National Health Security Strategy and Implementation Plan

2015-2018

DEPARTMENT OF HEALTH & HUMAN SERVICES · USA

ASPR
ASSISTANT SECRETARY FOR PREPAREDNESS AND RESPONSE

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Foreword

In 2009, the U.S. Department of Health and Human Services (HHS) released the first National Health Security Strategy (NHSS), which sought to galvanize efforts to minimize the health consequences of large-scale emergencies. The strategy was meant to fill a need born out of the tragic events of the previous decade—from the 9/11 terrorist attacks to Hurricane Katrina. Since then, communities have taken many steps to become more resilient—by developing their capabilities to withstand and overcome disasters, by engaging and training community members, and by securing community infrastructure, to cite just a few examples. Important progress has been made, but the nation must remain vigilant in its efforts to detect and address new threats in the shifting health security landscape. To unify effort and ensure future progress, the National Health Security Strategy and Implementation Plan (NHSS/IP) 2015–2018 presents a vision for the nation's health security over the next four years.

This document represents the latest milestone in the congressionally mandated requirement to achieve a health-secure and resilient nation. In 2009, the first NHSS presented a coherent vision of national health security and identified priorities to guide the nation's efforts. More recently, the National Health Security Review (NHSR) 2010–2014 described progress and challenges in improving and sustaining national health security over the past four years, and results from this analysis strongly informed the current strategy. The NHSS/IP 2015–2018 builds on past progress while providing strategic direction and an updated, streamlined approach toward increasing our national health security.

Like its predecessor, the NHSS/IP 2015–2018 is a national—not just federal—strategy. This means that the NHSS was developed through the sustained involvement of a broad array of stakeholders, including agencies and organizations from across the federal government, as well as representatives from the private sector, state and local governments, the nonprofit sector, community-based organizations, and the scientific and academic community. All these stakeholders provided substantial input, time, data, ideas, and feedback. Their contributions have helped shape a common vision of health security that this nation can stand behind and support. We at HHS are confident that the nation will continue to progress toward achieving national health security. We see a nation that is prepared to counter both intentional and unintentional threats; in which individuals and communities are alert and ready to support the response during an emergency; and in which the public health, healthcare, and emergency management systems work seamlessly together. We see communities that seek to strengthen relationships among their members and with other communities.

This strategy is not just HHS's strategy, but is a strategy for all Americans. The NHSS/IP 2015–2018 aims to make this nation a safer place to live in a world of diverse threats and high-consequence incidents. We hope that all Americans will take ownership of this strategy and champion its implementation for the betterment of the nation.

Nicole Lurie, MD, MSPH
Assistant Secretary for Preparedness and Response

Introduction

National health security is a state in which the nation and its people are prepared for, protected from, and resilient in the face of incidents with health consequences. The threats and risks that communities face are diverse—they can be intentional or naturally occurring and can result from both persistent and emerging threats, including severe weather, infectious diseases, hazardous material exposures, and terrorist attacks. The impact of these incidents can be exacerbated by vulnerabilities that vary from community to community, such as a large number of at-risk individuals,[*] [1] weak social networks, unprotected critical infrastructure, a lack of training and exercising for health security, and a lack of available countermeasures for emerging infectious diseases. The health security of our nation depends on the efforts of all Americans and begins at the community level.

National health security also depends firmly on the ingenuity of individuals and connected, healthy communities. Communities contribute to the nation's health security by building and leveraging local assets and skills, enhancing and protecting their community's infrastructure, facilitating citizen engagement, fostering interpersonal connections among community members, and cultivating relationships among local organizations. In addition, many communities have contributed to health security by developing and strengthening relationships with faith-based organizations, academic institutions, and private industry. The federal government maintains a proactive posture, works to build and support a culture of resilience, develops key skills and core capabilities in the federal and nonfederal workforce, partners with private industry to ensure a manufacturing infrastructure to produce medical countermeasures, and acts as a safety net in response to large-scale emergencies, particularly those that outstrip the response capacity of local or state governments.

[*] At-risk individuals: Persons who, "[b]efore, 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. Includes individuals specifically recognized as "at-risk" in the Pandemic and All-Hazards Preparedness Act section 2802 of the PHS Act (i.e., children, senior citizens, and pregnant women), individuals who may need additional response assistance [including] persons 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."

Recognizing the significant health component of national security, in 2006, Congress passed landmark legislation, the *Pandemic and All-Hazards Preparedness Act*, which required that a *National Health Security Strategy* (NHSS), implementation plan (IP), and an evaluation of progress be developed every four years.[2] Released in 2009, the original NHSS introduced a unified vision and approach to national health security.[3] In 2013, Congress passed the *Pandemic and All-Hazards Preparedness Reauthorization Act*, and called for the second iteration of the NHSS to be submitted in 2014 and every four years thereafter. This iteration of the NHSS provides strategic direction to ensure that efforts to improve health security nationwide are guided by a common vision, based on sound evidence, and carried out in an efficient, collaborative manner. It builds on knowledge of the progress made since 2009, as well as awareness of current gaps in national health security and the ever-shifting strategic landscape.

Strategic Landscape

The strategic landscape is made up of contextual factors that influence decision-making for the NHSS. The current national health security landscape differs in some important ways from the landscape that existed when the first NHSS was released five years ago.

First, national strategies, policies, and doctrine now define the strategic landscape in which we operate. The *National Security Strategy* (NSS), the nation's overarching security document, recognizes health-related issues, specifically pandemic disease threats, as potential threats to national security.[4] In addition, the NSS incorporates concepts central to health security, including resilience, engaged communities and citizens, intergovernmental coordination, global public health cooperation, and strategic partnerships with nongovernmental organizations (NGOs). The National Preparedness Goal, developed in response to *Presidential Policy Directive* (PPD)-8 to strengthen our nation's security and resilience, outlines core capabilities organized into the five mission areas (prevention, protection, mitigation, response, and recovery).[5, 6] The NHSS drives actions that communities must to take to address five key mission areas before, during, and after an incident (Figure 1). These mission areas align with those found in the National Preparedness Goal.[7] Moreover, the NHSS follows these strategies, policies, and doctrine and supports their overarching objectives.

Figure 1. Mission Areas Relevant to National Health Security

The health policy landscape is also changing rapidly with the implementation of the Affordable Care Act.[8] The Patient Protection and Affordable Care Act, hereafter referred to as the Affordable Care Act, affects national health security in a variety of important ways. For example, expanded insurance coverage, including coverage for preventive services, is expected to increase the overall health and resilience of the population. A healthier population will be better able to respond to and recover from incidents. Through increased access, increased insurance coverage is also expected to improve patient care in the aftermath of an event that displaces people from their local communities. Healthcare delivery system reforms, such as accountable care organizations, are a key element of the Affordable Care Act intended to improve the quality and efficiency of care. Such reforms are also expected to improve health situational awareness (HSA) and the use of electronic health records (EHRs) to ensure continuity across the patient continuum of care, from first encounter with the medical system in the field, until the time he or she is discharged from a definitive care facility. The implementation of the Affordable Care Act will facilitate the collection of better data to understand the population needs of a community before an incident occurs (e.g., identifying populations that require assistance during power outages because they use medical equipment that make them electricity-dependent).[9] Although many of the provisions of the Affordable Care Act will improve health security, implementation of the law varies by state and affects communities differently; as a result, it is important for stakeholders to continue to prioritize planning for emergencies throughout ongoing implementation.

Second, a period of economic austerity has resulted in the need for health security stakeholders to take a closer look at how resources are allocated and to examine whether these resources are being used efficiently. Although resource-constrained environments can have negative effects on health security, they can also facilitate strategic and thoughtful prioritization of health security activities and innovative practices to improve efficiency. Many communities face financial hardships that negatively affect governmental and nongovernmental service provision, individuals' ability to prepare their households

for incidents, and professionals' availability for training and coordination. State and federal governments also face financial challenges, while needing to continue to perform their current functions. Therefore, health security activities that are efficient, effective, and synergistic—using existing resources and routine practices—are desired.

Third, we live in a world that is characterized by the rapid proliferation of technological advances that provide great opportunities for improving society but also introduce new vulnerabilities. For example, new technologies in the life sciences provide opportunities to treat or cure diseases while at the same time those technologies could be applied with a harmful intent. Air travel and information technologies make our world increasingly interconnected, allowing people, ideas, and information to flow globally. However, through these same means, localized disease outbreaks can quickly become global pandemics. The growth of social media not only increases opportunities for individuals and organizations to connect with each other and to access and use information, but also facilitates the spread of potentially dangerous rumors and misinformation—with significant consequences for public health. To address these communication challenges, health security leaders and other stakeholders must ensure proper cybersecurity, understand how to frame communications effectively, and know how to optimally manage and use social media as sources of "big data,"[10] especially with respect to differentiating useful and erroneous information. The nation also requires sustained research and development to support continued technological innovations for health security including the infrastructure to develop, manufacture, and test medical countermeasures for man-made and natural threats.

Incidents, such as the Ebola epidemic in West Africa, Deepwater Horizon oil spill, Hurricane Katrina, Superstorm Sandy, and the 2009 H1N1 influenza pandemic have demonstrated the need for "science preparedness." Science preparedness emphasizes the need for disaster research and its supporting infrastructure to answer critical questions about public health emergencies, which can help emergency planners, responders, and communities recover more rapidly, and learn how to better respond to a similar incident. After an incident, there is a finite window of opportunity to identify, collect, and analyze the critical and time-sensitive data and information needed to protect the health and safety of responders, communities, and the nation as a whole.[11] Science preparedness is a collaborative effort to establish and sustain an evidence-based research framework that supports all the health security mission areas.

Fourth, climate change is expected to have ongoing effects on the health of Americans in every region of the country. As emphasized in the *National Climate Assessment*,[12] some extreme weather and climate events, including hurricanes, heat waves, floods, and droughts, have increased in recent decades, and these trends are projected to continue, and could accelerate. Extreme weather events present immediate health hazards as well as longer-term risks related to mold, waterborne diseases, and behavioral health– and stress-related disorders. Changes in temperature, precipitation, and in the timing and duration of seasons affect food security; the distribution of disease vectors, such as ticks and mosquitos; and the length and intensity of allergy seasons. Increased levels of ground-level ozone, as well as particulate matter from more frequent forest fires and droughts, affect outdoor air quality. Many of these health threats disproportionately affect at-risk individuals. It is important to have a

coordinated and thoughtful approach to addressing such a diverse and far-reaching set of threats to health security.

Over the past five years, the strategic landscape has changed, affecting national health security in many ways. Given these changes, we must continually reassess our course to respond to strategic changes, look toward the future to anticipate what we may encounter, and take action now. The NHSS/IP 2015–2018 attempts to anticipate what our nation will face over the next four years and to drive action in areas that will best enhance the nation's health security.

Past Progress

The nation's future health security builds on the progress made by diverse stakeholders over the past five years, as described in the NHSR 2010–2014. Community resilience has been the focus of increased awareness and has been incorporated into programs and policies. Furthermore, although the importance of individual preparedness continues to be recognized, there is now a greater understanding and appreciation for the role of community health resilience in supporting health security. The Public Health Emergency Medical Countermeasures Enterprise (PHEMCE) is operational and coordinates federal efforts to prepare for enhanced chemical, biological, radiological, and nuclear (CBRN) threats including pandemic influenza and emerging infectious diseases from a medical countermeasure (MCM) perspective.[13] HSA is now commonly understood to be broader than biosurveillance, encompassing health system and human services resources and health-related response assets, leading to a more comprehensive picture of the range of potential health threats, their potential adverse impacts to human health, and the assets available for response and recovery operations to mitigate the adverse impact on human health. A growing number of healthcare personnel understand how they can positively affect health security, and a greater number of paid staff and volunteers have received training in how they can support health security. Hospitals are better prepared to identify and respond to mass-casualty events and disease outbreaks and public health emergency managers are now working in collaboration with state, local, tribal, and territorial (SLTT) emergency managers. Finally, the U.S. government has established stronger relationships with other countries in a collaborative effort to improve global health security.

Vision

A nation that is secure and resilient in the face of diverse incidents with health consequences, with people in all communities enjoying a high level of security against threats to their health and well-being.

Goal

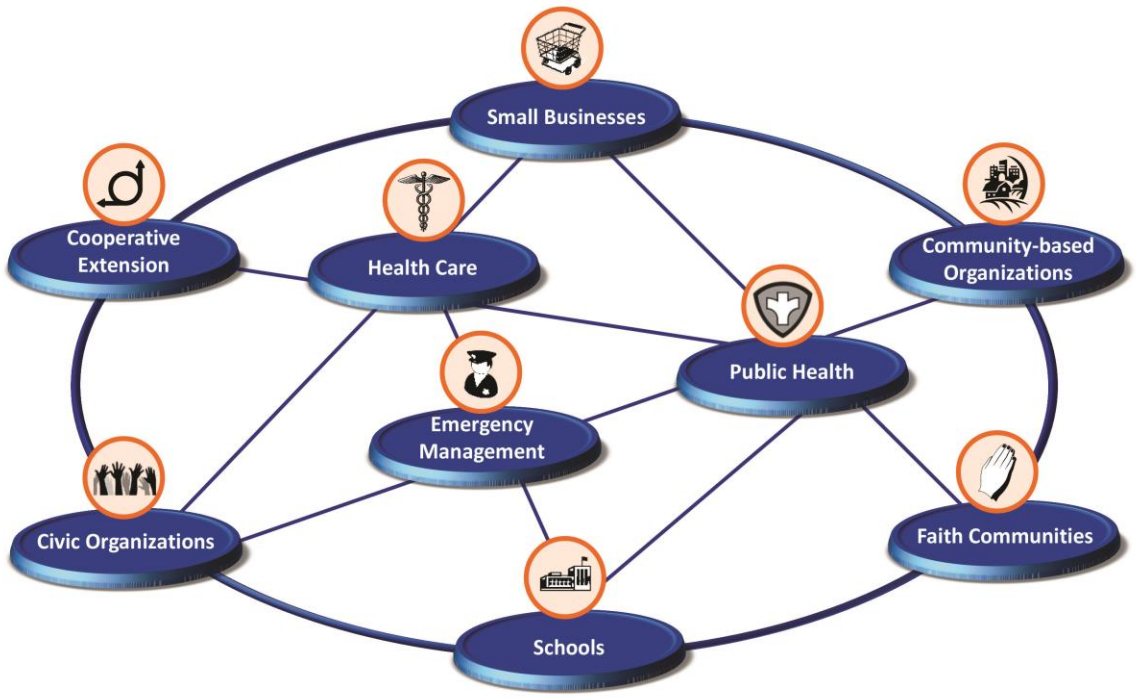
To strengthen and sustain communities' abilities to prevent, protect against, mitigate the effects of, respond to, and recover from incidents with negative health consequences.

Vision, Goal, and Guiding Principles

The NHSS 2015–2018 provides a foundation on which the whole community can contribute to the common goal of national health security. The NHSS seeks to inform governmental and nongovernmental policies and programs; encourage coordinated planning and activities; and guide prioritization of investments of time, talents, funds, and other resources. It provides direction by establishing a vision that is shared among stakeholders, a goal for the nation, principles to guide decision-making, and strategic objectives to focus and coordinate stakeholders' efforts to achieve high-priority results.

The vision can be achieved only through strong leadership across all levels of government and the commitment of communities around the nation. Leadership and coordinated planning at the community level can be achieved as dedicated individuals work together with the organizations that are common to most communities (see Figure 2). These organizations include emergency management (EM) agencies that protect and serve, schools that protect and educate youth, faith communities that inspire and support, county-based cooperative extensions that provide connections to education and research institutions, civic organizations that channel the dedication and goodwill of community members, and small businesses that are the heart and economic center of our communities. The strength of a community derives from both the engagement of individual citizens and the relationships among its many organizations. States, working in concert with communities and augmented by the federal government, have unique authorities and can play important coordination and support roles in health security.

Figure 2. An Inclusive, Proactive Approach to Partnerships and Collaboration Within and Among Communities to Enhance National Health Security[†] [14]



[†] Cooperative extensions provide resources for land-grant institutions to solve public needs with college or university resources through nonformal, noncredit programs. The extensions address six major areas, including 4-H youth development, agriculture, leadership development, natural resources, family and consumer sciences, and community and economic development.

Guiding Principles

A set of principles guides national health security decision-making. These guiding principles describe the characteristics that lead to high performance and productive relationships, both of which facilitate collaborative achievement of national health security.

Strategic Alignment

The NHSS will contribute to the achievement of the goals of the National Security Strategy and PPDs and should guide initiatives that contribute to the health security of communities across the nation.

Evidence-Based Practice

Scientifically based evidence will be the foundation for health security policies, programs, practices, and informed decisions and should be improved through research, analysis, and experience.

Continuous Quality Improvement

Policies, programs, and practices to improve national health security will be monitored, evaluated, and improved using systematic and rigorous quality management processes.

Community Engagement

An inclusive, proactive approach will be used to foster effective partnerships and collaboration within and among communities, and the needs and contributions of individuals will be integrated into national health security efforts.

Maximum Benefit

National health security will be strengthened and sustained by leveraging opportunities in one area to make advances in others and by prioritizing improvements that benefit multiple sectors, populations, or levels of government.

Strategic Objectives

The goal of the NHSS is supported by five strategic objectives (see box below). The priorities identified for each strategic objective are those deemed to require dedicated and focused attention for the next four years. The NHSS Implementation Plan (Appendix A) lists activities that could be performed over the next four years in support of the priorities. Stakeholders will need to collaborate on many of these activities. The next sections explain the objectives and priorities in greater detail, while the IP provides greater detail on the activities.

Strategic Objectives

1. Build and sustain healthy, resilient communities.
2. Enhance the national capability to produce and effectively use both medical countermeasures and non-pharmaceutical interventions.
3. Ensure comprehensive health situational awareness to support decision-making before incidents and during response and recovery operations.
4. Enhance the integration and effectiveness of the public health, healthcare, and emergency management systems.
5. Strengthen global health security.

Strategic Objective 1: Build and Sustain Healthy, Resilient Communities

Scope

Community resilience is a community's sustained ability to withstand, adapt to, and recover from adversity.[15] Promoting community resilience is a multisector endeavor that leverages community and individual assets, such as infrastructure, talents, skills, relationships, technology, and natural resources. Because health is a key aspect of overall community resilience, the scope of this objective is community *health* resilience—a community's ability to use its assets to strengthen public health and healthcare systems and to improve the community's physical, behavioral, and social health to withstand, adapt to, and recover from adversity.

Community health resilience is the ability of a community to use its assets to strengthen public health and healthcare systems and to improve the community's physical, behavioral, and social health to withstand, adapt to, and recover from adversity.

Vision for Building and Sustaining Healthy, Resilient Communities

The nation will create a robust culture of health resilience, promoting physical and behavioral health and well-being, connecting communities, and championing volunteers. Across the nation, communities, organizations, and individuals will all contribute through their unique resources and capabilities. A culture of resilience will equip them not only to address daily challenges, but also to prevent, prepare for, mitigate, respond to, and recover from large-scale emergencies. Individuals and households will know how to improve health and will act on that knowledge. They will be engaged with the healthcare system and understand how to support their neighbors and community. Households and communities will work together, with the support of local organizations, and will engage in training and planning that prepare them to fulfill their roles in health security. Communities will promote health in part by supporting community infrastructure, including secure housing, economically viable neighborhoods, quality healthcare facilities, and spaces for gathering and exercise.[16] Public health, healthcare, behavioral health, and social service organizations will understand the needs of the people they serve and be ready to meet those needs before, during, and after an incident. As individuals and organizations become more health-resilient and build robust social networks, whole-community resilience will thrive.

Operational Context

The NHSS 2010–2014 heightened awareness of and refined the concept of community resilience. Increasingly, national and federal policies have prioritized community resilience and community health resilience through operational guidance (e.g., the National Disaster Recovery Framework[17]), national guidance, and grant funding guidelines (e.g., *Healthcare Preparedness Capabilities: National Guidance*

for Healthcare System Preparedness).[18] The Patient Protection and Affordable Care Act has benefited communities by increasing interorganizational collaboration among NGOs (particularly healthcare facilities) and governmental organizations. The nation has made progress in understanding how to build and sustain resilient communities, including the roles that people and infrastructure play. However, opportunities remain for many parts of the public health and healthcare systems to improve their contributions to health security. For example, expanded health insurance coverage might contribute to the communities' health resilience by improving access to care. The potential for such a contribution will vary by community, as communities often have distinct characteristics, strengths, and risks. The unique makeup of communities influences the types of operational support that may be needed from state or federal governments following a disaster and the kinds of partners that need to be engaged in preparedness activities to build resilience prior to an event.

Communities are facing an increasingly complex array of challenges. Human-caused and naturally occurring incidents are more frequent and costly and are influenced by global factors, such as climate change, interconnected economies, and population shifts toward large, dense urban centers and megacities. A wider range of partners and capabilities must be brought together to address these heightened risks and to complement and expand available community, state, and federal support. A community resilience approach does this by encouraging actions that improve the community's ability to withstand, adapt to, and recover from adversity while also promoting strong day-to-day systems and addressing the underlying social determinants of health. In particular, incidents with negative health consequences, particularly those that are catastrophic, underscore the importance of social connectedness, educated and effective bystander response (e.g., spontaneous action by a member of the public to help another person), and strong partnerships among people and organizations that can be leveraged to improve response and sustain recovery.

Priorities

Several areas are prioritized to continue to build and sustain healthy, resilient communities. Improving social connectedness will enhance individual and community health resilience. Communities that plan together will be better able to identify risks, take action to withstand the effects of an incident, and recover more swiftly than communities that do not. Governmental organizations and NGOs can improve the physical, behavioral, and social health of a community. These organizations need to forge and maintain strong relationships prior to an incident to understand each community's unique strengths and vulnerabilities; quickly provide resources to those in need; and mobilize a whole-community effort for prevention, protection, mitigation, response, and recovery. Relationships among stakeholders in government and private industry, NGOs, and academia expand the reach of resources and extend the reach of the public workforce while also helping NGOs meet people's needs. All organizations—including those that do not have health security as their primary mission—need to develop, train, and exercise response and recovery plans in coordination with community partners.

