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Building public health preparedness and food and agriculture defense capabilities using whole community and one health concepts

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Abstract: Emergency managers are embracing the Whole Community approach described in Federal Emergency Management Agency (FEMA) preparedness policy, doctrine, and guidance. The Whole Community approach entails broad collaboration and integration of effort among multiple disciplines and preparedness partners to coordinate solutions for all threats and hazards. Potential public health emergencies – to include foodborne and animal disease outbreaks – are issues on the emergency management agenda requiring such broad coordination. Scientists and public health practitioners across multiple disciplines describe a philosophy very similar to "Whole Community" known as "One Health," linking efforts to address the shared threats to human, animal and environmental health. This paper recommends a coordinated strategy for FEMA to link "Whole Community" and "One Health" tenets as part of a national preparedness effort.

Keywords: homeland security; one health; preparedness; public health emergencies; strategy; whole community.

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1 Introduction

The preparedness challenges facing the United States require a coordinated approach to problem-solving and building capabilities for preventing, protecting against, responding to, recovering from, and mitigating all threats and hazards. The current national preparedness philosophy promoted by the Federal Emergency Management Agency (FEMA) promotes this thinking in its preparedness guidance, programs, and processes for all levels of government, the private sector, nongovernmental organizations, and the public. This mindset, known as

the *Whole Community* approach to emergency management (FEMA 2011a: p. 3), is also important for the public health domain, where various threats have the potential to create disasters, inflict mass casualties, jeopardize national security, and cause economic instability.

At the state and local level, multiple departments and agencies need to work together for the purposes of public health preparedness (including food and agricultural incidents that also impact public health) and contribute their respective knowledge, skills, assets, and authorities for the purposes of building capability. This is not only because economic realities require a coordinated approach and shared ownership of preparedness but because different elements of the community are uniquely qualified to deliver critical emergency management tasks.

The intent of this paper is to propose a vision for capabilities-based, *National preparedness guidance* in the context of public health and food and agriculture defense.[1] Specifically, the paper explains the complementary relationship between *Whole Community* emergency management and *One Health* – a global strategy for forging interdisciplinary partnerships among human, animal, and environmental health practitioners (One Health Initiative 2011). Linking the *Whole Community* and *One Health* concepts can facilitate preparedness efforts consistent with the basic premise of capabilities-based preparedness, i.e., planning, under uncertainty, to provide capabilities suitable for a wide range of modern-day challenges and circumstances while working within an economic framework that necessitates choice (Davis 2002: p. xi).

2 Whole Community Emergency Management: Background and Criticality

Faced with limited budgets and steady increases in threats, vulnerabilities and potential disaster consequences, emergency managers require a *Whole Community* approach to building preparedness capabilities. The Federal Emergency Management Agency (FEMA) describes *Whole Community* as "a means by which residents, emergency management practitioners, organizational and community leaders, and government officials can collectively understand and assess the needs of their respective communities and determine the best ways to organize and strengthen their assets, capacities, and interests (Federal Emergency

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1 For the purposes of this paper and the sake of simplicity, the broad term "food and agriculture defense" means all threats and hazards affecting food production and also includes the management of and response to diseases affecting agricultural animals.

Management Agency 2011a: p. 3)." Creative partnerships among all aspects of a community (volunteer, faith and community-based organizations, the private sector, and the public) are necessary to prepare for, protect against, respond to, recover from, and mitigate any disaster (Federal Emergency Management Agency 2011c: p. ii).

The threats and hazards our communities face are not just tied to historical occurrences such as natural disasters and emerging problems such as terrorism, but also drivers for potential events and worst case scenarios that go far beyond the capabilities of government solutions (Federal Emergency Management Agency 2010). Such worst case disaster scenarios – including public health related disasters – are becoming less theoretical as the result of activity in the planet's natural environment; human and social systems that create and redistribute hazards; and hazards resulting from the human-made constructed environment (Mileti 1999: p. 107). The public health impacts of recent catastrophes such as tornadoes, hurricanes, floods, and earthquakes have been significant and stressed local communities' response capabilities. For example, following hurricane-related flooding, there is great potential for sewage to contaminate water systems and come in contact with people; foodborne illnesses; and diseases caused by harmful pathogens thriving in the post-disaster environment. In 2011, the world witnessed how a natural disaster in Japan quickly gave way to a public health emergency as radiation leaked from a damaged nuclear facility. In addition, the continued growth of populated areas combined with the modern global transportation network that moves people, goods, and services with tremendous efficiency promote the emergence of infectious diseases across the planet, such as influenza, severe acute respiratory syndrome (SARS) or West Nile virus. There are also several organizations throughout the world that either possess or are currently seeking access to chemical, biological, or radiological weapons for use against civilians. As a result, the emergency management and public health preparedness and response, missions have increased in complexity. The partnerships required to build preparedness capabilities span multiple disciplines and virtually all societal segments.

Responses to events involving infectious diseases or dangerous pathogens can involve an array of technical specialists, such as clinicians, laboratory personnel, epidemiologists, first responders, and personnel from other professions that may be from government or the private sector. An adulteration of the food supply will similarly require the assistance of the public health community and law enforcement, as well as multiple industry segments across the *field-to-fork* food production continuum. Major disease outbreaks in agricultural animal populations require broad partnerships among animal and public health specialists and a plethora of potential public and private sector organizations to provide

surge support for disease control and response activities. Community response to each of the aforementioned hazards will benefit from an informed and vigilant public to assist with public health investigations as needed, engage in hazard mitigation or protection activities, and comply with protective action recommendations from authorities during an incident. The *Whole Community* approach is an important perspective to include in building public health preparedness and food and agriculture safety and security capabilities.

3 One Health Philosophy: Background and Criticality

As described earlier, it is expected that natural and man-made disasters, to include public health events, will continue to increase in frequency and impact (Federal Emergency Management Agency 2011a: p. 1). While specialization within various disciplines is obviously important to enable focused and in-depth study of diseases and health hazards of concern, understanding how public health events can emerge in an infinite number of biological systems speaks to the critical need for coordination across the scientific and emergency management community. This coordination is important for the purposes of disease diagnosis, surveillance, and the implementation of countermeasures. The *One Health* perspective essentially means that in the 21st century, human medicine, veterinary medicine, and all those involved in the health sciences must work across their respective educational institutions, organizations and agencies to expedite progress in ensuring and protecting health (Kaplan et al. 2009).

Increases in emerging and reemerging diseases involving livestock, food-borne, and zoonotic pathogens that ultimately threaten human health are apparent (Murphy 1999: p. 20). Outbreaks involving emerging infectious diseases that appear in new geographic areas or increase abruptly will continue to occur in the future despite the progress of vaccines and other public health advances. Continued changes in human behavior (e.g., animal production, trade, etc.) and customs will provide the necessary conditions for the emergence of new diseases (World Health Organization: Regional Office for South-East Asia 2005: pp. 1–2). For example, the continued growth of human and animal populations puts many species in close contact and facilitates effective transmissions of disease (Murphy 1999: p. 20). In fact, of the 1461 diseases now recognized in humans, 60% come from multi-host pathogens affecting multiple species (One Health Commission 2012).

The modern food production system, commonly referred to as the "field-to-fork continuum" also poses significant challenges in the emergency management arena. Unfortunately, the advances of modern food production are also incredibly efficient as a means of disseminating harmful pathogens and agents to vast populations either through intentional or unintentional adulteration of the food supply along various production nodes. Summarizing the perspective of Frederick A. Murphy, Professor, at the Department of Pathology at the University of