Communities need to continue to build and foster a culture of health resilience, one in which individuals are mindful of and habitually take actions that improve their own health and resilience and those of

their families, neighborhoods, and communities. Building a culture of health resilience includes investing in comprehensive health education and promotion activities to teach residents about actions that they can take to be healthier, as well as ways in which they can protect themselves and their families before, during, and after an incident. These activities should integrate the access and functional needs of at-risk individuals.

Strategic Objective 1 Priorities

1.1. Encourage social connectedness through multiple mechanisms to promote community health resilience, emergency response, and recovery.

1.2. Enhance coordination of health and human services through partnerships and other sustained relationships.

1.3. Build a culture of resilience by promoting physical, behavioral health, and social health; leveraging health and community systems to support health resilience; and increasing access to information and training to empower individuals to assist their communities following incidents.

Strategic Objective 2: Enhance the National Capability to Produce and Effectively Use Both Medical Countermeasures and Non-Pharmaceutical Interventions

Scope

Countermeasures are used to protect communities from and limit the adverse health impacts of CBRN attacks, outbreaks of infectious diseases, and other incidents. There are two main types of countermeasures: MCMs and non-pharmaceutical interventions (NPIs). MCMs include medications and other pharmaceutical remedies which mitigate and prevent the spread of disease - such as vaccines, small molecule, antibody, and cellular therapeutics, antimicrobials, antidotes, antitoxins, and decorporation agents to reduce radioactive contamination - as well as non-pharmaceutical medical devices and approaches - such as ventilators, diagnostics, personal protective equipment (PPE), and patient decontamination.[‡19] NPIs refer to community mitigation strategies that are used to prevent the spread of disease, contamination, or other adverse effects related to an incident. NPIs include both actions taken by individuals, such as hand hygiene and covering one's mouth when coughing, and actions taken by communities to reduce contact with contagious persons, such as social distancing (e.g., closing schools and asking people to work at home).[§ 20] This objective encompasses the enhancement of the successful PHEMCE, and the range of actions related to enhancing the nation's capacity to develop, manufacture, evaluate, and use MCMs and NPIs both for routine public health purposes as well as during emergencies; from research to development and acquisition, to effective use or implementation of countermeasures, to assessing the intended and unintended consequences of the countermeasures.

Vision for Enhancing the National Countermeasure Capability

The nation will rapidly and nimbly develop, manufacture, evaluate, and deploy countermeasures through public-private partnerships that protect communities from and alleviate the effects of:

- CBRN agents

[‡] Although the 2012 PHEMCE strategy identifies ventilators, diagnostics, and similar equipment and services as "non-pharmaceutical interventions," the PHEMCE implementation plan has updated the terminology to "non-pharmaceutical MCM interventions." For purposes of consistency, the NHSS uses the PHEMCE implementation plan's language, which is also consistent with Centers for Disease Control and Prevention (CDC) language for NPIs.

[§] These lists are not exhaustive.

- infectious diseases, including pandemic influenza, emerging and re-emerging pathogens, and antimicrobial-resistant pathogens.

The nation will be poised to address a wide range of threats. It will create a comprehensive suite of countermeasures for everyday public health and in public health emergencies, as well as coordinated process for using them effectively. To ensure the best response, stakeholders will make use of both MCMs and NPIs. For example, the response to an influenza pandemic would employ social distancing (e.g., canceling large gatherings, asking people to stay home when sick) or usage of antiviral drugs until a vaccine is available. The nation will invest in developing and manufacturing cost-effective MCMs and in plans to implement NPIs and ensure their efficacy. Countermeasure experts will collaborate with healthcare practitioners and the public to integrate their efforts in planning for and using countermeasures.

Operational Context

The nation has made progress in developing and preparing countermeasures through the active involvement of many agencies and organizations. PHEMCE has facilitated and strengthened interaction among federal stakeholders and between federal- and nonfederal stakeholders. It provides an integrated vision of the entire MCM enterprise, which is necessary to ensure the maximum health benefit and most-efficient use of public and private resources. Figure 3 shows the PHEMCE mission components, as well as lead agencies within and outside of HHS and essential nonfederal stakeholders. Central to this strategic objective are the 2012 PHEMCE *Strategy* and *Implementation Plan* and annual updates.** [21]

HHS and the U.S. Department of Defense (DoD) maximize the nation's ability to respond to CBRN threats by aligning available MCM research and development and related infrastructure resources with PHEMCE public health emergency and DoD requirements and priorities.[22] DoD partners have also supported development of MCMs of mutual interest to DoD and HHS and coordinated closely with HHS down to the level of funding individual projects. These investments have supported progress in early- and late-stage MCM research and in identifying new applications and uses of existing products. The Biomedical Advanced Research and Development Authority's (BARDA's) Centers for Innovation in Advanced Development and Manufacturing, BARDA's Fill Finish Manufacturing Network, and DoD's Advanced Development and Manufacturing Capability were established to assist companies in the advanced

** The updated 2014 Public Health Emergency Medical Countermeasures Enterprise (PHEMCE) Strategy and Implementation Plan (SIP) is anticipated for release in late calendar year (CY) 2014. Developers of the 2014 PHEMCE SIP have been actively engaged in the NHSS process to ensure alignment.

development and manufacture of MCMs and respond rapidly in the development and manufacturing of MCMs during public health emergencies. Additionally, the National Institute of Allergy and Infectious Diseases (NIAID), the lead component of the National Institutes of Health (NIH) for research and development of MCMs for CBRN threats, supports early and preclinical development of MCMs and transitions those that show promise to BARDA for advanced development. The length of time to develop an MCM is an ongoing challenge; however, successes have been realized. These successes include a reduction in the time needed for product sterility testing, more rapid access to both clinical and nonclinical testing, and a reduction in time to move bulk MCM product into its final form needed for use. As a result, seven MCMs received FDA approval in the last two years and 12 new products have become available under Project BioShield since 2004. Additionally, NIAID and BARDA are actively providing developers many core pharmaceutical services that small companies lack to develop, manufacture, and test their MCM candidates.

CDC has invested significantly in procuring and maintaining materiel for the Strategic National Stockpile (SNS), the nation's repository of antibiotics, vaccines, antidotes, antitoxins, and other critical medical equipment and supplies. State and local capacity to receive, distribute, and dispense MCMs has improved since 2009. Such programs as the CDC Division of State and Local Readiness provide distribution and dispensing technical assistance, while the Cities Readiness Initiative (CRI) provided funding and technical assistance to state and local health departments. In the past four years, research has been conducted to model the impact that many NPIs have on influenza transmission, and new evidence-based guidance for communities on the use of NPIs is being developed and will be available soon.

Currently, some gaps remain in the nation's countermeasure capability. Despite the availability of portable diagnostic assays for some high-priority threat pathogens, point-of-care diagnostics for other high-priority threats are unavailable and remain PHEMCE priorities for advanced development. Research on NPIs is lacking, and the ability to develop, manufacture and test novel MCMs rapidly for unknown emerging infectious disease threats (e.g., MERS-CoV) remains a challenge for the PHEMCE. Harmonization and streamlining for rapid biosafety and biosecurity permitting is needed among CDC, FDA, and USDA for transport of MCMs, reagents, and allied supplies during domestic and global public health emergencies. Moving forward, progress must be sustained—and innovation fostered—for both MCMs and NPIs in the face of changes to funding mechanisms and the fiscal environment. Doing so requires additional efforts to facilitate engagement of the full range of essential stakeholders.

Figure 3. Lead Agencies in the Public Health Emergency Medical Countermeasures Enterprise[23]

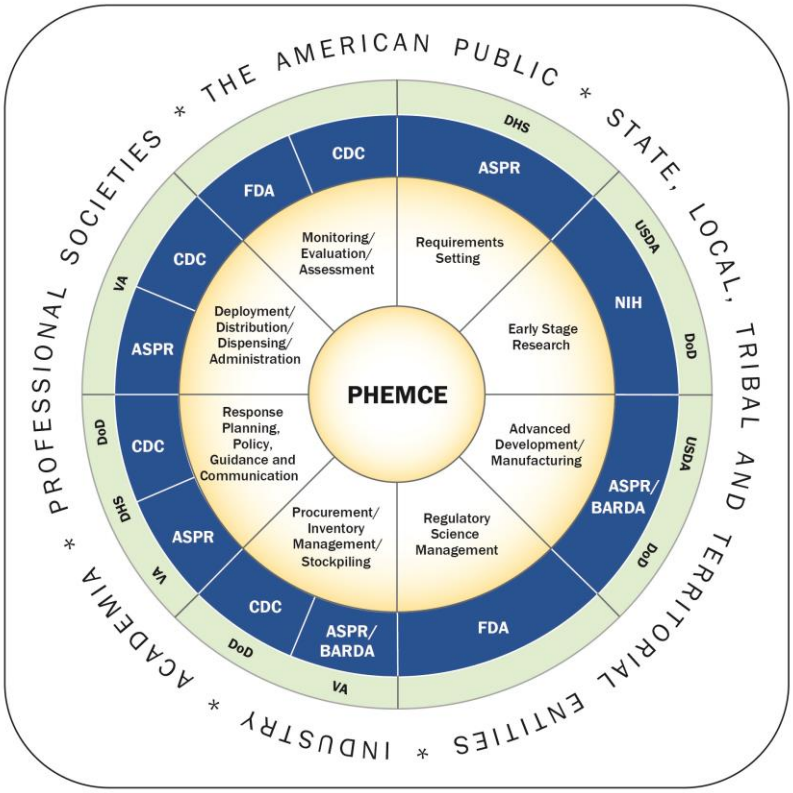


Figure 2: PHEMCE Agency Lead Roles

Key

- PHEMCE Mission Components
- HHS PHEMCE Agencies
- Non-HHS PHEMCE Agencies
- Non-Federal Stakeholders

Acronyms

PHEMCE: Public Health Emergency Medical Countermeasures Enterprise
DHS: Department of Homeland Security
DoD: Department of Defense
USDA: U.S. Department of Agriculture
VA: Department of Veterans Affairs
HHS: Department of Health and Human Services
ASPR: Assistant Secretary for Preparedness and Response
BARDA: Biomedical Advanced Research & Development Authority
CDC: Centers for Disease Control and Prevention
FDA: Food and Drug Administration
NIH: National Institutes of Health

Priorities

This NHSS objective aims to enhance and expand the national countermeasure capability in several ways. First, innovation and application of both MCMs and NPIs to address both routine public health needs as well as those that arise during emergencies is fundamental.

Public health and emergency management professionals at all levels must learn and consider the full range of countermeasure options available in order to determine which combination to deploy in response to an incident. The nation must ensure that countermeasures are developed and tested

appropriately to address the needs and priorities of all segments of the population, including first-response personnel and at-risk individuals.

Second, this objective will help to implement the vision described in the PHEMCE strategy by improving collaboration with nonfederal stakeholders to better ensure that PHEMCE's priorities are achieved.

Third, this objective will encourage the effective use of NPIs through planning and preparation to identify effective interventions, the situations in which they should be deployed, methods for monitoring their effects, and indicators to modify or discontinue NPIs. Identification will require an understanding of the intersection between biology and all countermeasures that are required to contain the threat. Specifically, research is needed to inform decisions regarding which NPIs are most effective under specific circumstances; to identify and understand the effects of interventions (including unintended effects); and to determine their feasibility (e.g., in terms of public acceptability and ease of use).

Finally, this objective will give special attention to building national capacity to distribute and dispense MCMs. Encouraging communities and governments to collaborate will help ensure stakeholder support for an effective countermeasure response when an incident occurs.

Strategic Objective 2 Priorities

2.1. Create and/or refine decision-making frameworks and coordinated processes that consider both MCMs and NPIs when making research, advanced development, and acquisition decisions related to countermeasures and determining the best approaches to reducing adverse health effects of particular incidents of concern.

2.2. Increase nonfederal stakeholder engagement within PHEMCE processes.

2.3. Focus research and translation on NPIs to ensure that evidence is accurate and actionable.

2.4. Expand and improve national capacity to research, develop, manufacture, obtain, distribute, and dispense medical countermeasures.

Strategic Objective 3: Ensure Comprehensive Health Situational Awareness to Support Decision-Making Before Incidents and During Response and Recovery Operations

Scope

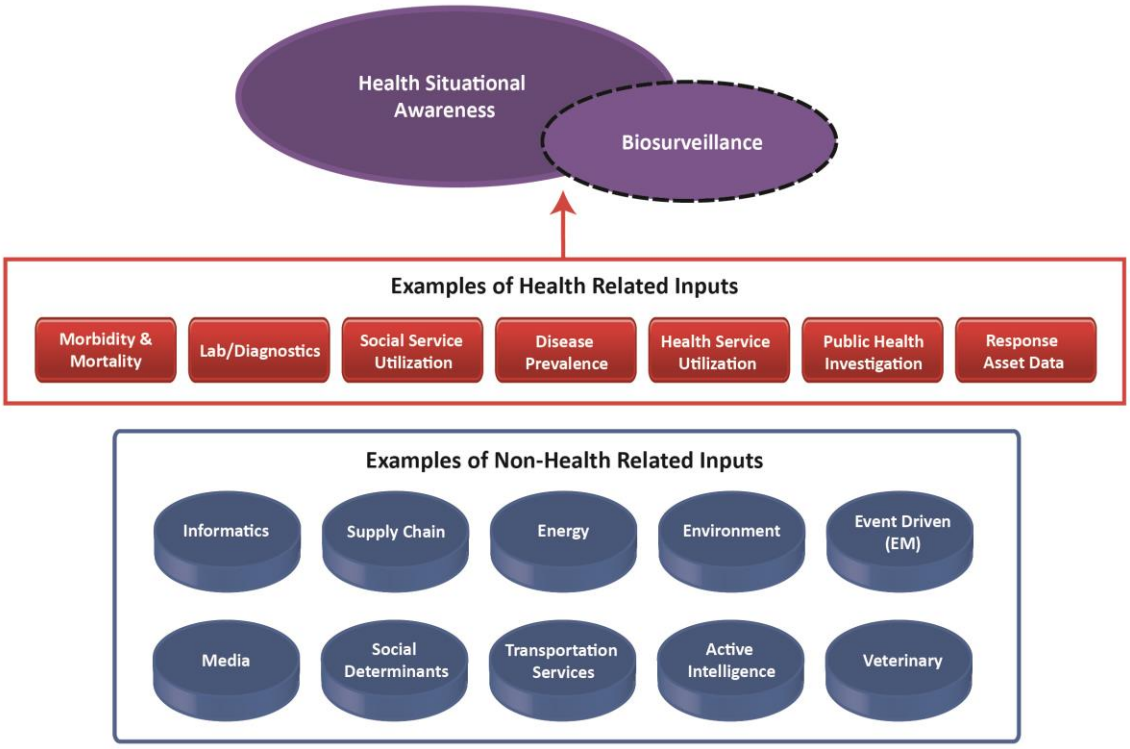
Detection is an important aspect of national health security that should not be understated.[24] *Detection* refers to the timely identification of a threat or incident with negative health consequences. National situational awareness (SA) includes all sectors and relevant actors nationally and globally across the prevention, protection, mitigation, response, and recovery mission areas (see Figure 1) and uses a process that involves an active, continual, and timely information-gathering loop that relies on existing assets, networks, and systems. Active and timely SA provides the foundation for decisions and actions that, in turn, can result in better resource utilization, successful prevention and mitigation of emerging threats, and improved security for the nation. HSA contributes to overall SA by providing information that includes data regarding health threats, population health, health system and human services resources, health-related response assets, and other considerations to inform decision-making.[††] [25] HSA is also both domestic and international in reach and contributes to health security, homeland security, and national security. HSA processes actively gather information about resource allocation, risk analysis, forecasting, response, and other actions that might affect health security to support decision-making before incidents and during response and recovery operations.

HSA is a knowledge state that results from the process of actively gathering, analyzing, integrating, interpreting, validating, and disseminating information. HSA includes routine and emergency biosurveillance[‡‡] information and other health-related information, and nonhealth inputs, as shown in Figure 4.

[††] HSA is a knowledge state that results from the process of active information-gathering (both domestic and international) with appropriate analysis, integration, interpretation, validation, and sharing of information related to health threats and the health of the human population, as well as health system and human services resources, health-related response assets, and other information that could affect the public's health to inform decision-making, resource allocation, and other actions.

[‡‡] *Biosurveillance* is defined in the *National Strategy for Biosurveillance* as "the process of gathering, integrating, interpreting, and communicating essential information related to all-hazards threats or disease activity affecting human, animal, or plant health to achieve early detection and warning, contribute to overall situational awareness of the health aspects of an incident, and to enable better decision making at all levels."

Figure 4. Inputs to Health Situational Awareness[26]



HSA and biosurveillance are integrally related, though not synonymous. Biosurveillance is a key information-gathering activity that encompasses human disease surveillance, animal disease surveillance, environmental monitoring, and gathering of intelligence and other information for early warning and SA. HSA encompasses both biosurveillance information-gathering activities and data as well as data related to the assets available for response and recovery operations to mitigate the adverse impact on human health including human services and public health and healthcare system assets, resources, and infrastructure.

Vision for Ensuring Health Situational Awareness to Support Decision-Making

HSA is an operational capability that is flexible to provide timely and relevant information based on the unique nature of the incident to decision-makers to support health-related decision-making. A robust capability for HSA would allow users at all levels of the prevention, protection, response, recovery and mitigation mission areas and across sectors to define and access the information most relevant to them. A capability for HSA will provide decision-makers with the following:

- Insight on threats and risks that could adversely affect health and the assessment of potential consequences.

- Near-real-time information on the status of the human population health that is adversely affected or at-risk.
- Near-real-time information on the response and recovery capabilities and resources available to protect human health and mitigate adverse impacts.
- Forecasting and analysis of future needs to ensure proactive decision-making and efficient and effective allocation and use of resources.
- Near-real-time information from other sectors on critical infrastructure functionality that could affect health and triggers for corrective action.
- Information to consistently provide risk communication to the public.
- Coordinate a management structure to ensure information is retrieved from and provided to all relevant stakeholders in a timely fashion.
- Insight on severity, counterability, and urgency.

A capability for HSA will leverage state-of-the-art technology and information management systems while always ensuring privacy and security in accordance with the National Strategy for Information Sharing and Safeguarding.[27] These systems will be continuously improved and made interoperable or functionally compatible.[§§] In addition, a capability for HSA will be underpinned by a robust workforce and human networks of subject-matter experts and will include human, animal, and environmental health.

Operational Context

SA has been operationalized in the past few years by automating and integrating the collection, analysis, and visualization of data into meaningful knowledge and usable information. Timely (near-real-time) delivery of appropriately analyzed, relevant data to the key decision-makers involved in all phases of a health incident is vital to achieving successful outcomes. Interoperability or functional compatibility among systems is also important to allow for information flow across all sectors of a community and among all levels of government. The breadth of the collected information needs to include not only health-related data but also non–health-related data that may be required to make sound operational decisions (e.g., transportation data, power-grid status, active intelligence from law enforcement, real-time weather and climate information). SA products and services have been integrated into the National Incident Management System (NIMS) to inform and improve the allocation of critical resources

[§§] *Functional compatibility* is defined as a combination of means and ways to perform a set of tasks under specified standards and conditions that collectively provide the ability to achieve a desired effect.

during all stages of incident management. SA processes, systems, and products provide decision-makers with the knowledge, contextual insight, and forecasting needed to make informed and effective management decisions during response and recovery operations and to inform public affairs and risk communication during incidents.

The HHS Secretary's Operations Center (SOC) serves as the central HSA hub through which HHS monitors public health and medical indicators and warnings, both domestically and internationally, and coordinates integrated response and recovery operations related to ongoing events of public health significance. The SOC maintains HSA on a 24-hour-a-day, 365-day-a-year basis and oversees all phases of the information management process, including collection, analysis, integration, and dissemination. Dissemination of information is conducted under a phased reporting structure that mirrors the structure used by the Department of Homeland Secruity (DHS) National Operation Center and the Federal Emergency Management Agency (FEMA) National Watch Center, and allows for the sharing of information with both internal and external partners. Additionally, the SOC works with other federal and SLTT operations centers to share information and coordinate appropriate responses for public health and medical consequences. The SOC works internally to coordinate all department and agency activities across the HHS spectrum.

Specific examples of success in improving operational HSA have been demonstrated. HHS monitors social media during incident responses to identify potential emerging public health concerns. Following Superstorm Sandy, HHS used social media tools to discover an outbreak of norovirus and alerted HHS personnel working in shelters to prevent further spread. The increased use of EHR technology, promoted through the Centers for Medicare & Medicaid Services (CMS) EHR Incentive Programs, is providing opportunities for near-real-time exchange of disease surveillance data.[28] HHS has employed MedMap, a secure geographic information system (GIS)-based electronic, interactive mapping application that combines data from multiple federal and public agencies into a single visual environment for enhanced SA to support planning for and response to natural and human-caused incidents. Effective decision support requires coordinated information-sharing and analysis to provide appropriate context and transform the information into actionable tasks to support desired outcomes.

Priorities

The development of several national strategies relevant to HSA has increased attention in this area and promoted a shared vision. The next step is to implement that vision by continuing to build and improve the data systems needed to support effective HSA. An area of focus for this objective will be improving the ability to share information—human health, environmental, and zoonotic—across all relevant stakeholders and to use that information to identify threats and mitigate their effects. More generally, data collection and information creation activities need to be flexible and responsive to adapt to evolving decision support requirements. The ability to refine data sources throughout the life cycle of an incident and to include contextual information is vitally important and should be strengthened and promoted. In the next four years, it will also be critical to achieve a better understanding of the full range of HSA needs among stakeholders, including the access and functional needs of at-risk individuals

and the extent to which existing operational capabilities address them. Coordination among public and private stakeholders can be facilitated by creating a voluntary oversight authority with representatives from key stakeholder groups and sectors. In addition, data collection and sharing among stakeholders can be informed by a better understanding of the barriers (e.g., barriers to surveillance, interoperability and data sharing), whether technology- or policy-related, and ways to address them.

Strategic Objective 3 Priorities

3.1. Improve HSA and data-sharing with respect to integrating human health, environmental, zoonotic, and other relevant information to mitigate immediate, short-, and long-term health effects.

3.2. Promote continuous improvement through use of state-of-the-art innovative systems, tools, and partnerships to ensure improvement of HSA.

3.3. Determine and expand operational capabilities to meet the HSA needs for all relevant stakeholders so that data sourcing is both situationally and user-defined.

3.4. Develop a voluntary, collaborative coordinating authority (CCA) and management structure for HSA to promote and coordinate consistent approaches to HSA.

3.5. Address technology and policy challenges to ensure the functional compatibility of systems to collect, integrate, analyze, visualize, and share information.

Strategic Objective 4: Enhance the Integration and Effectiveness of the Public Health, Healthcare, and Emergency Management Systems

Scope

The public health, healthcare, and emergency management systems are related, overlapping systems contributing to national health security. The public health system includes public agencies (e.g., schools, Medicaid, environmental protection agencies, land-use agencies), state and local public health departments, and private organizations whose actions have significant consequences for the health of the public.[29] The healthcare system is the organization of people, institutions, and resources that deliver healthcare services, including behavioral health services, to meet the healthcare needs of the population. Emergency management[30] involves the efforts of communities or businesses to plan for and coordinate the people and emergency services required to reduce vulnerability to hazards and to cope with disasters while addressing all mission areas of health security (See Figure 1). Emergency services involve a community's first-responder organizations that have the specialized training and equipment to support a national level health incident through response, treatment or stabilization, transportation through fire services and emergency medical services (EMS), and decontamination of personnel and equipment through hazardous material services.[31] Components of the emergency management system are also essential to establishing and maintaining incident command and incident management operations. A skilled workforce is the foundation of these systems. The workforce is made up of paid and volunteer staff employed by governments and other organizations, as well as interim employees, volunteers, and bystanders who just happen to be at the scene of an incident and seek to contribute.

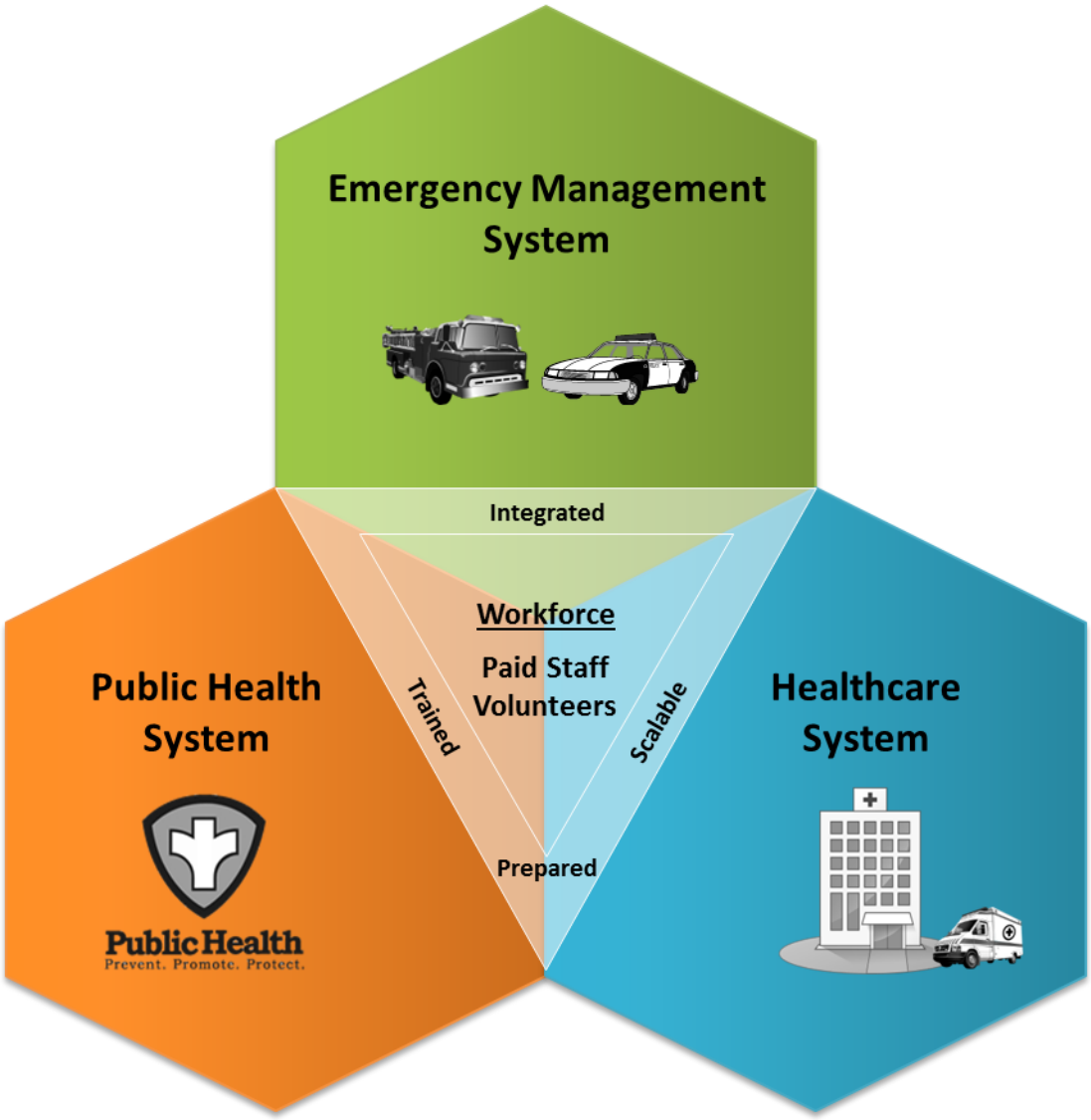
The integration of public health, healthcare, and emergency management systems means that they can work together day to day, mutually supporting one another so that they can seamlessly scale up to handle increased requirements or demands during the mitigation, response, and recovery phases of the incident life cycle. Furthermore, integrating the expertise and specialized equipment found in the public health, healthcare, and emergency management systems will enhance a community's resilience without duplicating services under different organizations or strategies.

Vision for Enhancing the Integration and Effectiveness of the Public Health, Healthcare, and Emergency Management Systems

Integrated, scalable public health, healthcare, and emergency management systems will be dynamic, risk-informed, and flexible. These systems will be able to adjust, on immediate notice, from baseline operations to crisis response mode using established, trained, and tested processes and practices, as well as information-sharing tools and technologies. Systems will address the needs of all communities and populations, including at-risk individuals. The federal government will maintain robust national capabilities (e.g., ability to deploy skilled personnel through the National Disaster Medical System) that can augment state and local efforts as needed. Communication and coordination across levels of government will facilitate an integrated response when local capabilities are overwhelmed.

The workforce supporting these systems will be highly skilled and will exhibit both the ability and the willingness to respond to complex incidents. The workforce will be large enough to meet both routine and surge demands. Given the interdependencies across workforces, efforts to develop the health labor force will be coordinated across key workforce domains to enhance the national security workforce (Figure 5). Workers will be well-educated in their respective disciplines, established incident management practices, and safety protocols. Paid staff and volunteers (e.g., civilian Medical Reserve Corps members) will be trained in key evidence-based competencies. Interim volunteers will be registered, trained on emergency response plans, exercised, and emergency managers will use them effectively. An active bystander culture will be nurtured, in which members of the general public have the support and confidence to take life-saving actions, especially in the early moments following an incident and before traditional first responders can arrive. During an incident, when bystanders and other spontaneous volunteers appear on the scene, emergency managers will establish an orientation session to identify volunteers' specific skills and abilities, arrange just-in-time training, and attempt to direct their contributions according to their specific skills and abilities, to augment first-responder resources.

Figure 5. Integrated Emergency Management System, Public Health System, and Healthcare System Supported by Paid Staff and Volunteers



Communities will enhance the national health security workforce by engaging youth, offering them service projects and leveraging their enthusiasm and creativity to solve problems. These experiences will call to action the next generation of emergency management leaders and prepare them to face existing and future threats.

Operational Context

Since 2009, the nation has made progress toward establishing the foundation for integrated public health, healthcare, and emergency management systems. Regional planning alliances and healthcare coalitions have increased in number, strengthening organizational ties, and introducing new sectors into

planning and response activities. In a 2011 survey, 94.5 percent of acute care hospitals that responded, reported participation in a coalition for emergency planning and response purposes.[32] Most responding coalitions indicated wide participation of both hospital and other stakeholders, such as public health agencies, EMS providers, and emergency management agencies. Although the number of coalitions is increasing, evidence is needed to determine whether coalitions or other organizational relationships or approaches are associated with improved intrasystem and intersystem integration. If the evidence is found, understanding which characteristics are associated with improved outcomes could inform guidance and improve healthcare system performance and resilience. The implementation of the Health Information Technology for Economic and Clinical Health (HITECH) Act[33] and Affordable Care Act has furthered the adoption of EHRs, which has facilitated the integration of healthcare and other organizations. However, EHR interoperability issues among governments, including federal agencies, and between governmental and nongovernmental sectors, remain as a challenge.

Healthcare delivery organizations have improved their workers' ability to respond to rapid, temporary increases in patients through better integration with public health, emergency management, and other partners. Many organizations have developed guidance, tools, and templates to improve the scalability of the national health security system, including resources for crisis standards of care for communities. Legal and policy challenges, however, remain barriers to implementation of crisis standards of care. The Public Health Emergency Preparedness (PHEP) and Hospital Preparedness Program (HPP) cooperative agreements[34] and Emergency Medical Services for Children (EMSC) program all have defined capabilities and associated guidance to help states, territories, and select large municipalities improve integration across the public health, healthcare, and emergency management systems, including resources addressing the access and functional needs of at-risk individuals. However, decreasing funds threaten the sustainability of achievements made by communities nationwide.

The public health, healthcare, and emergency management workforces are all currently operating under significant constraints, with gaps in coverage in many communities.[35] In recent years, activities have been undertaken to build a highly competent workforce for health security. In particular, there has been a focus on identifying core competencies for the disaster medicine and public health workforces. Many educational courses have been delivered, including training in points of dispensing (PODs), safety, and environmental health. Progress has been made toward both quantifying the number of staff and volunteers available for incident response and assessing communities' ability to quickly notify and assemble staff and volunteers. However, performance measurement, logistical, and other challenges remain. Although creative actions have been taken in communities and states to cope with the insufficient workforce, collaborative and swift national corrective action is needed to address these problems. In this regard there are several notable needs: 1) evaluate the effectiveness of workforce training; 2) adapt existing training materials for regional use; 3) place more epidemiologists, public health informaticians, other skilled public health professionals at the state and local levels; 4) develop new training materials in communities and regions where none exists, and 5) expand the reach and use of e-learning for training.

Priorities

The priorities for this objective seek to sustain and build on recent progress. Increased integration will improve systems' resilience, meaning that they will become more scalable, robust, efficient, interoperable, sustainable, and adaptive to change. These qualities might be strengthened through coalition-building, as well as cooperative planning, training and exercising in all mission areas. Perhaps the greatest gains can be made by focusing on those organizations that do not view health security as their primary responsibility. To reduce the burden on responders, it is important to ensure that home health agencies, behavioral health facilities, long-term-care facilities, provider groups, Medicaid providers, and others remain operational and serve the populations that rely on them. A focus on rural communities will also be helpful because many planning assumptions based on urban models do not apply in rural areas. System integration can be improved both by building on routine services so that relationships and processes are understood, and by ensuring that infrastructure is in place to support information-sharing and exchange. Efforts are also essential to ensure that the integrated systems can address the needs of all individuals, including at-risk individuals.

Additional competency and capability-based training is needed to help paid staff, volunteers, and the organizations they serve to understand and perform their specific roles and responsibilities in health security. A broad education framework that articulates professional roles and competencies for national health security and offers training and career development paths will help ensure proficient and effective workers. Ongoing recruitment and retention strategies are critical to ensure that there is a sufficient supply of qualified workers to meet routine and surge demands for services, particularly at the state and local levels. Additional efforts to improve the management and use of volunteers to supplement the paid workforce will enhance national health security because volunteers are critical to any response or recovery effort.

Strategic Objective 4 Priorities

4.1. Define and strengthen healthcare coalitions and regional planning alliances across all incident phases.

4.2. Build upon and improve routine systems and services as a foundation for incident response and risk reduction, focusing on common elements that leverage the alignment of routine capabilities with those needed during an incident.

4.3. Ensure that the integrated, scalable system can meet the access and functional needs of at-risk individuals.

4.4. Strengthen competency and capability-based health-security-related workforce education.

4.5. Expand outreach to increase the numbers of trained workers and volunteers with appropriate qualifications and competencies.

4.6. Effectively manage and use nonmedical volunteers and affiliated, credentialed, and licensed (when applicable) healthcare workers.

Strategic Objective 5: Strengthen Global Health Security

Scope

Global health security refers to mitigation of, preparedness for, response to, and recovery from incidents that adversely affect health and that also could pose a risk to national and international security, destabilize economies, disrupt social cohesion, and affect the critical business of government.[36] Today's global health security threats arise from many sources, both natural and human-created. These include emerging infectious diseases, antimicrobial-resistant pathogens, natural disasters, the risk that accelerating scientific research capabilities may cause the inadvertent release of CBRN agents, vulnerabilities across a globalized food supply, and continued concerns about intentional use of CBRN agents. Furthermore, storms are getting more frequent and much stronger, droughts, fires, earthquakes, floods, and other natural and man-made phenomena that will have a direct impact on communities are ever-present.

The health of the American people and that of the people around the world are more closely linked than ever before. Greater movement of people, animals, and goods across international borders increases the risk of exposure to health threats originating outside one's own country. In such an interconnected environment, the best way for a country to protect its population is to prevent a health threat from emerging and spreading in the first place. This means addressing threats early and at their source, before they spread more widely within and across borders; it also means that other countries, including the United States, should prepare for the arrival of such trans-national threats within their own borders. The 2014 Ebola outbreaks are a good illustration of this. Thus, all nations benefit from attention to their own health security and to global health security.

Vision for Strengthening Global Health Security

The nation will strengthen global health security and, as a result, its own health security. In partnership with other nations, intergovernmental organizations, and public and private stakeholders, the United States will help accelerate progress toward a world safe from public health threats and will promote efforts to strengthen global health security as a national health security priority. By working together with international partners to develop global capacities and operational capabilities to prevent epidemics, detect threats early, rapidly respond to incidents, and support integrated recovery efforts, the United States will also protect the health of the American people from global health security threats.

Operational Context

The U.S. government has responded effectively to many national and global health security threats. These include the 2009 influenza pandemic (H1N1), the ongoing occurrences of Avian Influenza A (H7N9 and H5N1), the emergence of Middle East Respiratory Syndrome (MERS), and the unprecedented Ebola epidemic in West Africa—all of which underscore how infectious diseases can emerge (or reemerge) and spread or have the potential to spread rapidly across countries and even around the globe. The U.S. government has also sought to mitigate health security threats emanating from international incidents

that overwhelmed local response capacity, such as the 2010 earthquake in Haiti, the 2011 tsunami and nuclear power plant incident in Japan, and the 2013 typhoon in the Philippines.

The U.S. government uses a variety of mechanisms to strengthen national and global health security. Domestically, several national strategies highlight U.S. health security, including the *National Strategy for Countering Biological Threats*,[37] the *National Strategy for Pandemic Influenza*,[38] the *National Strategy for Combating Antibiotic-Resistant Bacteria*,[39] and the *National Strategy for Biosurveillance*.[40]

On an international level, the United States works within multiple bilateral and multilateral agreements and frameworks to protect the American people from global health security threats. For example, the United States is a signatory to the *2005 International Health Regulations* (IHR), a legally binding agreement among 196 state parties, which obligates member states to develop and maintain the capability to detect, assess, notify, and respond to public health threats, especially those of international concern.[41] Under the IHR, the U.S. government works both domestically and internationally to ensure that health security capabilities are in place. The United States is also a party to the *Global Health Security Initiative*,[42] an international partnership that arose in the immediate aftermath of the 2001 terrorist attacks among like-minded countries to strengthen health preparedness and response globally, encompassing CBRN threats and pandemic influenza. The North American Plan for Animal and Pandemic Influenza[43] and the health security work under the U.S.-Canada Beyond the Border initiative[44] are other examples of regional efforts in which the United States plays a part to promote global health security.

Although substantial progress has been made toward building global capacity to respond to health threats, much work remains. To accelerate progress toward a world safe from health security threats and to promote global health security as an international security priority, the United States, working with at least 30 partner countries, recently launched the *Global Health Security Agenda* (GHSA).[45] Through the GHSA, the United States has committed to prioritize coordinated action and specific, measurable steps focused on preventing epidemics, detecting biological threats early, and rapidly responding to biological threats of international concern.[46] As part of the GHSA, CDC, Department of State (DOS) and DoD are collaborating with other agencies and partner countries to establish emergency operations centers, build information systems, and strengthen laboratory capacity and capability to mitigate biological threats.[47] U.S. Department of Agiriculture (USDA) is partnering with the World Organisation for Animal Health (OIE), the Food and Agriculture Organization of the United Nations (FAO), and other nations to rapidly detect, diagnose, and manage dangerous animal diseases in affected and high-risk countries. In 2014, the U.S. Agency for International Development (USAID) launched its

new Emerging Pandemic Threats Program[48] in 20 countries, which provides technical and operational support for preventing, detecting, and responding to new emerging zoonotic disease threats.

The efforts just described are a sampling of the many ways in which the United States is working to help mitigate global health security threats. The priorities outlined here are consistent with and will complement and strengthen the current objectives within the global health security agenda.***

Priorities

Global health security is a priority for the United States. Developing and strengthening partnerships with other countries and intergovernmental organizations is a key component to developing global health security capabilities. Additionally, promoting the development of multisectoral biosafety and biosecurity systems, frameworks for food and drug safety, and mechanisms to address weaknesses in the medical supply chain all contribute to preventing the global spread of diseases and other public health threats. Strengthening laboratory systems, linking regional and global networks for biosurveillance, improving sample-sharing, and improving global efforts to develop and widely deploy novel diagnostics can improve the timely detection of public health threats and diseases. Finally, developing multisectoral response capabilities, as well as frameworks and policies for the international sharing of MCMs and medical and public health personnel, plays a vital role in the international response efforts during a public health emergency. Thus, the United States will continue to partner with

*** The Objectives of the Global Health Security Agenda are as follows:

1. Prevent the emergence and spread of antimicrobial drug resistant organisms and emerging zoonotic diseases, and strengthen international regulatory frameworks governing food safety.
2. Promote national biosafety and biosecurity systems.
3. Reduce the number and magnitude of infectious disease outbreaks.
4. Launch, strengthen, and link global networks for real-time biosurveillance.
5. Strengthen the global norm of rapid, transparent reporting and sample sharing.
6. Develop and deploy novel diagnostics and strengthen laboratory systems.
7. Train and deploy an effective biosurveillance workforce.
8. Develop an interconnected global network of Emergency Operations Centers and multi-sectoral response to biological incidents.
9. Improve global access to medical and non-medical countermeasures during health emergencies.

other countries and intergovernmental organizations to achieve concrete, measurable, and meaningful gains in the world's ability to prevent, detect, and respond to global health security threats.

Strategic Objective 5 Priorities

5.1. Support implementation of the WHO International Health Regulations (IHR 2005) and partner with the WHO, the World Organisation for Animal Health (OIE), the Food and Agriculture Organization (FAO), and other intergovernmental organizations and countries towards development of global public health capacities and capabilities.

5.2. Strengthen national capacities and capabilities globally to detect diseases in a timely manner.

5.3. Strengthen national capacities and capabilities globally to prevent the global spread of public health threats and diseases.

5.4. Strengthen national capacities and capabilities globally to respond to public health emergencies of international concern.

Conclusion

Threats to our nation's security are both persistent and evolving. Decision-making for the NHSS 2015–2018 builds on the foundation established by the NHSS 2010–2014 while taking into account important changes that have occurred in the strategic landscape for national health security during the past five years. First, the concept of national health security is now widely understood and has been incorporated into laws and policies at all levels of government. Second, the nation continues to experience economic challenges, which slows progress in health security but facilitates strategic and thoughtful prioritization of innovative activities and practices that improve efficiency. Last, the use of social media has flourished, increasing opportunities for both individuals and organizations to connect with each other and to access and use information while emphasizing the need for a better understanding of how such tools can be used to disseminate health security information.

The five strategic objectives within the NHSS organize and steer improvement efforts within substantive areas critical to achieving health security. These objectives take into account key features of the operational context in which health security is strengthened and sustained:

- Promoting community resilience is a multisectoral endeavor that leverages community and individual assets, such as infrastructure, talents, skills, relationships, technology, and natural resources. Because health is a key aspect of overall community resilience, strategic objective 1 focuses on **building and sustaining community health resilience**—a community's ability to use its assets to strengthen public health and healthcare systems and to improve the community's physical, behavioral, and social health to withstand, adapt to, and recover from adversity.
- The nation has made progress in developing and implementing countermeasures, including progress in conducting early- and late-stage MCM research; developing, manufacturing, and testing vaccines, therapeutics, diagnostics, and other products; improving state and local capacity to receive, distribute, and dispense MCMs; and understanding the impact that different NPIs can have on influenza and other infectious disease transmission. Strategic objective 2 focuses on **enhancing and expanding the nation's overall countermeasure capabilities for everyday healthcare and addressing public health emergencies while improving elements within these capabilities.**
- The national SA enterprise is made up of organizations nationwide that collectively contribute to SA. Since 2009, the government has developed several national strategies that improve HSA (including the *National Strategy for Biosurveillance*,[49] the *Federal Health Information Technology Strategic Plan*,[50] and the *National Biosurveillance Strategy for Human Health*, version 2.0).[51] Strategic objective 3 focuses on **improving current HSA capabilities** while improving elements of data collection to inform decision-making and information-sharing.

- The public health, healthcare, and emergency management systems are related, overlapping systems contributing to national health security. The integration of these systems means they are able to work together day to day, mutually supporting one another so that they can seamlessly scale up to handle increased requirements or demands during mitigation, response, and recovery phases. A skilled workforce, made up of both paid and volunteer staff, is the foundation of these systems. Strategic objective 4 focuses on **enhancing the integration and effectiveness of the public health, healthcare, and emergency management systems.**
- Global health security remains a priority for the United States. The health of the American people and that of the people around the world are more closely linked than ever before. Greater movement of people, animals, and goods across international borders increases the risk of exposure to health threats originating outside one's own country. In such an interconnected environment, the best way for a country to protect its population is to prevent a health threat from emerging and spreading in the first place. Strategic objective 5 focuses on using partnerships, relationship-building, and technical assistance to **strengthen global health security**.

Ensuring a health-secure future is a collective responsibility requiring coordinated action among all stakeholders—individuals, households, governments, private industry, community-based organizations (CBOs), and academic and research organizations. Within the current strategic landscape, effective, efficient actions and sustainable processes and systems will be prioritized. Evaluations will be promoted to support decision-making and quality improvement efforts, particularly at the community level. With this strategy, the nation takes its next step towards protecting the health and safety of all Americans.

Appendix A: National Health Security Strategy Implementation Plan 2015–2018

Implementation

The *NHSS Implementation Plan* (IP) serves as a framework to help guide the nation and facilitate collaboration and coordination among stakeholders in their pursuit of advancing the current state of national health security. The IP elaborates on the priorities introduced in the NHSS by describing specific implementation activities on which stakeholders might collaborate to address those priorities over the next four years (2015 to 2018). It is important to recognize that each IP activity described is subject to the availability of funds and resources.

National Health Security Stakeholders

Implementation of the NHSS will require contributions from a wide variety of stakeholders. Key stakeholder groups are shown in Figure A.1, which describes the complex relationships and dependencies of national health security stakeholders. Core stakeholders include (1) individuals and families, (2) communities, (3) the emergency management workforce, (4) the public health workforce, and (5) the healthcare workforce. Coordination of efforts among this core group of stakeholders is needed to ensure progress toward the priorities in the NHSS. The periphery of the figure shows the sectors of society that support the core group in achieving national health security: (1) the scientific and academic community; (2) CBOs; (3) the nonprofit sector; (4) the private sector; and (5) federal, state, local, tribal, and territorial governments. In order to achieve and sustain national health security, contributions are needed from all sectors of society at all levels.

Figure A.1. National Health Security Stakeholders

The diversity of national health security stakeholders reflects the fact that national health security is the responsibility of the entire nation. Governments can contribute resources, provide leadership, and coordinate actions, but they cannot adequately address health security priorities without the cooperation, innovation, and investment of nongovernmental partners. Individuals, for example, might be called on to respond to an incident or help their neighbors; and new technologies provide opportunities for individuals to contribute to HSA. CBOs can provide assets for all health security mission areas, mobilize and train volunteers, and promote health resilience. Although the government can offer guidance to nongovernmental partners within the community, it is the responsibility of these nongovernmental partners to convey their needs and implement solutions. Activities through which

stakeholders, at all levels of government and in all sectors of society, can contribute to progress toward advancing national health security are described in the sections below.

Aligning Implementation with Strategy

Although the strategy is essential to defining a vision for national health security and illuminating a path forward, true progress will be achieved only through the coordinated engagement and sustained action of a diverse array of stakeholders. The activities within the IP are intended to operationalize the objectives and priorities laid out in the NHSS. They also are the means to achieve progress that can be tracked and measured for the next four years. Because many of the activities require partnerships among stakeholders, these activities will not only advance the individual strategic objectives but also strengthen the cooperation, coordination, and integration of systems in communities nationwide, which is critical for fostering community health resilience. To reinforce the motivation of stakeholders, achieve national health security goals, and cultivate and sustain lasting partnerships in this endeavor, HHS will work with nonfederal partners to spotlight and acknowledge stakeholders' contributions following the completion of an activity or the achievement of a goal.

Implementation Activities

The implementation activities were developed and selected through an intensive stakeholder engagement process managed by HHS/ASPR. At the start of the process, candidate priorities and activities for each priority area in the NHSS were created using input from multiple sources, including subject-matter experts, national strategies and policies, formal evaluations of progress for the 2009 NHSS, and academic and gray literature.[†††] [52] Focus groups, surveys, and in-depth interviews with hundreds of governmental and nongovernmental subject-matter experts were used to evaluate and prioritize activities and identify issues of strategic importance for the next four years.

Broadly, the activities fall into four categories. For some stakeholders, key contributions will take the form of direct provision of services (e.g., crafting and testing plans, stockpiling medications for acute and chronic conditions). For others, activities may involve creating policy guidance, standards, or metrics appropriate for their communities. Other activities might involve developing incentives (e.g., tax credits, identified cost savings) that increase the number of nongovernmental entities engaged in actions that enhance their communities' health security. Stakeholders may also be involved in capacity-building

[†††] *Gray literature* is "written material (as a report) that is not published commercially or is not generally accessible."

activities. Activities typically require the participation and coordinated action of multiple stakeholders. The execution of activities will be facilitated by the production of guidance and tools produced under the direction of HHS.

Organization of the Document

The remainder of the IP is organized in six sections: There is one section outlining activities for each of five strategic objectives and a final section describing the approach that will be used to manage and coordinate implementation and evaluate progress toward advancing national health security.

The formatting convention for activities followed a model that states what federal agencies or partners "will" do; and what nonfederal stakeholders or partners "may or can" do. This approach was taken in an effort to amplify federal agencies' commitments to the IP activities and out of recognition that the majority of health security work can be realized only through active engagement and nonfederal-stakeholder action. It is important to recognize that nonfederal activities are not expressed as directives. It is equally important to recognize that, although federal activities are characterized with the term *will*, federal departments and agencies will, to the extent possible, execute the NHSS activities and support other federal departments and agencies in these activities contingent on the availability of resources and as departmental missions permit. The following federal departments and agencies are currently listed as leads, co-leads, or potential partners to champion activities included in the IP:

- Department of Commerce (DOC)
- Department of Defense (DoD)
- Department of Education (DoED)
- Department of Homeland Security (DHS)
- Department of Interior (DOI)
- Department of Justice (DOJ)
- Department of Labor (DOL)
- Department of State (DOS)
- Department of Transportation (DOT)
- Environmental Protection Agency (EPA)
- Federal Bureau of Investigation (FBI)
- Health and Human Services (HHS)
- Housing and Urban Development (HUD)
- National Center for Disaster Medicine and Public Health (NCDMPH)
- Peace Corps
- United States Agency for International Development (USAID)
- United States Department of Agriculture (USDA)
- United States Geological Survey (USGS)
- United States Department of Veterans Affairs (VA)

In instances in which a federal department or agency has a clear role in leading an activity, the organization with primary responsibility has been included in the brackets after the descriptive text. Also of note, because the IP will cover a span of four years, a time frame for likely execution of activities has also been included in the brackets at the end of the descriptive text for each activity.

Strategic Objective 1: Build and Sustain Healthy, Resilient Communities

Overview

Community resilience is a community's sustained ability to withstand, adapt to, and recover from adversity.[53] Promoting community resilience is a multisector endeavor that leverages community and individual assets, such as infrastructure, talents, skills, relationships, technology, and natural resources. Because health is a key aspect of overall community resilience, the scope of this objective is community *health* resilience—a community's ability to use its assets to strengthen public health and healthcare systems and to improve the community's physical, behavioral, and social health to withstand, adapt to, and recover from adversity.

The NHSS identifies three priorities to build and sustain healthy, resilient communities. The remainder of this section outlines activities for the next four years to address each of the high-priority focus areas for implementation.

Activities by Priority

Priority 1.1: Encourage social connectedness through multiple mechanisms to promote community health resilience, emergency response, and recovery.

1.1.1. State governments and professional societies can create templates and toolkits for communities to tailor with audience-specific messages on community connectedness, social capital, and health resilience. [2015]

1.1.2. Federal partners will work with academia to evaluate and report on the best uses of traditional media (e.g., print and visual media) and new media (e.g., social media and mobile health technologies) to promote social connections among community members. [HHS, DHS, USDA] [2015]

1.1.3. Local governments can encourage community members to use social networking sites and other methods designed to strengthen neighbor-to-neighbor ties and explore potential uses of such sites for emergency response. [2015]

1.1.4. Local governments, CBOs, and the private sector can empower constituents to engage in their communities' resilience, response, and recovery activities by creating culturally sensitive guidance based on sociocultural research. [2016–2018]

1.1.5. CBOs and the faith community can identify at-risk individuals and connect them with personal and logistical support. [2016-–2018]

1.1.6. Federal partners; state, local, tribal, and territorial (SLTT) governments; CBOs; academia; and research organizations can coordinate research efforts to implement and translate health resilience research needs articulated in the national health security applied research agenda. [DHS, HHS, DOT, USGS, DoED, USDA, DoD] [2016–2018]

Priority 1.2: Enhance coordination of health and human services through partnerships and other sustained relationships.

1.2.1. Federal partners will identify and disseminate culturally and linguistically appropriate promising practices in developing cross-sector partnerships to promote community health resilience, response, and recovery. [DHS, HHS] [2016–2018]

1.2.2. State and local governments can map current local assets for provision of health and human services during and after incidents. [2015]

1.2.3. SLTT governments, CBOs, the research sector, and federal partners can identify options for incentivizing human services providers to participate in HPP coalitions. [2016–2018]

1.2.4. SLTT governments and CBOs can cross-train public health, healthcare and human services professionals to improve recovery service provision. [2016–2018]

1.2.5. SLTT governments can work with CBOs to ensure that community leaders, on whom constituents rely for support, have access to behavioral health services. [2016–2018]

1.2.6. Federal partners will work in conjunction with academia and SLTT governments to incorporate a framework to guide the integration of culturally and linguistically appropriate community education efforts for professionals on recovery planning. [DHS, EPA, HHS, HUD, USDA] [2016–2018]

Priority 1.3: Build a culture of resilience by promoting physical, behavioral, and social health; leveraging health and community systems to support health resilience; and increasing access to information and training to empower individuals to assist their communities following incidents.

1.3.1. State and local governments, CBOs, and the private sector can promote general population training in health-related areas, such as first aid, cardiopulmonary resuscitation, psychological first aid, and self- and family care. [2015]

1.3.2. CBOs can use routine community meetings and events to disseminate culturally and linguistically appropriate information on the topic of health resilience and sponsor events to encourage planning for incident response and recovery. [2015]

1.3.3. Federal partners, state and local governments, CBOs, and academia can improve the dissemination and implementation of existing community health resilience learning opportunities for volunteers. [DHS, HHS, USDA] [2016–2018]

1.3.4. State and local governments can encourage the identification of safe places for children post-disaster, including emergency care and effective supports for reconstitution of routine child care services within the community. [2016–2018]

1.3.5. State and local government and NGOs can implement trainings and exercises for volunteers on effective and educated bystander response. [2016–2018]

1.3.6. Nonfederal stakeholders, such as the private sector, can promote volunteerism and participation in employer-sponsored wellness activities through programs that recognize or compensate employees for their efforts in these areas. [2016–2018]

1.3.7. State and local governments, academia, CBOs, and the private sector can integrate messaging on health resilience into national educational initiatives, such as America's PrepareAthon and annual influenza messaging. [2016–2018]

1.3.8. CBOs can partner with local governments to develop a messaging campaign to encourage financial donations through existing mechanisms, such as the National Donations Management Network. [2016–2018]

1.3.9. SLTT governments and CBOs (e.g., Voluntary Organizations Active in Disasters, National Voluntary Organizations Active in Disasters, American Red Cross) can partner with the state coordinator for volunteers before a disaster by developing a volunteer and donation management plan or developing memoranda of understanding. [2016–2018]

1.3.10. Federal partners will work with the private sector to develop a culturally and linguistically appropriate community health resilience guide for businesses on promoting employee health and preparing for disasters. [HHS] [2017–2018]

Strategic Objective 2: Enhance the National Capability to Produce and Effectively Use Both Medical Countermeasures and Non-Pharmaceutical Interventions

Overview

Countermeasures are used to protect communities from and limit the adverse health impacts of CBRN attacks, outbreaks of infectious diseases, and other incidents. There are two main types of countermeasures: MCMs and non-pharmaceutical interventions (NPIs). MCMs include medications and other pharmaceutical remedies which mitigate and prevent the spread of disease - such as vaccines, small molecule, antibody, and cellular therapeutics, antimicrobials, antidotes, antitoxins, and decorporation agents to reduce radioactive contamination- as well as non-pharmaceutical medical devices and approaches - such as ventilators, diagnostics, personal protective equipment (PPE), and patient decontamination.[‡‡‡] [54] NPIs refer to community mitigation strategies that are used to prevent the spread of disease, contamination, or other adverse effects related to an incident. NPIs include both actions taken by individuals, such as hand hygiene and covering one's mouth when coughing, and actions taken by communities to reduce contact with contagious persons, such as social distancing (e.g., closing schools and asking people to work at home).[§§§] [55] This objective encompasses the enhancement of the successful PHEMCE, and the range of actions related to enhancing the nation's capacity to develop, manufacture, evaluate, and use MCMs and NPIs both for routine public health purposes as well as during emergencies; from research to development and acquisition, to effective use or implementation of countermeasures, to assessing the intended and unintended consequences of the countermeasures. .

The NHSS identifies four priorities to enhance the national capability to produce and effectively use both MCMs and NPIs. The remainder of this section outlines activities for the next four years to address each of the high-priority focus areas for implementation.

[‡‡‡] Although the 2012 PHEMCE strategy identifies ventilators, diagnostics, and similar equipment and services as "non-pharmaceutical interventions," the PHEMCE implementation plan has updated the terminology to "non-pharmaceutical MCM interventions." For purposes of consistency, the NHSS uses the PHEMCE implementation plan's language, which is also consistent with Centers for Disease Control and Prevention (CDC) language for NPIs.

[§§§] These lists are not exhaustive.

Activities by Priority

Priority 2.1: Create and/or refine decision-making frameworks and coordinated processes that consider both MCMs and NPIs when making research, advanced development, and acquisition decisions related to countermeasures and determining the best approaches to reducing adverse health effects of particular incidents of concern.

2.1.1. Federal partners will continue to work with state and local stakeholders on efforts to improve state and local readiness to make and implement decisions about use of MCMs and NPIs in responses through the identification, design, and implementation of response plans, countermeasure guidance, exercises/drills, algorithms, and checklists/flowcharts that involve integrated MCM–NPI approaches to diverse incidents. [DHS, HHS] [2016–2018]

2.1.2. State governments can lead, with academia and local governments in support of, the development of a coordinated approach to regional and federal planning processes that contribute information on implementation constraints, opportunities, and the social and economic benefits and costs of MCMs and NPIs. [2016–2018]

2.1.3. Federal partners will develop communication plans to better communicate to nonfederal stakeholders the risks and benefits of implementing different types of MCMs and NPIs during CBRN incidents. [HHS, DHS] [2016–2018]

2.1.4. Federal partners will create a strategy or approach (including budgeting and risk assessments) to prioritize investments in MCM and NPI development and implementation to best affect health security. [HHS, DoD, DHS] [2016–2018]

2.1.5. Federal partners will collaborate with academia and state and local public health departments on developing personnel guidance that addresses remaining gaps in healthcare worker and healthcare first responder MCM and NPI preparedness. [DOL, HHS] [2016–2018]

2.1.6. Federal partners will establish a mechanism to develop an overarching framework and capability to rapidly identify best medical countermeasure strategies and other options to control newly emerging pandemic infectious diseases. [HHS, DHS] [2018]

Priority 2.2: Increase nonfederal stakeholder engagement within PHEMCE processes.

2.2.1. Federal partners will identify the scope of, and mechanisms to maximize, nonfederal engagement in the PHEMCE process to, for example, encourage basic research, promote public private partnerships with industry; and ensure state, local, and private sector capabilities to distribute MCMs. [DHS, HHS] [2015]

2.2.2. Federal partners will identify ways for nonfederal partners to engage in the PHEMCE process for requirement-setting for MCM research and development. [HHS, DoD, USDA, VA] [2016–2018]]

2.2.3. Federal partners associated with the PHEMCE will work with nonfederal PHEMCE stakeholders, such as SLTT governments and the medical community and providers, to identify the highest-priority needs for appropriate nonfederal-stakeholder input into the PHEMCE process. [DHS, HHS] [2016–2018]

2.2.4. Federal partners will and other PHEMCE stakeholders can improve and expand federal and nonfederal communication on security-sensitive PHEMCE-related issues by building on and leveraging existing protocols for communicating classified information to SLTT governments. [DHS] [2016–2018]

2.2.5. Federal partners will work with academies of clinical practice to develop and disseminate, as appropriate, the PHEMCE response planning portfolio for those MCMs that are already in the stockpile. [HHS] [2016–2018]

2.2.6. Federal partners will and SLTT governments can improve the active engagement of end users, such as patient providers and public health officials, in MCM-oriented trainings and exercises. [DHS, HHS] [2016–2018]

2.2.7. Federal PHEMCE stakeholders will engage nonfederal stakeholders in a discussion of the prioritization of antimicrobial resistance measures and solutions. [DHS, HHS, DoD] [2016–2018]

Priority 2.3: Focus research and translation on NPIs to ensure that evidence is accurate and actionable.

2.3.1. Federal partners will expand work with public health and medical sectors to test and evaluate the utility of federal guidance on NPI use for targeted audiences. [HHS] [2015]

2.3.2. Federal partners will work with SLTT governments and professional societies to assess, develop, and improve strategies for implementing research findings related to NPIs—including PPE, social distancing, and other community mitigation strategies—to enhance translation of research into practice. [DOJ, DOL, HHS, VA, DoD] [2016–2018]

2.3.3. Federal partners will collaborate with state and local health departments, CBOs, and academia to research and translate risks, costs, benefits, and expectations of use, in addition to personal, social, and legal barriers, for NPIs. [DHS, DOJ, HHS, DoD] [2016–2018]

2.3.4. Federal partners will and academia can identify situations through research and evaluation in which NPIs can be prioritized because of delay in MCM production or when MCMs are determined to be infeasible. [HHS] [2016–2018]

Priority 2.4: Expand and improve national capacity to research, develop, manufacture, obtain, distribute, and dispense medical countermeasures.

2.4.1. Federal partners will develop a coordinated communication approach that shares timely and accurate information on supply, challenges associated with the production and dissemination of emerging and existing MCMs, specifically if the product is in limited supply and high demand. [HHS] [2015]

2.4.2. Federal partners will draft guidance outlining the process for dissemination and prioritization of MCMs for first response personnel and their families during specific types of events. [DHS, HHS] [2015]

2.4.3. Federal partners, SLTT governments, and CBOs can work cooperatively to develop user-friendly tools for communicating scientific guidance on use of MCMs and NPIs to policy-makers and the public. [HHS] [2016–2018]

2.4.4. Federal partners will collaborate with academia and the commercial industry on a report for multipurpose use of the manufacturing infrastructure to allow scalable delivery of countermeasures. [HHS, DHS] [2016–2018]

2.4.5. Federal partners will explore funding opportunities that can help SLTT governments address gaps in MCM and NPI education, training, and guidance. [HHS, DHS] [2016–2018]

2.4.6. Federal partners will work with academia and the private sector to identify and assess novel strategies for sustaining the SNS. [HHS, DoD] [2016–2018]

2.4.7. SLTT governments can promote field tests of readiness for distribution and dispensing of countermeasures in every state, taking into consideration the resources of both private supply-chain contractors and government stockpiles. [2016–2018]

2.4.8. Federal partners will draft guidance for nonfederal stakeholders on how the private sector, SLTT governments, CBOs, academia, and healthcare systems can contribute to distribution and dispensing strategies and operational requirements, increase the number of closed PODs, and participate in training, exercises and drills. [HHS, DHS, VA, DoD] [2016–2018]

2.4.9. Federal partners will develop strategies for prioritizing basic research, applied research, advanced development, and procurement of medical countermeasures that address the public health and medical consequence of CBRN accidents, incidents, and attacks as well as pandemic influenza and emerging infectious diseases. [HHS, DoD] [2018]

2.4.10. Federal partners will develop strategies to maintain, and where appropriate expand, advanced development pipelines replete with medical countermeasures and platforms to address unmet public health needs, emphasizing innovation, flexibility, multi-purpose and broad spectrum application, and long-term sustainability. [HHS] [2018]

2.4.11. Federal partners will create or sustain overarching capabilities to rapidly mature promising candidate drugs, vaccines, therapeutics,and diagnostics using public-private ventures and other collaborative opportunities. [HHS, DoD] [2018]

2.4.12. Federal partners will develop a capability base to provide enabling core services to medical countermeasure innovators that includes establishing Centers for Innovation and Advance Development and Manufacturing and identifying ways to accelerate regulatory processes for these public health emergency medical countermeasures whenever possible to help provide safe and effective products quickly to the end users. [HHS] [2018]

2.4.13. Federal partners will develop agile, robust and sustainable U.S. manufacturing infrastructure capable of rapidly producing vaccines and other biologics against pandemic influenza and other emerging threats. [HHS] [2018]

Strategic Objective 3: Ensure Comprehensive Health Situational Awareness to Support Decision-Making Before Incidents and During Response and Recovery Operations

Overview

The national situational awareness (SA) enterprise includes all sectors and relevant actors nationally and globally across the prevention, protection, mitigation, response, and recovery mission areas (see Figure 1 in the NHSS) and uses a process that involves an active, continual, and timely information-gathering loop that relies on existing assets, networks, and systems. Active and timely SA provides the foundation for decisions and actions that, in turn, can result in better resource utilization, successful prevention and mitigation of emerging threats, and improved security for the nation. HSA contributes to overall SA by providing information that includes data regarding health threats, population health, health system and human services resources, health-related response assets, and other considerations to inform decision-making.[****] [56] HSA is also both domestic and international in reach and contributes to health security, homeland security, and national security. HSA processes actively gather information about resource allocation, risk analysis, forecasting, response, and other actions that might affect health security to support decision-making before incidents and during response and recovery operations.

HSA is a knowledge state that results from the process of actively gathering, analyzing, integrating, interpreting, validating, and disseminating information. HSA includes routine and emergency biosurveillance[††††] information and other health-related information, and nonhealth inputs, as shown in Figure 4 in the NHSS.

[****] HSA is a knowledge state that results from the process of active information-gathering (both domestic and international) with appropriate analysis, integration, interpretation, validation, and sharing of information related to health threats and the health of the human population, as well as health system and human services resources, health-related response assets, and other information that could affect the public's health to inform decision-making, resource allocation, and other actions.

[††††] *Biosurveillance* is defined in the *National Strategy for Biosurveillance* as "the process of gathering, integrating, interpreting, and communicating essential information related to all-hazards threats or disease activity affecting human, animal, or plant health to achieve early detection and warning, contribute to overall situational awareness of the health aspects of an incident, and to enable better decision making at all levels."

The NHSS identifies five priorities for ensuring HSA to support decision-making. The remainder of this section outlines activities for the next four years to address each of the high-priority focus areas for implementation.

Activities by Priority

Priority 3.1: Improve HSA and data-sharing with respect to integrating human health, environmental, zoonotic, and other relevant information to mitigate immediate-, short-, and long-term health effects.

3.1.1. SLTT health, agriculture, and environment agencies can expand the integration and sharing of human and animal surveillance and outbreak information across states, counties, and other sectors, especially for zoonotic, environmental, and food- and water-borne illnesses. [2016–2018]

3.1.2. Scientific institutions can convene a body of experts to develop a list of leading indicators of environmental health warning signs for human, animal, and plant health. [2015]

3.1.3. Federal partners will develop a prioritized list of top environmental and zoonotic threats to focus strategic planning activities and resource allocation for One Health (e.g., food safety, specific zoonotic diseases). [HHS, DoD, USDA, EPA, FBI, USGS] [2015]

3.1.4. Higher education centers can develop partnerships, curricula, and cross-degree programs (e.g., joint public health and veterinary medicine degrees) to aid in developing a workforce that understands the language of human, animal, and environmental health. [2016–2018]

3.1.5. Federal partners will and state agricultural agencies can work with industry to increase public reporting and alerts on the incidence and prevalence of disease in animals intended for human consumption. [USDA, HHS, DOI] [2016–2018]

Priority 3.2: Promote continuous improvement through use of state-of-the-art innovative systems, tools, and partnerships to ensure improvement of HSA.

3.2.1. Federal partners will and nonfederal stakeholders can recruit local institutions, such as schools, clinics, hospitals, long-term-care facilities, and pharmacies, to actively and passively participate in the collecting of HSA information and timely reporting to local health departments. [HHS, DoED] [2016–2018]

3.2.2. Federal partners will work with nonfederal stakeholders, including private industry, to develop a framework and research agenda to guide efforts to build capacity to harness electronic health information for HSA while maintaining patient confidentiality and ensuring adequate security. [HHS, DHS, DoD, VA, DOC] [2016–2018]

3.2.3. Federal partners will and state health departments can identify opportunities for improvement in HSA through reviews of after-action reports of recent national events and evaluation of HSA

efforts across the spectrum from preparedness to recovery. [HHS, DHS, DoD, USDA, DOT, FBI] [2016–2018]

3.2.4. Federal partners will work with SLTT stakeholders to innovate and improve functional compatibility of their systems across all sectors and among all levels of government. [HHS, DHS, DoD, VA] [2016–2018]

3.2.5. Federal partners will conduct a comprehensive multi-agency review and evaluation of existing and planned data systems and sources to build and maintain a shared inventory that could be used for HSA purposes. [HHS, DHS, DoD, VA, USDA, EPA, USGS] [2016–2018]

3.2.6. Federal partners will encourage and facilitate engagement with skilled experts across government, academia, and private industry who can analyze and interpret data vital to comprehensive HSA. [HHS, DHS, DoD, VA, USDA, EPA] [2016–2018]

3.2.7. Nonfederal stakeholders can identify innovative approaches to address research priorities under relevant areas identified by the 2013 National Biosurveillance Science and Technology Roadmap.[57] [HHS] [2016–2018]

3.2.8. Federal partners will work with nonfederal stakeholders to help improve the resiliency of their cybersecurity systems by supporting and promoting the use of the National Institute of Standards and Technology *Framework for Improving Critical Infrastructure Cybersecurity* where relevant to HSA.[58] [DHS, DOC] [2016–2018]

3.2.9. Federal partners will conduct a cooperative multi-agency and multi-sector review and evaluation of existing modeling systems to identify gaps and improve coordination as it relates to HSA. [DHS, DoD, HHS, VA, EPA, USDA, FBI] [2016–2018]

3.2.10. State health departments can work with professional associations to conduct an inventory of regional health information organizations (RHIOs) and electronic health information exchanges (HIEs) and determine the potential for inclusion in a national HSA capability. [2016–2018]

3.2.11. SLTT health and emergency management departments can develop strategies for integrating new technologies and SA products, tools, and standards into routine practice. [2016–2018]

3.2.12. Federal partners will develop alternative protocols for patient triage that seek to identify higher levels of efficiency for electronic medical records and EHRs during casualty surges. [HHS, VA, DoD] [2016–2018]

3.2.13. Federal partners will invest in research to improve the methodology of and measures included in the National Health Security Preparedness Index (NHSPI). [HHS] [2016–2018]

Priority 3.3: Determine and expand operational capabilities to meet the HSA needs for all relevant stakeholders so that data sourcing is both situationally and user-defined.

3.3.1. State and local health, environment, law enforcement, and agriculture agencies can strengthen joint health, intelligence, agricultural, and law enforcement capabilities for prevention and mitigation of animal- or human disease incidents. [2015]

3.3.2. State departments of health, environment, and agriculture can implement mechanisms for routine interdisciplinary and interagency health information-sharing, along with other entities, such as hospitals, while leveraging existing RHIOs and HIEs.[‡‡‡‡] [2016–2018]

3.3.3. Federal partners will and nonfederal stakeholders can implement mechanisms to strengthen health-security communications related to disease events across all sectors and at all levels of government and, where appropriate, broaden key audiences to include large-animal associations at national and SLTT levels. [DHS, HHS, USDA, FBI] [2016–2018]

3.3.4. Federal partners will work with SLTT health departments to determine information-sharing needs across all levels of government and among all sectors, including but not limited to RHIOs and HIEs, schools, healthcare providers, businesses, and other healthcare organizations to enhance multidirectional SA. [HHS] [2016–2014]

3.3.5. Federal partners will work with nonfederal stakeholders to improve HIEs to support patient healthcare needs, as well as population-oriented uses, in near-real time.[§§§§] [HHS] [2016–2018]

3.3.6. Federal partners will develop secure, seamless pathways by which appropriate classified information, intelligence products, open-source information, and relevant health information can be shared across agencies.[*****] [HHS, DoD, DHS, VA, USDA, EPA, FBI] [2016–2018]

3.3.7. Federal partners will work with academic institutions to incorporate disaster decision support, bio-informatics, modeling and simulation, information-sharing, GIS, and data visualization into undergraduate- and graduate-level emergency management curricula.[†††††] [DoED] [2016–2018]

[‡‡‡‡] As appropriate, according to privacy and security laws and regulations.

[§§§§] As appropriate, according to privacy and security laws and regulations.

[*****] As appropriate, according to privacy and security laws and regulations.

[†††††] As appropriate, according to privacy and security laws and regulations.

3.3.8. Federal partners will work with state health departments to encourage the establishment and participation of RHIOs in providing public health departments access to relevant data. [HHS] [2016–2018]

3.3.9. Federal partners will work with SLTT health departments to harmonize SA-preparedness performance metrics across programs. [DHS, DoD, HHS, USDA, DOT] [2016–2018]

3.3.10. Federal partners will work with SLTT governments and the private sector to develop the capability to house, share, and appropriately use information related to SA that protects proprietary interest and patient confidentiality. [HHS, DOC] [2016–2018]

3.3.11. Federal partners will work with SLTT partners to develop multi-sectoral policy frameworks and advance regulatory oversight for managing material to support diagnostic research and biosurveillance activities. [HHS, DHS, DoD, DOT] [2016–2018]

3.3.12. SLTT health departments will work together with individuals and their caregivers to share health information and empower them to become more active participants in health as related to HSA. [2016–2018]

Priority 3.4: Develop a voluntary, collaborative coordinating authority (CCA) and management structure for HSA to promote and coordinate consistent approaches to HSA.

3.4.1. Federal partners will work with academia to survey and evaluate successful and unsuccessful national, local, and regional models of governance, including those employed by the PHEMCE and the Senior Leaders Council on Patient Movement,[59] to inform the development of a (CCA). [HHS, DHS, VA, DoD] [2015]

3.4.2. Federal partners will solicit federal agencies and recruit qualified subject-matter experts to serve as members of an HSA collaborative coordinating authority that will leverage existing entities and processes, through engagement with SLTT partners. [HHS, DHS, VA, DoD, USDA, DOI, EPA] [2015]

3.4.3. The CCA will develop a charter with an actionable plan to align with and support the NHSS oversight structure. [HHS, DHS] [2015]

3.4.4. The CCA will work with state health departments to establish forums for the sharing of best practices, protocols, and lessons learned in SA. [HHS, DHS] [2015]

3.4.5. The CCA will work with state health departments to establish systematic and ongoing methods and mechanisms for multi-stakeholder priority-setting and decision-making. [HHS, DHS] [2016–2018]

Priority 3.5: Address technology and policy challenges to ensure the functional compatibility of systems to collect, integrate, analyze, visualize, and share information.

3.5.1. Federal partners will work with nonfederal stakeholders to develop and disseminate data-use and data-sharing agreement templates that address the proprietary, privacy, security, ethical constraints, data ownership, stewardship, and liability protection issues that may arise with sharing various types of data.‡‡‡‡‡ [HHS] [2016–2018]

3.5.2. Federal partners will work with nonfederal stakeholders, including private industry, to identify existing standards for maintaining the security and privacy of HSA data and information, determine whether gaps exist, and develop additional standards if needed. [HHS, DOC] [2015]

3.5.3. Federal partners engaged in HSA will review and update information management plans to align with current strategies and policies while coordinating with other stakeholders to determine critical information exchange requirements and best practices. [HHS, DHS, DoD] [2015]

3.5.4. The CCA will identify the types of information that could be shared and develop an action plan to encourage engagement among federal, nonfederal, and international partners with regard to information-sharing strategies. [DHS, HHS] [2016–2018]

3.5.5. Federal partners will and SLTT health departments can examine and document the existing multi-directional information-sharing and reporting relationships between SLTT health departments and local institutions, such as schools, clinics, hospitals, long-term-care facilities, and community organizations and businesses, and identify where additional information-sharing may be beneficial. [HHS] [2015]

3.5.6. State health departments can coordinate with local health department public information officers (PIOs) to develop guidelines for effective use of social media for public communications. [2015]

3.5.7. Federal partners will identify existing policies and best practices to expand HIE usage by nontraditional providers to include EMS and public health and human services. [HHS, DOT] [2015]

‡‡‡‡‡ As appropriate, according to privacy and security laws and regulations.

3.5.8. Federal partners will evaluate models for best practices and lessons learned on ensuring communications redundancy and coverage. [DHS, DoD] [2015]

3.5.9. Federal partners will conduct cybersecurity risk assessments of healthcare systems, with the goal of developing contingency plans for continuity of operations in the event of a cyber-incident that leverage existing cybersecurity risk assessment resources. [DHS, DOJ] [2016–2018]

3.5.10. Federal partners will enforce policies that harmonize the implementation of Health Insurance Portability and Accountability Act of 1996 (HIPAA) privacy and security provisions and regulations.[60] [HHS] [2016–2018]

3.5.11. Federal partners will work to implement and leverage standardization of data elements to promote interoperability among disparate healthcare information among public health, and emergency management. [HHS] [2016–2018]

3.5.12. Federal partners will implement information-sharing interoperability solutions across healthcare coalitions. [HHS, DHS, DoD, VA, USDA, EPA] [2016–2018]

Strategic Objective 4: Enhance the Integration and Effectiveness of the Public Health, Healthcare, and Emergency Management Systems

Overview

The public health, healthcare, and emergency management systems are related, overlapping systems contributing to national health security. The public health system includes public agencies (e.g., schools, Medicaid, environmental protection agencies, land-use agencies), state and local public health departments, and private organizations whose actions have significant consequences for the health of the public.[61] The healthcare system is the organization of people, institutions, and resources that deliver healthcare services, including behavioral health services, to meet the healthcare needs of the population. Emergency management[62] involves the efforts of communities or businesses to plan for and coordinate the people and emergency services required to reduce vulnerability to hazards and to cope with disasters while addressing all mission areas of health security (See Figure 1 in the NHSS). Emergency services involve a community's first-responder organizations that have the specialized training and equipment to support a national level health incident through response, treatment or stabilization, transportation through fire and emergency medical services (EMS), and decontamination of personnel and equipment through hazardous-material services.[63] Components of the emergency management system are also essential to establishing and maintaining incident command and incident management operations. A skilled workforce is the foundation of these systems. The workforce is made up of paid and volunteer staff employed by governments and other organizations, as well as interim employees, volunteers, and bystanders who just happen to be at the scene of an incident and seek to contribute.

The integration of public health, healthcare, and emergency management systems means that they can work together day to day, mutually supporting one another so that they can seamlessly scale up to handle increased requirements or demands during the mitigation, response, and recovery phases of the incident life cycle. Furthermore, integrating the expertise and specialized equipment found in the public health, healthcare, and emergency management systems will enhance a community's resilience without duplicating services under different organizations or strategies.

The NHSS identifies six priorities to enhance the integration and effectiveness of the public health, healthcare, and emergency management systems. The remainder of this section outlines activities for the next four years to address each of the high-priority focus areas for implementation.

Activities by Priority

Priority 4.1: Define and strengthen healthcare coalitions and regional planning alliances across all incident phases.

4.1.1. Federal partners will develop tools and guidance for the inclusion of nontraditional organizations (e.g., utility agencies, pharmacies, human service organizations) in the regional preparedness planning process, including information on how to incentivize nontraditional organizations to join and remain active participants. [HHS] [2016]

4.1.2. Federal partners working in collaboration with academia and the community will build the evidence base around coalition effectiveness, including developing and testing metrics of coalition performance. [HHS] [2016–2018]

4.1.3. Local health departments can work with nonprofit hospitals to identify ways in which the hospitals can contribute to community health resilience by addressing issues identified in a community's health needs assessment, as described in the Affordable Care Act. [2016–2018]

4.1.4. Healthcare coalitions can work with their members and state emergency operations centers (EOCs) to define active response roles for the coalition beyond pre-incident planning. [2016–2018]

4.1.5. Healthcare coalitions can encourage member organizations to voluntarily share information about their mobile medical assets and training on those mobile medical asset platforms that could potentially be used through the Emergency Management Assistance Compact (EMAC). [2016–2018]

4.1.6. Federal partners, in collaboration with healthcare coalitions, will establish guidance for the development, implementation, evaluation, and improvement of health system emergency management programs (e.g., doctrine). [HHS] [2016–2018]

Priority 4.2: Build upon and improve routine systems and services as a foundation for incident response and risk reduction, focusing on common elements that leverage the alignment of routine capabilities with those needed during an incident.

4.2.1. Federal partners will incentivize the implementation of existing tools that promote the coordination of care in an event (e.g., patient-tracking tools, EHR compatibility features). [HHS] [2016–2018]

4.2.2. Federal partners will provide guidance for how to modify existing information systems (e.g., EHR systems, immunization information systems) to better support national health security goals. [HHS] [2016–2018]

4.2.3. Federal partners will work with nonfederal stakeholders (e.g., Joint Commission) to support the widespread application of principles of disaster risk reduction and mitigation. [HHS] [2016–2018]

4.2.4. Hospitals, providers, and academia can explore how existing telemedicine programs and technologies can be redirected in an event to address surge and increase access in areas affected by disaster, including rural communities. [2016–2018]

4.2.5. Nonfederal stakeholders can promote community support of hospitals during a disaster by developing continuity-of-operations plans that address the relocation of personnel, the performance of essential functions, and the devolution of services (when the transfer of essential functions is required) using the guidance provided in Continuity Guidance Circular 1 and 2, published by FEMA. [2016–2018]

4.2.6. SLTT government planners can evaluate their continuity plans and capabilities using the Continuity Assistance Tool (CAT), published by FEMA. [2016–2018]

4.2.7. Federal partners will enhance existing fatality management capabilities by developing policy and procedural recommendations for a mass fatality response in a resource-scarce environment in which operations may need to be modified to account for limited personnel, infrastructure, or equipment and supplies. [HHS, DoD, DHS, VA, FBI] [2016–2018]

Priority 4.3: Ensure that the integrated, scalable system can meet the access and functional needs of at-risk individuals.

4.3.1. Federal partners will develop quality measures for pediatric disaster preparedness in order to provide guidance to state and local governments regarding incidents affecting children. [HHS] [2016]

4.3.2. Nonfederal stakeholders can explore options to incentivize providers to counsel at-risk populations about preparedness (e.g., obtain a Current Procedural Terminology [CPT] code for preparedness counseling). [2016]

4.3.3. Federal partners will work with academia, private industry, and SLTTs to conduct research on how to use social media and other data sources (e.g., records of durable medical goods providers and health plans) to locate at-risk individuals. [HHS] [2016]

4.3.4. Federal partners will work with nonfederal stakeholders to create guidance on how to plan for and engage populations with enhanced privacy needs (e.g., domestic violence victims) for evacuation and sheltering. [HHS, DHS] [2016–2018]

4.3.5. State and local governments can work with schools and day care centers to increase awareness of the need to develop and exercise family reunification plans. [2016–2018]

Priority 4.4: Strengthen competency and capability-based health-security-related workforce education.

4.4.1. Academia and professional associations can create short, tailored trainings for specialty providers (e.g., obstetrician/gynecologists) and government employees to assist with emergency response without a prescribed role in National Preparedness Goal mission areas. [2016–2018]

4.4.2. State governments can coordinate training at the regional rather than local level to ensure consistency across potential responder groups. [2016–2018]

4.4.3. Federal partners will work with nonfederal stakeholders to identify cybersecurity-awareness and training opportunities through both public and private agencies and organizations. [DHS, HHS, DoED] [2016–2018]

4.4.4. Federal partners will work with all relevant stakeholders to develop a national plan for disaster health education and training, including core content, a scope-of-practice model, educational standards, educational program accreditation, and individual provider certification. [HHS, NCDMPH] [2016–2018]

4.4.5. Federal partners will work with all relevant stakeholders to establish disaster health education credentials in fields that currently lack them. [HHS, NCDMPH] [2018]

4.4.6. Federal partners will review, adapt, and disseminate existing Incident Command System (ICS) and other training materials originally produced for use by first responders to healthcare and public health personnel. [HHS, DHS, NCDMPH] [2017–2018]

4.4.7. Federal partners, with academia and other nonfederal stakeholders, will develop new consensus-based national health security competencies and create metrics to assess the validity, relevance, and status of new, as well as currently defined, workforce competencies. [HHS, DHS] [2017–2018]

4.4.8. State and local governments can assess the return on investment of workforce training to understand effects of trainings, training gaps, and retention of workers over time. [2018]

Priority 4.5: Expand outreach to increase the numbers of trained workers and volunteers with appropriate qualifications and competencies.

4.5.1. Federal partners will explore options to incentivize states to adopt the model interstate EMS licensure compact language for events that do not meet the threshold for a gubernatorial disaster declaration. [DHS, DOT, NHTSA] [2015]

4.5.2. Stakeholders can participate in public–private initiatives to facilitate workforce expansion during a response. [2015]

4.5.3. Before incidents, federal partners will and state and local governments and private sector businesses can identify requirements and the minimal effective number of surge staff needed, as well as local, state, regional, and federal sources of surge staff (e.g., temporary/intermittent agency staff, volunteers, and local government staff) outside of health departments, assign them to likely response tasks suited to their reassignments, and ensure that available skills and competencies match defined response requirements. [HHS] [2016]

4.5.4. Nonfederal stakeholders can engage national temporary staffing agencies before incidents and conduct advanced credentialing to facilitate rapid deployment. [2015]

4.5.5. Federal partners will and nonfederal stakeholders can incentivize the retention of volunteers and professional staff (e.g., provide free community college, college credit). [HHS, DoED] [2018]

Priority 4.6: Effectively manage and use nonmedical volunteers and affiliated, credentialed, and licensed (when applicable) healthcare workers.

4.6.1. Nonfederal stakeholders can adopt common (pathogen-specific) standards for personal protective equipment for responders and volunteers based on federal guidance. [2016-–2018]

4.6.2. State and local governments can identify and consider opportunities to leverage credentialing efforts that may be under way for routine healthcare needs for use in incident response. [2016–2018]

4.6.3. State and local governments can work with institutions of higher education to ensure that individuals who volunteered as students continue to be engaged and informed of opportunities after graduation. [2016–2018]

4.6.4. Federal partners will work with voluntary organizations not traditionally involved in national health security to assist them in defining roles in incident response and identifying ways they can contribute to community resilience in incident prevention, protection, mitigation, response, and recovery phases. [HHS] [2016–2018]

Strategic Objective 5: Strengthen Global Health Security

Overview

Global health security refers to preparedness for, response to, and recovery from incidents that adversely affect health and that also could pose a risk to security, destabilize economies, disrupt social cohesion, and affect the critical business of government.[64] Today's global health security threats arise from many sources, both natural and human-created. These include emerging infectious diseases, antimicrobial-resistant pathogens, natural disasters, the risk that accelerating scientific research capabilities may cause the inadvertent release of CBRN agents, vulnerabilities across a globalized food supply, and continued concerns about intentional use of CBRN agents. Furthermore, storms are getting more frequent and much stronger, droughts, fires, earthquakes, floods, and other natural and man-made phenomena that will have a direct impact on communities are ever-present.

The health of the American people and that of the people around the world are more closely linked than ever before. Greater movement of people, animals, and goods across international borders increases the risk of exposure to health threats originating outside one's own country. In such an interconnected environment, the best way for a country to protect its population is to prevent a health threat from emerging and spreading in the first place. This means addressing threats early and at their source, before they spread more widely within and across borders; it also means that other countries, including the United States, should prepare for the arrival of such trans-national threats within their own borders. The 2014 Ebola outbreaks are a good illustration of this. Thus, all nations benefit from attention to their own health security and to global health security.

The NHSS identifies four priorities to further strengthen global health security. The remainder of this section outlines activities for the next four years to address each of the high-priority focus areas for implementation.

Activities by Priority

Priority 5.1: Support implementation of the WHO International Health Regulations (IHR 2005) and partner with the WHO, the Organization OIE, and the FAO and other intergovernmental organizations and countries towards development of global public health capacities and capabilities.

5.1.1. Federal partners will work in collaboration with international organizations, partner countries, NGOs, and the private sector to provide technical assistance toward strengthening core public health capacities and capabilities globally in line with the IHR. [HHS, DoD, DOS, USAID] [2016–2018]

5.1.2. Federal partners will work with partner countries to strengthen capacities and capabilities for accurate and transparent international reporting of potential public health threats to the OIE

and FAO. [USDA, HHS, DoD, DOS, USAID, USGS] [2016–2018]

5.1.3. Federal partners, working in collaboration with international organizations and with the support of academia and NGOs, could develop and conduct interdisciplinary cross-training in health diplomacy. [DOS, USAID, HHS, DoD, USDA] [2016–2018]

5.1.4. Federal partners, academia, and NGOs can train frontline health workers to strengthen their ability to better recognize infectious disease threats. [HHS, DoD, Peace Corps, USAID] [2016–2018]

5.1.5. Federal partners will work in collaboration with the public, private, academic, and nongovernmental sectors, as well as with intergovernmental organizations, to develop mechanisms to identify, document, disseminate, and learn from international health security experiences. [HHS, USAID, DoD, DOS, DHS] [2016–2018]

Priority 5.2: Strengthen national capacities and capabilities globally to detect diseases in a timely manner.

5.2.1. Federal partners will work with intergovernmental organizations and partner countries to support increased access by local to national health authorities to the worldwide laboratories participating in WHO's Global Outbreak Alert and Response Network (GOARN). [DoD, HHS] [2015]

5.2.2. Federal partners will work with intergovernmental organizations, partner countries, SLTT governments, NGOs, and nonfederal stakeholders to enhance early detection and alert systems that aim to identify public health threats through both established and innovative sources of information, such as social media. [HHS, DHS, DoD, USAID] [2016–2018]

5.2.3. Federal partners will work with partner countries, intergovernmental organizations, and private industry to strengthen model development and wide deployment of novel diagnostics. [HHS, DoD, DOS, USDA] [2016–2018]

5.2.4. Federal partners will work with partner countries and intergovernmental organizations to develop agreements and implement mechanisms to improve rapid sample-sharing of non-noninfluenza pathogens with potential for transnational spread, for public health purposes. [HHS, DOS, DHS, USDA] [2016–2018]

5.2.5. Federal partners will work with partner countries and intergovernmental organizations to strengthen laboratory systems so that they are capable of detecting pathogens accurately, as well as safely, ensuring minimal biosafety and biosecurity risk. [HHS, DoD, DOS, USDA] [2016–2018]

5.2.6. Federal partners will work with partner countries, intergovernmental organizations, NGOs, and SLTT governments to enhance detection and reporting of public health threats affecting refugee, internally displaced, and migrant populations. [DOS, , DoD, HHS] [2016–2018]

Priority 5.3: Strengthen national capacities and capabilities globally to prevent the global spread of public health threats and diseases.

5.3.1. Federal partners will work with partner countries and intergovernmental organizations to provide information, tools, education, and infrastructure support that contribute to building or strengthening food safety systems and regulatory capacity. [USDA, DOC, DOS, HHS, FBI] [2015]

5.3.2. Federal partners will work with partner countries, intergovernmental organizations, and NGOs to promote the appropriate and responsible use of antimicrobial agents in all settings, including clinical practice and promoting safe practices in livestock production to prevent the spread of antimicrobial resistance. [HHS, DoD, USDA, DOS, EPA] [2016–2018]

5.3.3. Federal partners will work with partner countries to develop multisectoral policy frameworks and advance regulatory oversight for managing materials used in diagnostics research and biosurveillance activities. [HHS, DoD, DOT] [2016–2018]

5.3.4. Federal partners will work with academia and the private sector to promote biosafety and biosecurity training. [HHS, DoD, DHS, USDA, DOS, FBI, DOL, EPA] [2015–2018]

5.3.5. Federal partners and private sector stakeholders can engage with foreign counterparts to curb spurious, falsely labeled, falsified, or counterfeit (SFFC) medicines that threaten public health, trade, innovation, and security, including law enforcement training and technical assistance to help detect SFFC medicines and prosecute traffickers. [DHS, HHS, DOJ, DOC] [2016–2018]

5.3.6. Federal partners and the private sector will help provide or improve training for supply chain professionals. [USAID, HHS, DOS] [2016–2018]

Priority 5.4: Strengthen national capacities and capabilities globally to respond to public health emergencies of international concern.

5.4.1. Federal partners will work with partner countries, the media, academic, and nongovernmental stakeholders, as well as the private sector, to foster and refine emergency alert systems and risk communication to notify communities in preparation for and during an emergency. [HHS, DOS] [2015]

5.4.2. Federal partners will work with intergovernmental organizations, partner countries, and NGOs to build on existing response networks and promote establishment of and linkage among EOCs to enhance real-time communication and coordination during public health emergencies. [HHS, DOS, DoD] [2016–2018]

5.4.3. Federal partners will work with intergovernmental organizations, partner countries, and NGOs to establish and train multisectoral rapid-response teams, with access to near-real-time information systems and the capacity to help identify the likely source of a disease outbreak or agent release. [HHS, DOS, USAID] [2016–2018]

5.4.4. Federal partners will work with partner countries, intergovernmental organizations, and the private sector to improve availability of public health emergency MCMs by increasing global production capacity, procurement, and stockpiling while taking into account the access and functional needs of at-risk individuals. [HHS, DOS] [2016–2018]

5.4.5. Federal partners will work with domestic and international partners to strengthen the infrastructures, policies, and operational frameworks needed to rapidly deploy public health MCMs, personnel, and other public health and medical assistance across countries in response to emergencies. [HHS, DoD, DOS, USAID] [2016–2018]

5.4.6. The research community can develop rapidly deployable template protocols to better coordinate the effective conduct of scientific investigation and research before, during, and after public health emergencies. [2016–2018]

5.4.7. Federal partners will collaborate with pharmaceutical companies producing MCMs to educate partner countries about U.S. regulatory standards, emergency use authorizations (EUAs), investigational new drugs (INDs), and stockpiling to facilitate the international deployment of MCMs during a public health emergency. [HHS, DOS, DOC] [2016–2018]

5.4.8. Federal partners will work with partner countries, intergovernmental organizations, and academia to focus on the role of scientific research collections to assist with planning or mitigation for zoonotic outbreaks. [USDA, HHS, DoD, DOS, DHS, EPA, DOI] [2016–2018]

Implementation Management

The implementation management goal for 2015–2018 is to have relevant stakeholders engaged in conducting the activities specified in the IP. Implementation management will focus on fostering and coordinating stakeholder participation nationwide. Where possible and appropriate, HHS will seek nonfederal representatives from all sectors to take a strong role in implementation activities and help promote bottom-up experimentation and consensus-building among nonfederal implementation stakeholders. Publication of the NHSS/IP 2015–2018 set the initial conditions for nationwide participation in achieving national health security by providing all stakeholders with a shared vision and guidance on how to achieve it.

Oversight

HHS will fulfill its statutory responsibility for the NHSS using an oversight committee structure that comprises:

(1) a strategic-level guidance committee,

(2) a core management committee,

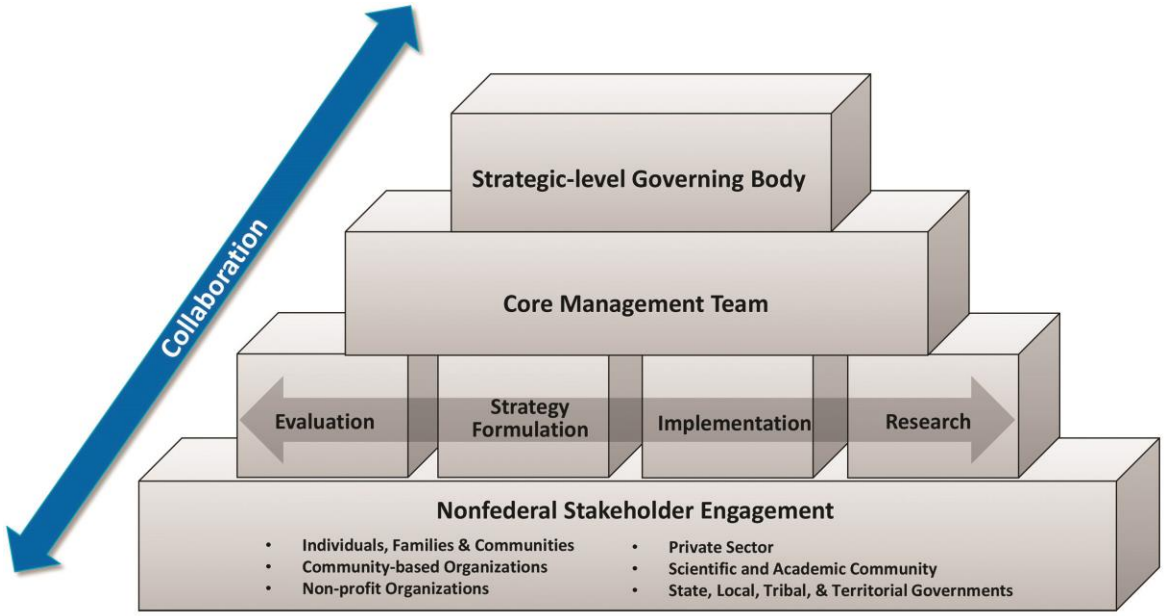
(3) functional subcommittees, and

(4) nonfederal-stakeholder engagement.

The oversight committee structure was developed in response to lessons learned from the first NHSS quadrennial cycle and demonstrates a commitment to quality improvement. The committee structure has several strengths and will facilitate communication and idea-sharing among federal and nonfederal stakeholders. HHS will use the oversight committee structure to manage and coordinate implementation of the NHSS and execution of the IP.

The committee structure proposes that the ASPR, on behalf of the HHS Secretary, serve as the authority for the NHSS and provides overall national leadership on health security. The oversight committee structure provides for strategic direction, management and coordination, functional work, and stakeholder engagement during the National Health Security phases of strategy formulation, implementation, and evaluation, as well as research that supports the national health security endeavor. As Figure A.2 shows, the top tier of the committee structure is made up of the Strategic Guidance Committee, which will be led by the HHS Deputy Assistant Secretary for Policy and Planning, along with representatives from key national health secruirty federal partners.

Figure A.2. Components of National Health Security Oversight Committee Structure



Participants at this level provide vision and strategic direction to ensure activities are focused and contribute to national health security.

The second tier will be a Management Committee chaired by the HHS Division of Policy and Strategic Planning. The management entity leads the intellectual and practical aspects of the quadrennial strategic planning and management processes.

The third tier will be a functional component composed of four subcommittees, devoted to the functions of evaluation, strategy formulation, implementation, and research. Within the functional component, the Implementation and Strategy Formulation subcommittees will work collaboratively to develop course corrections and to shift emphasis to areas in which more progress is needed. The Evaluation and Research subcommittees will provide the Implementation and Strategy Formulation subcommittees with evidence regarding which activities are meaningful, efficient, cost-effective, and promoting health security.

The fourth tier calls for individuals and community members to have access to the NHSS oversight committee structure membership in order to educate and share concerns that may affect progress toward advancing national health security efforts. These nonfederal stakeholders may be engaged through federal advisory committees, public meetings, solicitations for individual opinions, and other mechanisms consistent with the Federal Advisory Committee Act.[65]

Supporting Stakeholder Execution of the Implementation Plan

Building on the guidance provided in the NHSS and IP, HHS will work continuously over the next four years to encourage and help sustain stakeholder participation in implementation activities. The Implementation Subcommitee will engage in several activities to support stakeholder progress in executing the IP. These include implementation tracking to assess the current status of implementation; analysis of information to identify successes, shortfalls, barriers, and enablers; continuous improvement to identify and execute or recommend corrective actions; and periodic public communications to sustain support for implementation efforts and to encourage additional stakeholders to participate actively.

Implementation Tracking

The Implementation Subcommittee will collect and maintain evaluative information on the status of IP activities. This will enable the workgroup to create a common operating picture (COP) that will be shared with all stakeholders to help coordinate their efforts. The Implementation Subcommittee will obtain this information directly from federal partners, leverage existing sources to the extent practicable, and request voluntary submission of progress data from nonfederal stakeholders. To fill gaps in existing data sources, the Implementation Subcommittee will develop incentives for stakeholders to report data voluntarily, remove barriers to data collection, disseminate data-reporting standards, and ensure data security and integrity. Information of interest includes not only progress toward completion of specific IP activities but also resource availability and allocation, facilitators or barriers to initiating or implementing activities, and stakeholder relationships.

Analysis

In addition to creating a COP, the Implementation Subcommittee will analyze implementation tracking data to identify gaps between planned and actual implementation activities, as well as barriers and enablers of participation. The Subcommittee will provide venues in which they can work with nonfederal stakeholders to interpret and draw implications from tracking data. These collaborative analyses will help to support local tailoring or adaptation of features of the implementation. The Subcommittee will also document promising practices and lessons learned.

Continuous Improvement

Informed by implementation data, the Implementation Subcommittee will work with stakeholders, including representatives from nonfederal organizations, to identify actions that should be taken to improve implementation of the NHSS and execution of the IP. These will include targeting resources to problem areas and promising opportunities, providing technical assistance, identifying and mobilizing new stakeholders and relationships among stakeholders, and working directly and collaboratively with implementation stakeholders to create common awareness of implementation barriers and enablers and address them through corrective actions. Proposed corrective actions and other initiatives to improve implementation will be passed to the management component for review and approval and to the strategic component for vetting by federal partners as appropriate.

Public Communications

The Implementation Subcommitee will publicize information on implementation status in order to socialize and market key concepts in the NHSS and IP, publicize success stories, disseminate best practices, create accountability mechanisms, and mobilize new stakeholders. The Subcommittee will also collaborate with the public affairs representative on the tier 2 management component (described above and shown in Figure A.2). Reporting will include press releases, reports or report cards, social media outreach, speeches, and announcements by HHS officials. Venues will include conferences or webinars with stakeholders.

Evaluating Progress Toward National Health Security

In addition to tracking stakeholder implementation, HHS will evaluate progress toward national health security within an evaluation and decision support framework. Evaluation is intended to inform strategy, improve implementation, assess outcomes, and inform decisions for national health security. Specific requirements are being determined through engagement with both federal and nonfederal stakeholders. Experience during the first quadrennial cycle highlighted the importance of evaluation activities that are grounded in principles of continuous quality improvement and evidence-based practice.

HHS has institutionalized the evaluation function in its oversight structure and its quadrennial process. An Evaluation Subcommittee will be responsible for evaluation activities and products. The Subcommittee will evaluate progress toward national health security through an ongoing process that involves collecting, analyzing, and integrating both qualitative and quantitative data and information from available sources. These sources will include related products, such as the NHSPI, the Trust for America's Health reports, and the National Snapshot of Public Health Preparedness, which will be a combined ASPR–CDC report starting in 2016. The NHSPI aggregates 128 existing measures to produce national and state scores in five domains of preparedness, mostly focused on public health. The NHSPI is developmental, and additional work is needed to test and refine it. Future versions will need to incorporate additional sectors and concepts that influence the health security of states and the nation. The Subcommittee will produce several evaluation products during the quadrennial cycle, including annual updates for stakeholders and concluding with publication of the second NHSR Report.

Evaluation products will be designed to maximize operational utility for stakeholders, beyond simply a retrospective review. Stakeholders will be engaged throughout the process to ensure that evaluation activities and products remain relevant to their unique needs in order to encourage meaningful use of the results.

Appendix B: Glossary

All-hazards approach

"An approach for prevention, protection, mitigation, response, and recovery that addresses a full range of threats and hazards, including domestic terrorist attacks, natural and [human-caused] disasters, accidental disruptions, and other emergencies."[66]

At-risk individuals

Persons who, "[b]efore, 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. Includes 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 [including] persons 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."[67]

Big data

Big data refers to datasets whose size is beyond the ability of typical database software tools to capture, store, manage, and analyze.[68]

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."[69]

Biosecurity

"Protection of high-consequence microbial agents and toxins, or critical relevant information, against theft or diversion by those who intend to pursue intentional misuse."[70]

Biosurveillance

The "process of gathering, integrating, interpreting, and communicating essential information related to all-hazards threats or disease activity affecting human, animal, or plant health to achieve early detection and warning, contribute to overall situational awareness of the health aspects of an incident, and to enable better decision-making at all levels."[71]

Capability

"[P]rovides 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."[72]

Community health resilience

A community's ability to use its assets to strengthen public health and healthcare systems and to improve the community's physical, behavioral, and social health to withstand, adapt to, and recover from adversity.[73]

Community resilience approach

An approach that encourages actions that improve a community's ability to withstand, adapt to, and recover from adversity while promoting strong day-to-day systems and addressing the underlying social determinants of health.

Continuous quality improvement

An "ongoing effort to achieve measurable improvements in the efficiency, effectiveness, performance, accountability, outcomes, and other indicators of quality services or processes."[74]

Cooperative extensions

Cooperative extensions provide resources for land-grant institutions to solve public needs with college or university resources through non-formal, non-credit programs. The extensions address six major areas, including 4-H youth development, agriculture, leadership development, natural resources, family and consumer sciences, and community and economic development.[75]

Electronic health record (EHR)

A " digital version of a patient's paper chart." [76]

Emergency management system

Coordination of systems and multidisciplinary personnel (e.g., police, fire, emergency managers) to address all phases of an incident.[77]

Emergency medical services (EMS)

A system of coordinated response involving private and public agencies and organizations that provides emergency medical care after an incident that causes serious illness or injury.[78]

Emergency services sector

A "system of preparedness, response, and recovery elements that form the nation's first line of defense for preventing and mitigating the risk from physical and cyber attacks, and manmade and natural disasters. The sector consists of emergency services facilities and associated systems, trained and tested personnel, detailed plans and procedures, redundant systems, and mutual-aid agreements that provide life safety and security services across the Nation via a first-responder community comprised of federal, state, local, tribal, territorial and private sector partners."[79]

Global health security

Prevention of, protection from, mitigation of, response to, and recovery from serious incidents that are cross-border in nature and that pose a risk to security, destabilize economies, disrupt social cohesion, and affect the critical business of government.[80]

Healthcare coalition

A "single functional entity" of healthcare facilities and related organizations that work together to prevent, protect, mitigate against, respond to, and recover from an incident.[81]

Healthcare system

The "broader, community-wide health system that includes hospitals, skilled nursing facilities, nursing homes, hospices, health centers, home care, physician and other ambulatory care providers, specialty services like dialysis centers, poison control centers, and emergency medical services, and an array of other healthcare providers at the State and local level[s]."[82]

Health situational awareness

A knowledge state that results from the process of active information-gathering (both domestic and international) with appropriate analysis, integration, interpretation, validation, and sharing of information related to health threats and the health of the human population, as well as health system and human services resources, health-related response assets, and other information that could affect the public's health to inform decision-making, resource allocation, and other actions.[83]

Incident

An occurrence, natural or human-caused, that requires a response to protect life or property.[84]

Incident command

"[O]rganizational element responsible for overall management of an incident and consisting of the Incident Commander (either single or unified command structure) and any assigned supporting staff."[85]

Medical countermeasures

Medical countermeasures include both pharmaceutical interventions (e.g., vaccines, antimicrobials, antidotes, and antitoxins) and non-pharmaceutical medical countermeasure interventions (e.g., ventilators, diagnostics, personal protective equipment, and patient decontamination methods) that may be used to prevent, mitigate, or treat the adverse health effects of a public health emergency." [86]

Medical surge

The capability to rapidly expand the capacity of the existing healthcare system in order to provide triage and subsequent medical care with the goal of rapidly and appropriately extending care for the injured or ill stemming from the event and the maintenance of continuity of care for non-incident-related illness or injury.[87]

National health security

A state in which 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.[88]

Non-pharmaceutical interventions

Actions, other than getting vaccinated and taking medicine, that people and communities can take to help slow the spread of illnesses, such as influenza; also known as community mitigation strategies.[89]

Pandemic and All-Hazards Preparedness Reauthorization Act

Law signed in March 2013 (Public Law No. 113-5) to reauthorize certain programs under the Public Health Service Act (Public Law No. 78-410, July 1, 1944) and the Federal Food, Drug, and Cosmetic Act (Public Law No. 75-717, 1938) with respect to public health security and all-hazards and to amend those acts. Authorizes funding for certain public health and medical preparedness programs; amends the Public Health Service Act to enable the Secretary to authorize state health departments and tribes to temporarily reassign personnel funded under Public Health Service Act programs to respond to a federally declared public health emergency in their jurisdiction; authorizes funding for buying medical countermeasures under Project BioShield; increases the flexibility to support advanced research and development of medical countermeasures; increases flexibility to authorize emergency use of unapproved products and unapproved uses of approved products.[90]

Patient Protection and Affordable Care Act

Is made up of two pieces of legislation—the Patient Protection and Affordable Care Act (Public Law 111-148) and the Health Care and Education Reconciliation Act of 2010 (Public Law 111-152)—that were signed into law in March 2010 and that aim to expand access to private and public health insurance while improving quality and lowering healthcare costs.[91]

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."[92]

Public health emergency

An infectious-disease outbreak; natural disaster; or chemical, biological, radiological, or nuclear event.[93]

Public health emergency of international concern

An "extraordinary event" that is determined, as provided under the International Health Regulations, "to constitute a public health risk to other States through the international spread of disease; and to potentially require a coordinated international response."[94]

Resilience/community resilience

A community's ability to withstand and recover—in both the short and long terms—from adversity, such as a natural disaster or terrorist attack.[95]

Appendix C: Abbreviations

Abbreviation	Definition
ASPR	Assistant Secretary for Preparedness and Response
BARDA	Biomedical Advanced Research and Development Authority
CBO	community-based organization
CBRN	chemical, biological, radiological, and nuclear
CCA	collaborative coordinating authority
CDC	Centers for Disease Control and Prevention
CMS	Centers for Medicare & Medicaid Services
COP	common operating picture
CPR	cardiopulmonary resuscitation
CPT	Current Procedural Terminology
CRI	Cities Readiness Initiative
CY	calendar year
DHS	U.S. Department of Homeland Security
DOC	U.S. Department of Commerce
DoD	U.S. Department of Defense
DOI	U.S. Department of the 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
DoED	U.S. Department of Education

Abbreviation	Definition
EHR	electronic health record
EM	Emergency management
EMAC	Emergency Management Assistance Compact
EMS	emergency medical services
EMSC	Emergency Medical Services for Children
EOC	emergency operations center
EPA	U.S. Environmental Protection Agency
ESS	emergency services sector
EUA	emergency use authorization
FAO	Food and Agriculture Organization of the United Nations
FBI	Federal Bureau of Investigation
FDA	U.S. Food and Drug Administration
FEMA	Federal Emergency Management Agency
GHSA	Global Health Security Agenda
GIS	geographic information system
GOARN	Global Outbreak Alert and Response Network
HHS	U.S. Department of Health and Human Services
HIE	health information exchange
HIPAA	Health Insurance Portability and Accountability Act
HITECH	Health Information Technology for Economic and Clinical Health
HPP	Hospital Preparedness Program
HSA	health situational awareness
HUD	U.S. Department of Housing and Urban Development

Abbreviation	Definition
ICS	Incident Command System
IHR	International Health Regulations
IND	investigational new drug
IP	implementation plan
MCM	medical countermeasure
MERS	Middle East Respiratory Syndrome
NCDMPH	National Center for Disaster Medicine and Public Health
NGO	nongovernmental organization
NHSPI	National Health Security Preparedness Index
NHSR	National Health Security Review
NHSS	National Health Security Strategy
NHTSA	National Highway Traffic Safety Administration
NIAID	National Institute of Allergy and Infectious Diseases
NIH	National Institutes of Health
NIMS	National Incident Management System
NIST	National Institute of Standards and Technology
NPI	non-pharmaceutical intervention
NSS	National Security Strategy
OIE	World Organisation for Animal Health
ONC	Office of the National Coordinator for Health Information Technology
PHEMCE	Public Health Emergency Medical Countermeasures Enterprise
PHEP	Public Health Emergency Preparedness
PIO	public information officer

Abbreviation	Definition
POD	point of dispensing
PPD	presidential policy directive
PPE	personal protective equipment
RHIO	regional health information organization
SA	situational awareness
SFFC	spurious, falsely labeled, falsified, or counterfeit
SIP	strategy and implementation plan
SLTT	state, local, tribal, and territorial
SNS	Strategic National Stockpile
SOC	Secretary's Operations Center
USAID	U.S. Agency for International Development
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
VA	U.S. Department of Veterans Affairs
WHO	World Health Organization

Appendix D: Crosswalk Between Public Health Service Act Goals and Subgoals and the National Health Security Strategy and Implementation Plan 2015–2018

Public Health Service Act Preparedness Goals and Subgoals	Sections in NHSS	Sections in IP
(1) Integration. Integrating public health and public and private medical capabilities with other first responder systems, including through--	Strategic Objective 3, Priority 3.2: Promote continuous improvement through use of state-of-the-art innovative systems, tools, and partnerships to ensure improvement of HSA Strategic Objective 4: Enhance the integration and effectiveness of the public health, healthcare, and emergency management systems Strategic Objective 5: Strengthen global health security	Activity 1.2.1: Federal partners will identify and disseminate culturally and linguistically appropriate promising practices in developing cross-sector partnerships to promote community health resilience, response, and recovery Activity 2.1.1. Federal partners will continue to work with state and local stakeholders on efforts to improve state and local readiness to make and implement decisions about use of MCMs and NPIs in responses through the identification, design, and implementation of exercises/drills, algorithms, and checklists/flowcharts that involve integrated MCM-NPI approaches to diverse incidents Activity 2.2.2. Federal partners will identify ways for nonfederal partners to engage in the PHEMCE process for requirement-setting for MCM research and development Strategic Objective 5: Strengthen global health security: All activities
(A) the periodic evaluation of federal, state, local, and tribal preparedness and	Guiding Principle: Continuous Quality Improvement: Policies, programs, and practices to improve national health security will be monitored, evaluated, and	Activity 1.3.5: State and local government and NGOs can implement trainings and exercises for volunteers on effective and educated bystander response

Public Health Service Act Preparedness Goals and Subgoals	Sections in NHSS	Sections in IP
response capabilities through drills and exercises, including drills and exercises to ensure medical surge capacity for events without notice; and	improved using systematic and rigorous quality management processes	Activity 2.1.1. Federal partners will continue to work with state and local stakeholders on efforts to improve state and local readiness to make and implement decisions about use of MCMs and NPIs in responses through the identification, design, and implementation of exercises/drills, algorithms, and checklists/flowcharts that involve integrated MCM-NPI approaches to diverse incidents Activity 2.2.6: Federal partners will and SLTT governments can improve the active engagement of end users, such as patient providers and public health officials, in MCM-oriented trainings and exercises Activity 2.4.8: Federal partners will draft guidance for nonfederal stakeholders on how the private sector, SLTT governments, CBOs, academia and healthcare systems can contribute to distribution and dispensing strategies and operational requirements, increase the number of closed PODs, and participate in exercises and drills Activity 4.3.5: State and local governments can work with schools and day care centers to increase awareness of the need to develop and exercise family reunification plans
(B) Integrating public and private sector public health and medical	Strategic Objective 4, Priority 4.5: Expand outreach to increase the numbers of trained workers and volunteers with appropriate	Activity 1.3.8: CBOs can partner with local governments to develop a messaging campaign to encourage financial donations through existing mechanisms such as the National

Public Health Service Act Preparedness Goals and Subgoals	Sections in NHSS	Sections in IP
donations and volunteers.	qualifications and competencies Strategic Objective 4, Priority 4.6: Effectively manage and use nonmedical volunteers and affiliated, credentialed, and licensed (when applicable) healthcare workers	Donations Management Network Activity 1.3.9: SLTT governments and CBOs (e.g., Voluntary Organizations Active in Disasters, National Voluntary Organizations Active in Disasters, American Red Cross) can partner with the state coordinator for volunteers before a disaster by developing a volunteer and donation management plan or developing memoranda of understanding Activity 4.5.3: Before incidents, federal partners will and state and local governments and private sector businesses can identify requirements and the minimal effective number of surge staff needed, as well as local, state, regional, and federal sources of surge staff (e.g., temporary/intermittent agency staff, volunteers, and local government staff) outside of health departments, assign them to likely response tasks suited to their reassignments, and ensure that available skills and competencies match defined response requirements Activity 4.6.4: Federal partners will work with voluntary organizations not traditionally involved in national health security to assist them in defining roles in incident response and identifying ways they can contribute to community resilience in incident prevention, protection, mitigation, response, and recovery phases

Public Health Service Act Preparedness Goals and Subgoals	Sections in NHSS	Sections in IP
(2) Public health. Developing and sustaining federal, state, local, and tribal essential public health security capabilities, including the following:	- -	- -
(A) Disease situational awareness domestically and abroad, including detection, identification, and investigation.	Strategic Objective 3: Ensure comprehensive health situational awareness to support decision-making before incidents and during response and recovery operations Strategic Objective 5, Priority 5.2: Strengthen national capacities and capabilities globally to detect diseases in a timely manner	Strategic Objective 3: Ensure comprehensive health situational awareness to support decision-making before incidents and during response and recovery operations: All activities Strategic Objective, 5 Priority 5.2: Strengthen national capacities and capabilities globally to detect diseases in a timely manner: All activities
(B) Disease containment including capabilities for isolation, quarantine, social distancing, and decontamination.	Strategic Objective 2, Priority 2.1: Create and/or refine decision-making frameworks and coordinated processes that consider both MCMs and NPIs when determining the best approaches to reducing adverse health effects of particular incidents of concern Strategic Objective 2, Priority	Strategic Objective 2, Priority 2.1: Create and/or refine decision-making frameworks and coordinated processes that consider both MCMs and NPIs when making research, advanced development, and acquisition decisions related to countermeasures and determining the best approaches to reducing adverse health effects of particular incidents of concern: All activities Strategic Objective 2, Priority 2.3: Focus research and translation on NPIs to ensure that

Public Health Service Act Preparedness Goals and Subgoals	Sections in NHSS	Sections in IP
	2.3: Focus research and translation on NPIs to ensure that evidence is accurate and actionable	evidence is accurate and actionable: All activities
(C) Risk communication and public preparedness.	Strategic Objective 1, Priority 1.3: Build a culture of resilience by promoting physical, behavioral, and social health; leveraging health and community systems to support health resilience; and increasing access to information and training to empower individuals to assist their communities following incidents	Activity 1.1.1: State governments and professional societies can create templates and toolkits for communities to tailor with audience-specific messages on community connectedness, social capital, and health resilience Activity 1.1.2: Federal partners will work with academia to evaluate and report on the best uses of traditional media (e.g., print and visual media) and new media (e.g., social media and mobile health technologies) to promote social connections among community members Activity 1.3.1: State and local governments, CBOs, and the private sector can promote general population training in health-related areas such as first aid, cardiopulmonary resuscitation, psychological first aid, and self- and family-care Activity 1.3.2: CBOs can use routine community meetings and events to disseminate culturally and linguistically appropriate information on the topic of health resilience and sponsor events to encourage planning for incident response and recovery Activity 1.3.5: State and local government and NGOs can implement trainings and exercises for volunteers on effective and educated

Public Health Service Act Preparedness Goals and Subgoals	Sections in NHSS	Sections in IP
		bystander response Activity 1.3.7: State and local governments, academia, CBOs, and the private sector can integrate messaging on health resilience into national educational initiatives, such as America's PrepareAthon and annual influenza messaging Activity 3.5.6: State health departments can coordinate with local health department public information officers (PIOs) to develop guidelines for effective use of social media for public communications Activity 5.4.1: Federal partners will work with partner countries, the media, academic, and nongovernmental stakeholders, as well as the private sector, to foster and refine emergency alert systems and risk communication to notify communities in preparation for and during an emergency
(D) Rapid distribution and administration of medical countermeasures.	Strategic Objective 2: Enhance the national capability to produce and effectively use both medical countermeasures and non-pharmaceutical interventions Strategic Objective 2, Priority 2.1: Create and/or refine decision-making frameworks and coordinated processes that consider both MCMs and NPIs when determining the best	Strategic Objective 2, Priority 2.1: Create and/or refine decision-making frameworks and coordinated processes that consider both MCMs and NPIs when making research, advanced development, and acquisition decisions related to countermeasures and determining the best approaches to reducing adverse health effects of particular incidents of concern. All activities Strategic Objective 2, Priority 2.2: Increase nonfederal stakeholder engagement within

Public Health Service Act Preparedness Goals and Subgoals	Sections in NHSS	Sections in IP
	approaches to reducing adverse health effects of particular incidents of concern Strategic Objective 2, Priority 2.2: Increase nonfederal stakeholder engagement within PHEMCE processes Strategic Objective 2, Priority 2.4: Expand and improve national capacity to manufacture, obtain, distribute, and dispense medical countermeasures Strategic Objective 5, Priority 5.4: Strengthen national capacities and capabilities globally to respond to public health emergencies of international concern	PHEMCE processes: All activities Strategic Objective 2, Priority 2.4: Expand and improve national capacity to manufacture, obtain, distribute, and dispense medical countermeasures: All activities Activity 5.4.4: Federal partners will work with partner countries, intergovernmental organizations, and the private sector to improve availability of public health emergency MCMs by increasing global production capacity, procurement, and stockpiling while taking into account the access and functional needs of at-risk individuals Activity 5.4.5: Federal partners will work with domestic and international partners to strengthen the infrastructures, policies, and operational frameworks needed to rapidly deploy public health MCMs, personnel, and other public health and medical assistance across countries in response to emergencies Activity 5.4.7: Federal partners will collaborate with pharmaceutical companies producing MCMs to educate partner countries about U.S. regulatory standards, emergency use authorizations (EUAs), investigational new drugs (INDs), and stockpiling to facilitate the international deployment of MCMs during a public health emergency
(3) Medical.	Strategic Objective 4: Enhance the integration and	Strategic Objective 4: Enhance the integration and effectiveness of the public

Public Health Service Act Preparedness Goals and Subgoals	Sections in NHSS	Sections in IP
Increasing the preparedness, response capabilities, and surge capacity of hospitals, other healthcare facilities (including mental health and ambulatory care facilities and which may include dental health facilities), and trauma care, critical care, and emergency medical service systems, with respect to public health emergencies (including related availability, accessibility, and coordination), which shall include developing plans for the following:	effectiveness of the public health, healthcare, and emergency management systems	health, healthcare, and emergency management systems: All activities
(A) Strengthening public health emergency medical and trauma management and treatment	Strategic Objective 4: Enhance the integration and effectiveness of the public health, healthcare, and emergency management systems	Activity 4.2.1: Federal partners will incentivize the implementation of existing tools that promote the coordination of care in an event (e.g., patient-tracking tools, EHR compatibility features) Activity 4.2.2: Federal partners will provide

Public Health Service Act Preparedness Goals and Subgoals	Sections in NHSS	Sections in IP
capabilities.		guidance for how to modify existing information systems (e.g., EHR systems, immunization information systems) to better support national health security goals Activity 4.2.3: Federal partners will work with nonfederal stakeholders (e.g., Joint Commission) to support the widespread application of principles of disaster risk reduction and mitigation Activity 4.2.4: Hospitals, providers, and academia can explore how existing telemedicine programs and technologies can be redirected in an event to address surge and increase access in areas affected by disaster, including rural communities Activity 4.2.5: Nonfederal stakeholders can promote community support of hospitals during a disaster by developing continuity-of-operations plans that address the relocation of personnel, the performance of essential functions, and the devolution of services (when the transfer of essential functions is required) using the guidance provided in Continuity Guidance Circular 1 and 2, published by FEMA Activity 4.2.6: SLTT government planners can evaluate their continuity plans and capabilities using Continuity Assistance Tool (CAT), published by FEMA
(B) Fatality	- -	Activity 4.2.7: Federal partners will enhance existing fatality management capabilities by

Public Health Service Act Preparedness Goals and Subgoals	Sections in NHSS	Sections in IP
management		developing policy and procedural recommendations for a mass fatality response in a resource-scarce environment in which operations may need to be modified to account for limited personnel, infrastructure, or equipment and supplies
(C) Coordinated medical triage and evacuation to appropriate medical institutions based on patient medical need, taking into account regionalized systems of care.	- -	Activity 3.2.12: Federal partners will develop alternative protocols for patient triage that seek to identify higher levels of efficiency for electronic medical records and EHRs during casualty surges Activity 4.3.4: Federal partners will work with nonfederal stakeholders to create guidance on how to plan for and engage populations with enhanced privacy needs (e.g., domestic violence victims) for evacuation and sheltering
(D) Rapid distribution and administration of medical countermeasures.	Strategic Objective 2: Enhance the national capability to produce and effectively use both medical countermeasures and non-pharmaceutical interventions	Strategic Objective 2, Priority 2.1: Create and/or refine decision-making frameworks and coordinated processes that consider both MCMs and NPIs when making research, advanced development, and acquisition decisions related to countermeasures and determining the best approaches to reducing adverse health effects of particular incidents of concern. All activities Objective 2, Priority 2.2: Increase nonfederal stakeholder engagement within PHEMCE processes: All activities
(E) Effective utilization of any	- -	Activity 4.1.5: Healthcare coalitions can encourage member organizations to voluntarily

Public Health Service Act Preparedness Goals and Subgoals	Sections in NHSS	Sections in IP
available public and private mobile medical assets (which may include such dental health assets) and integration of other federal assets.		share information about their mobile medical assets and training on those mobile medical asset platforms that could potentially be used through the Emergency Management Assistance Compact (EMAC)
(F) Protecting healthcare workers and healthcare first responders from workplace exposure during a public health emergency.	- -	Activity 2.3.2: Federal partners will work with SLTT governments and professional societies to assess, develop, improve and strategies for implementing research findings related to NPIs- including PPE, social distancing, and other community mitigation strategies- to enhance translation of research into practice Activity 4.6.1: Nonfederal stakeholders can adopt common (pathogen-specific) standards for personal protective equipment for responders and volunteers based on federal guidance
(G) Optimizing a coordinated and flexible approach to the medical surge capacity of hospitals, other healthcare facilities, critical care, trauma care (which may include trauma centers), and	Strategic Objective 4 Priority: Build upon and improve routine systems and services as a foundation for incident response and risk reduction, focusing on common elements that leverage the alignment of routine capabilities with those needed during an incident	Activity 4.1.1: Federal partners will develop tools and guidance for the inclusion of nontraditional organizations (e.g., utility agencies, pharmacies, human service organizations) in the regional preparedness planning process, including information on how to incentivize nontraditional organizations to join and remain active participants Activity 4.1.2: Federal partners working in

Public Health Service Act Preparedness Goals and Subgoals	Sections in NHSS	Sections in IP
emergency medical systems.	Strategic Objective 4, Priority 4.1: Define and strengthen healthcare coalitions and regional planning alliances across all incident phases	collaboration with academia and the community will build the evidence base around coalition effectiveness, including developing and testing metrics of coalition performance Activity 4.1.5: Healthcare coalitions can encourage member organizations to voluntarily share information about their mobile medical assets and training on those mobile medical asset platforms that could potentially be used through the Emergency Management Assistance Compact (EMAC) Activity 4.1.6: Federal partners, in collaboration with healthcare coalitions, will establish guidance for the development, implementation, evaluation, and improvement of health system emergency management programs (e.g. doctrine) Activity 4.2.1: Federal partners will incentivize the implementation of existing tools that promote the coordination of care in an event (e.g., patient-tracking tools, EHR compatibility features)
(4) At-risk individuals--	- -	- -
(A) Taking into account the individuals with disabilities public health and medical	Strategic Objective 4, Priority 4.3: Ensure that the integrated, scalable system can meet the needs of at-risk individuals	Activity 1.1.5: CBOs and the faith community can identify at-risk individuals and connect them with personal and logistical support Activity 1.3.4: State and local governments

Public Health Service Act Preparedness Goals and Subgoals	Sections in NHSS	Sections in IP
needs of at-risk individuals, including the unique needs and considerations of, in the event of a public health emergency.		can encourage the identification of safe places for children post-disaster, including emergency care and effective supports for reconstitution of routine child care services within the community Strategic Objective 4, Priority 4.3: Ensure that the integrated, scalable system can meet the access and functional needs of at-risk individuals. All activities Activity 5.2.6: Federal partners will work with partner countries, intergovernmental organizations, NGOs and SLTT governments to enhance detection and reporting of public health threats affecting refugee, internally displaced, and migrant populations
(5) Coordination. Minimizing duplication of, and ensuring coordination between, federal, state, local, and tribal planning, preparedness and response activities (including the State Emergency Management Assistance Compact). Such planning shall be	Guiding Principle: Strategic Alignment: The NHSS will contribute to the achievement of the *National Security Strategy* and PPDs, and should guide health initiatives that contribute to the security of communities across the nation Strategic Objective 2, Priority 2.1: Create and/or refine decision-making frameworks and coordinated processes that consider both MCMs and NPIs when determining the best approaches to reducing adverse health effects of particular	Activity 1.2.6: Federal partners will work in conjunction with academia and SLTT governments to incorporate a framework to guide the integration of culturally and linguistically appropriate community education efforts for professionals on recovery planning Activity 4.5.1: Federal partners will explore options to incentivize states to adopt the model interstate EMS licensure compact language for events that do not meet the threshold for a gubernatorial disaster declaration

Public Health Service Act Preparedness Goals and Subgoals	Sections in NHSS	Sections in IP
consistent with the National Response Plan, or any successor plan, and National Incident Management System and the National Preparedness Goal.	incidents of concern Strategic Objective 4: Enhance the integration and effectiveness of the public health, healthcare, and emergency management systems	
(6) Continuity of operations. Maintaining vital public health and medical services to allow for optimal federal, state, local, and tribal operations in the event of a public health emergency.		Activity 3.5.9: Federal partners will conduct cybersecurity risk assessments of healthcare systems, with the goal of developing contingency plans for continuity of operations in the event of a cyberincident that leverage existing cybersecurity risk assessment resources Activity 4.2.5: Nonfederal stakeholders can promote community support of hospitals during a disaster by developing continuity-of-operations plans that address the relocation of personnel, the performance of essential functions, and the devolution of services (when the transfer of essential functions is required) using the guidance provided in Continuity Guidance Circular 1 and 2, published by FEMA Activity 4.2.6: SLTT government planners can evaluate their continuity plans and capabilities using the Continuity Assistance Tool (CAT), published by FEMA
(7)	Strategic Objective 2: Enhance the national capability to produce and	Strategic Objective 2: Enhance the national capability to produce and effectively use both

Public Health Service Act Preparedness Goals and Subgoals	Sections in NHSS	Sections in IP
Countermeasures. (A) Promoting strategic initiatives to advance countermeasures to diagnose, mitigate, prevent, or treat harm from any biological agent or toxin, chemical, radiological, or nuclear agent or agents, whether naturally occurring, unintentional, or deliberate.	effectively use both medical countermeasures and non-pharmaceutical interventions	medical countermeasures and non-pharmaceutical interventions: All activities Activity 5.4.4: Federal partners will work with partner countries, intergovernmental organizations, and the private sector to improve availability of public health emergency MCMs by increasing global production capacity, procurement, and stockpiling while taking into account the access and functional needs of at-risk populations Activity 5.4.5: Federal partners will work with domestic and international partners to strengthen the infrastructures, policies, and operational frameworks needed to rapidly deploy public health MCMs, personnel, and other public health and medical assistance across countries in response to emergencies Activity 5.4.7: Federal partners will collaborate with pharmaceutical companies MCMs to educate partner countries about U.S. regulatory standards, emergency use authorizations (EUAs), investigational new drugs (INDs), and stockpiling to facilitate the international deployment of MCMs during a public health emergency
(8) Medical and public health community resiliency. Strengthening	Strategic Objective 1: Build and sustain healthy, resilient communities Strategic Objective 4: Enhance the integration and	Strategic Objective 1: Build and sustain healthy, resilient communities: All activities Activity 4.1.3: Local health departments can work with nonprofit hospitals to identify ways in which the hospitals can contribute to community

Public Health Service Act Preparedness Goals and Subgoals	Sections in NHSS	Sections in IP
the ability of states, local communities, and tribal communities to prepare for, respond to, and be resilient in the event of public health emergencies, whether naturally occurring, unintentional, or deliberate	effectiveness of the public health, healthcare, and emergency management systems Strategic Objective 4, Priority 4.2: Build upon and improve routine systems and services as a foundation for incident response and risk reduction, focusing on common elements that leverage the alignment of routine capabilities with those needed during an incident	health resilience by addressing issues identified in a community's health needs assessment, as described in the Affordable Care Act Activity 4.2.3: Federal partners will work with nonfederal stakeholders (e.g., Joint Commission) to support the widespread application of principles of disaster risk reduction and mitigation)
(A) optimizing alignment and integration of medical and public health preparedness and response planning and capabilities with and into routine daily activities; and	Strategic Objective 1 Priority: Build a culture of resilience by promoting physical and behavioral health; leveraging day-to-day health and community systems to support health resilience; and increasing access to information and training to empower individuals to assist their communities following incidents Strategic Objective 4 Priority: Build upon and improve routine systems and services as a foundation for incident response and risk reduction, focusing on common elements that leverage the alignment of routine capabilities with those needed	Activity 3.2.11: SLTT health and emergency management departments can develop strategies for integrating new technologies and SA products, tools, and standards into routine practice Strategic Objective 4, Priority 4.2: Build upon and improve routine systems and services as a foundation for incident response and risk reduction, focusing on common elements that leverage the alignment of routine capabilities with those needed during an incident: All activities

Public Health Service Act Preparedness Goals and Subgoals	Sections in NHSS	Sections in IP
	during an incident	
(B) Promoting familiarity with local medical and public health systems.	Guiding Principle: Community Engagement: An inclusive, proactive approach will be used to foster effective partnerships and collaboration within and among communities, and the needs and contributions of individuals will be integrated into national health security efforts	Activity 1.1.4: Local governments, CBOs, and the private sector can empower constituents to engage in their communities' resilience, response, and recovery activities by creating culturally sensitive guidance based on sociocultural research

Appendix E: References

[1] Public Health Emergency. (2012, December 18). At-risk individuals. Retrieved from http://www.phe.gov/Preparedness/planning/abc/Pages/at-risk.aspx

[2] Public Health Service Act (PHS), 42 U.S.C. 300hh-1 § 2802 (2013), as added by the Pandemic and All-Hazards Preparedness Act of 2006 (PAHPA), Public Law 109-417 § 103 (2006, December 19). Retrieved from http://www.gpo.gov/fdsys/pkg/PLAW-109publ417/pdf/PLAW-109publ417.pdf. Amended by the Pandemic and All-Hazards Preparedness Reauthorization Act of 2013 (PAHPRA), Public Law 113-5 § 101 (2013, March 13). Retrieved from http://www.gpo.gov/fdsys/pkg/PLAW-113publ5/pdf/PLAW-113publ5.pdf

[3] U.S. Department of Health and Human Services (HHS). (2009, December). *National health security strategy of the United States of America*. Washington, D.C. Retrieved from http://www.phe.gov/Preparedness/planning/authority/nhss/strategy/Documents/nhss-final.pdf

[4] White House. (2010, May). National security strategy. Washington, D.C. Retrieved from http://www.whitehouse.gov/sites/default/files/rss_viewer/national_security_strategy.pdf

[5] White House. (2011, March 30). Presidential policy directive/PPD-8: National preparedness. Washington, D.C. Retrieved from http://www.dhs.gov/presidential-policy-directive-8-national-preparedness

[6] Federal Emergency Management Agency (FEMA). (2014, July 24). National preparedness goal. Retrieved from http://www.fema.gov/national-preparedness-goal

[7] White House. (2011, March 30). Presidential policy directive/PPD-8: national preparedness. Washington, D.C. Retrieved from http://www.dhs.gov/presidential-policy-directive-8-national-preparedness

[8] Patient Protection and Affordable Care Act, Public Law 111-148 (2010, March 23). Retrieved from http://www.gpo.gov/fdsys/granule/PLAW-111publ148/PLAW-111publ148/content-detail.html

[9] DeSalvo, K., Lurie, N., Finne, K., Worrall, C., Bogdanov, A., Dinkler, A., Babcock, S., & Kelman, J. (2014). Using Medicare data to identify individuals who are electricity dependent to improve disaster preparedness and response. *American Journal of Public Health*, *104* (7), 1160–1164. doi:10.2105/AJPH.2014.302009

[10] Manyika, M., Chui, M., Brown, B., Bughin, J., Dobbs, R., Roxburgh, C., & Byers, A. H. (2011, May). *Big data: The next frontier for innovation, competition and productivity*. McKinsey Global Institute. Retrieved from http://www.mckinsey.com/insights/business_technology/big_data_the_next_frontier_for_innovation

[11] Public Health Emergency. (2014, September 12). Science preparedness. Retrieved from http://www.phe.gov/Preparedness/planning/science/Pages/default.aspx

[12] Melillo, J. M., Richmond, T., & Yohe, G. W. (Eds.). (2014). *Climate change impacts in the United States: The third national climate assessment*. Washington, D.C.: U.S. Global Change Research Program. Retrieved from http://nca2014.globalchange.gov/

[13] For more information on PHEMCE, please see Public Health Emergency. (2013, May 30). Public health emergency medical countermeasures enterprise. Retrieved from http://www.phe.gov/Preparedness/mcm/phemce/Pages/default.aspx

[14] U.S. Department of Agriculture. (2014). About us: Extension. Retrieved from http://www.csrees.usda.gov/qlinks/extension.html

[15] U.S. Department of Health and Human Services. (2009, December). *National health security strategy of the United States of America*. Washington, D.C. Retrieved from http://www.phe.gov/Preparedness/planning/authority/nhss/strategy/Documents/nhss-final.pdf

[16] National Prevention Council. (2011, June). *National prevention strategy*. Rockville, Md.: HHS, Office of the Surgeon General. Retrieved from http://www.surgeongeneral.gov/initiatives/prevention/strategy/

[17] Federal Emergency Management Agency. (2011, September). *National disaster recovery framework: Strengthening disaster recovery for the nation*. Washington, D.C. Retrieved from http://www.fema.gov/media-library-data/20130726-1820-25045-5325/508_ndrf.pdf

[18] U.S. Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response, Hospital Preparedness Program. (2012, January). *Healthcare preparedness capabilities: National guidance for healthcare system preparedness*. Washington, D.C. Retrieved from https://www.phe.gov/preparedness/planning/hpp/reports/documents/capabilities.pdf

[19] U.S. Department of Health and Human Services. (2012, December). *Public health emergency medical countermeasures enterprise (PHEMCE) implementation plan*. Washington, D.C. Retrieved from http://www.phe.gov/Preparedness/mcm/phemce/Documents/2012-PHEMCE-Implementation-Plan.pdf

[20] HHS, CDC. (2012, August 28). Nonpharmaceutical interventions (NPIs). Retrieved from http://www.cdc.gov/nonpharmaceutical-interventions/

[21] U.S. Department of Health and Human Services. (2012, December). *Public health emergency medical countermeasures enterprise (PHEMCE) implementation lan*. Washington, D.C. Retrieved from http://www.phe.gov/Preparedness/mcm/phemce/Documents/2012-PHEMCE-Implementation-Plan.pdf

[22] HHS, ASPR, BARDA. (2010, January). Integrated national biodefense medical countermeasures portfolio. For more information, see Public Health Emergency. (2012, June 12). PHEMCE governance. Retrieved from http://www.phe.gov/Preparedness/mcm/phemce/Pages/governance.aspx

[23] U.S. Department of Health and Human Services. (2012). *Public health emergency medical countermeasures enterprise (PHEMCE) strategy*. Retrieved from http://www.phe.gov/Preparedness/mcm/phemce/Documents/2012-PHEMCE-Strategy.pdf

[24] White House. (2012, July). *National strategy for biosurveillance.* Washington, D.C. Retrieved from http://www.whitehouse.gov/sites/default/files/National_Strategy_for_Biosurveillance_July_2012.pdf; HHS. (2014, May). *Public health and medical situational awareness strategy*. Washington, D.C.: U.S. Government Printing Office; DHS. (2010, February). *National biosurveillance strategy for human health*. Washington, D.C.: U.S. Government Printing Office.

[25] HHS. (2014, May). *Public health and medical situational awareness strategy*. Washington, D.C.: U.S. Government Printing Office.

[26] HHS. (2014, May). *Public health and medical situational awareness strategy*. Washington, D.C.: U.S. Government Printing Office.

[27] White House. (2012, December). *National strategy for information sharing and safeguarding*, Washington, D.C. Retrieved from http://www.whitehouse.gov/sites/default/files/docs/2012sharingstrategy_1.pdf

[28] HealthIT.gov. (2014, November 4). Public health surveillance [Infographic]. Retrieved from http://www.healthit.gov/sites/default/files/onc_public_health_surveillance_infographic-11042014.pdf

[29] HHS. (n.d.). What is the public health system? Retrieved from http://www.hhs.gov/ash/initiatives/quality/system/index.html

[30] Maine.gov. (2008, April 2). What is emergency management? Retrieved from https://www.maine.gov/mema/about/mema_emdef.shtml

[31] DHS. (2014, October 20). Emergency services sector. Retrieved from http://www.dhs.gov/emergency-services-sector

[32] Rambhia, K. J., Waldhorn, R. E., Selck, F., Mehta, A. K., Franco, C., & Toner, E. S. (2012, September). A survey of hospitals to determine the prevalence and characteristics of healthcare coalitions for emergency preparedness and response. *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science*, (*10*)3, 304–313.

[33] American Recovery and Reinvestment Act of 2009, Public Law 111-5 (2009, February 13). Retrieved from http://www.gpo.gov/fdsys/pkg/BILLS-111hr1enr/pdf/BILLS-111hr1enr.pdf

[34] HHS, CDC. (2012). *Public health emergency preparedness cooperative agreement: Budget period 1 performance measures specifications and implementation guidance at-a-glance summary—July 1, 2012–June 30, 2013*, version 1.1. Retrieved from http://www.cdc.gov/phpr/documents/PHEP_BP1_PM_At-a-Glance_v1_1.pdf; ASPR. (2013). *Hospital preparedness program (HPP) cooperative agreement: Hospital preparedness program (HPP) measure manual—implementation guidance for the HPP program measures: hospital preparedness program (HPP) budget period 2 (BP2)—1 July 2013–30 June 2014*, version 1.0. Retrieved from http://www.phe.gov/Preparedness/planning/evaluation/Documents/hpp-bp2-measuresguide-2013.pdf

[35] IOM. (2011, June 13). The impact of state and local budget cuts on public health preparedness. Retrieved from

http://www.iom.edu/~/media/Files/Activity%20Files/PublicHealth/MedPrep/Impact%20of%20state%20and%20local%20budget%20cuts%20on%20PHP.pdf

[36] Global Health Security Initiative. (n.d.). *Global health security initiative: 10 years of collaborative action*. Retrieved from http://ec.europa.eu/health/preparedness_response/docs/ghsi_anniversary_en.pdf

[37] National Security Council. (2009, November). *National strategy for countering biological threats*. Washington, D.C.: White House. Retrieved from http://www.whitehouse.gov/sites/default/files/National_Strategy_for_Countering_BioThreats.pdf

[38] Homeland Security Council. (2005, November). *National strategy for pandemic influenza*. Washington, D.C.: White House. Retrieved from http://www.flu.gov/planning-preparedness/federal/pandemic-influenza.pdf

[39] White House. (2014, September). *National strategy for combating antibiotic-resistant bacteria*. Washington, D.C. Retrieved from http://www.whitehouse.gov/sites/default/files/docs/carb_national_strategy.pdf

[40] White House. (2012, July). *National strategy for biosurveillance*. Washington, D.C. Retrieved from http://www.whitehouse.gov/sites/default/files/National_Strategy_for_Biosurveillance_July_2012.pdf

[41] World Health Organization (WHO). (2008). *International health regulations (2005)*, 2nd ed. Geneva. Retrieved from http://www.who.int/ihr/publications/9789241596664/en/

[42] Global Health Security Initiative. (n.d.). Global Health Security Initiative. Retrieved from http://www.ghsi.ca/english/index.asp

[43] *North American Pandemic Influenza*, April 2, 2012, Retrieved from http://www.phe.gov/Preparedness/international/Pages/napapi.aspx

[44] White House. (2011, February 4). Declaration by President Obama and Prime Minister Harper of Canada: Beyond the border [Press release]. Retrieved from http://www.whitehouse.gov/the-press-office/2011/02/04/declaration-president-obama-and-prime-minister-harper-canada-beyond-bord

[45] Global health security agenda: Toward a world safe and secure from infectious disease threats. (n.d.). Retrieved from http://www.globalhealth.gov/global-health-topics/global-health-security/GHS%20Agenda.pdf

[46] Global health security agenda: Toward a world safe and secure from infectious disease threats. (n.d.). Retrieved from http://www.globalhealth.gov/global-health-topics/global-health-security/GHS%20Agenda.pdf

[47] HHS Office of Global Affairs. (n.d.). What the U.S. government is doing. Retrieved from http://www.globalhealth.gov/global-health-topics/global-health-security/usgovernmentrole.html

[48] USAID. (2014, April 28). Emerging pandemic threats program. Retrieved from http://www.usaid.gov/ept2

[49] White House. (2012, July). *National strategy for biosurveillance*. Washington, D.C. Retrieved from http://www.whitehouse.gov/sites/default/files/National_Strategy_for_Biosurveillance_July_2012.pdf

[50] Office of the National Coordinator for Health Information Technology. (2011). *Federal health information technology strategic plan 2011–2015*. Washington, D.C. Retrieved from http://www.healthit.gov/sites/default/files/utility/final-federal-health-it-strategic-plan-0911.pdf

[51] DHS. (2010, February). *National biosurveillance strategy for human health*. Washington, D.C.: U.S. Government Printing Office.

[52] Gray literature. (n.d.). *Merriam-Webster*. Retrieved from http://www.merriam-webster.com/dictionary/gray%20literature

[53] HHS. (2009, December). *National health security strategy of the United States of America*. Washington, D.C. Retrieved from http://www.phe.gov/Preparedness/planning/authority/nhss/strategy/Documents/nhss-final.pdf

[54] HHS. (2012, December). *Public health emergency medical countermeasures enterprise (PHEMCE) implementation plan*. Washington, D.C. Retrieved from http://www.phe.gov/Preparedness/mcm/phemce/Documents/2012-PHEMCE-Implementation-Plan.pdf

[55] HHS, CDC. (2012, August 28). Nonpharmaceutical interventions (NPIs). Retrieved from http://www.cdc.gov/nonpharmaceutical-interventions/

[56] HHS. (2014, May). *Public health and medical situational awareness strategy*. Washington, D.C.: U.S. Government Printing Office.

[57] National Science and Technology Council. (2013, June). *National biosurveillance science and technology roadmap*. Washington, D.C.: Executive Office of the President, Office of Science and Technology Policy. Retrieved from http://www.whitehouse.gov/sites/default/files/microsites/ostp/biosurveillance_roadmap_2013.pdf

[58] NIST. (2014, February 12). *Framework for improving critical infrastructure cybersecurity*, version 1.0. Washington, D.C. Retrieved from http://www.nist.gov/cyberframework/upload/cybersecurity-framework-021214-final.pdf

[59] Yeskey, K. (2010, July 22). The key role of NDMS in disaster response [Statement before the U.S. Senate Committee on Homeland Security and Governmental Affairs, Subcommittee on State, Local, and Private Sector Preparedness and Integration]. Retrieved from http://www.hhs.gov/asl/testify/2010/07/t20100722a.html

[60] Health Insurance Portability and Accountability Act, Public Law 104-191 (1996, August 21). Retrieved from http://www.gpo.gov/fdsys/pkg/PLAW-104publ191/html/PLAW-104publ191.htm

[61] HHS. (n.d.). What is the public health system? Retrieved from http://www.hhs.gov/ash/initiatives/quality/system/index.html

[62] Maine.gov. (2008, April 2). What is emergency management? Retrieved from https://www.maine.gov/mema/about/mema_emdef.shtml

[63] DHS. (2014, October 20). Emergency services sector. Retrieved from http://www.dhs.gov/emergency-services-sector

[64] Global Health Security Initiative. (n.d.). *Global health security initiative: 10 years of collaborative action*. Retrieved from http://ec.europa.eu/health/preparedness_response/docs/ghsi_anniversary_en.pdf

[65] Federal Advisory Committee Act of 1972, Public Law 92-463, 5 U.S.C. § 5 (1972, October 6).

[66] DHS. (2006). *National infrastructure protection plan*. Washington, D.C., p. 103. Retrieved from http://www.dhs.gov/xlibrary/assets/NIPP_Plan_noApps.pdf

[67] Public Health Emergency. (2012, December 18). At-risk individuals. Retrieved from http://www.phe.gov/Preparedness/planning/abc/Pages/at-risk.aspx

[68] Manyika, M., Chui, M., Brown, B., Bughin, J., Dobbs, R., Roxburgh, C., & Byers, A. H. (2011, May). *Big data: The next frontier for innovation, competition and productivity*. McKinsey Global Institute. Retrieved from http://www.mckinsey.com/insights/business_technology/big_data_the_next_frontier_for_innovation

[69] [List of terms related to biosecurity]. (n.d.). Retrieved from http://www.cdc.gov/biosafety/biosecuritytraining/Definitions.pdf

[70] [List of terms related to biosecurity]. (n.d.). Retrieved from http://www.cdc.gov/biosafety/biosecuritytraining/Definitions.pdf

[71] White House. (2012, July). *National strategy for biosurveillance*. Washington, D.C., p. 2. Retrieved from http://www.whitehouse.gov/sites/default/files/National_Strategy_for_Biosurveillance_July_2012.pdf

[72] DHS. (2007, September). *National preparedness guidelines*. Washington, D.C., p. 40. Retrieved from http://www.fema.gov/pdf/emergency/nrf/National_Preparedness_Guidelines.pdf

[73] HHS, ASPR. (2014). *National health security strategy 2015–2018*. Retrieved from http://www.phe.gov/nhss

[74] Riley, W. J., Moran, J. W., Corso, L. C., Beitsch, L. M., Bialek, R., & Cofsky, A. (2010, January–February). Defining quality improvement in public health. *Journal of Public Health Management and Practice*, *16*(10), 5–7.

[75] U.S. Department of Agriculture. (2014). About us: Extension. Retrieved from http://www.csrees.usda.gov/qlinks/extension.html

[76] Office of the National Coordinator for Health Information Technology. (2013, March 16). What is an electronic health record (EHR)? Retrieved from http://www.healthit.gov/providers-professionals/faqs/what-electronic-health-record-ehr

[77] Public Health Emergency. (2012, February 14). Emergency management and the incident command system. Retrieved from http://www.phe.gov/Preparedness/planning/mscc/handbook/chapter1/Pages/emergencymanagement.aspx

[78] NHTSA EMS. (n.d.). What is EMS? Retrieved from http://www.ems.gov/whatisems.htm

[79] DHS. (2010). *Emergency services sector–specific plan: An annex to the national infrastructure protection plan*, p. i. Retrieved from http://www.dhs.gov/emergency-services-sector

[80] Global Health Security Initiative. (n.d.). *Global health security initiative: 10 years of collaborative action*. Retrieved from http://ec.europa.eu/health/preparedness_response/docs/ghsi_anniversary_en.pdf

[81] HHS, ASPR. (2009). *From hospitals to healthcare coalitions: Transforming health preparedness and response in our communities*. Washington, D.C., p. 128. Retrieved from http://www.phe.gov/Preparedness/planning/hpp/Documents/hpp-healthcare-coalitions.pdf

[82] HHS, ASPR. (2009). *From hospitals to healthcare coalitions: Transforming health preparedness and response in our communities*. Washington, D.C., p. 128. Retrieved from http://www.phe.gov/Preparedness/planning/hpp/Documents/hpp-healthcare-coalitions.pdf

[83] HHS. (2014, May). *Public health and medical situational awareness strategy*. Washington, D.C.: U.S. Government Printing Office.

[84] DHS. (2008, December). *National incident management system*. Washington, D.C. Retrieved from https://www.fema.gov/pdf/emergency/nims/NIMS_core.pdf

[85] DHS. (2008, December). *National incident management system*. Washington, D.C., p. 140, Retrieved from https://www.fema.gov/pdf/emergency/nims/NIMS_core.pdf

[86] Public Health Emergency. (2012, December). *Public health emergency medical countermeasures enterprise (PHEMCE) implementation plan*. Washington, D.C., p. 16. Retrieved from http://www.phe.gov/Preparedness/mcm/phemce/Documents/2012-PHEMCE-Implementation-Plan.pdf

[87] HHS. (2012, January). *National Guidance for Healthcare System Preparedness.* p. xiv. Retrived from: http://www.phe.gov/preparedness/planning/hpp/reports/documents/capabilities.pdf

[88] HHS, ASPR. (2009, December). *National health security strategy of the United States of America*. Washington, D.C., p. 3. Retrieved from http://www.phe.gov/Preparedness/planning/authority/nhss/strategy/Documents/nhss-final.pdf

[89] HHS, CDC. (2012, August 28). Nonpharmaceutical interventions (NPIs). Retrieved from http://www.cdc.gov/nonpharmaceutical-interventions/

[90] Public Health Emergency. (2014, March 18). Pandemic and all-hazards preparedness reauthorization act. Retrieved from http://www.phe.gov/Preparedness/legal/pahpa/Pages/pahpra.aspx

[91] HHS. (2014, November 18). Key features of the Affordable Care Act. Retrieved from http://www.hhs.gov/healthcare/facts/timeline/index.html

[92] White House. (2007, October 18). Homeland security presidential directive 21: Public health and medical preparedness. Washington, D.C. Retrieved from http://fas.org/irp/offNOAs/nspd/hspd-21.htm

[93] Public Health Emergency. (2014, November 24). Public health emergency. Retrieved from http://www.phe.gov/preparedness/Pages/default.aspx; CDC & Prevention Office of Public Health Preparedness. (2014, October 23). Funding and guidance for state and local health departments. Retrieved from http://www.cdc.gov/phpr/coopagreement.htm

[94] World Health Organization. (n.d.). IHR procedures concerning public health emergencies of international concern (PHEIC). Retrieved from http://www.who.int/ihr/procedures/pheic/en/

[95] Norris, F. H., Stevens, S. P., Pfefferbaum, B., Wyche, K. F., & Pfefferbaum, R. L. (2008, March). Community resilience as a metaphor, theory, set of capacities, and strategy for disaster readiness. *American Journal of Community Psychology*, *41*(1–2), 127–150; Pfefferbaum, B. J., Reissman, D. B., Pfefferbaum, R. L., Klomp, R. W., & Gurwitch, R. H. (2007). Building resilience to mass trauma events. In

Doll, L. S., Bonzo, S. E., Mercy, J. A., Sleet, D. A., & Haas, E. N. (Eds.), *Handbook of injury and violence prevention* (pp. 347–358). New York: Springer Science + Business Media.

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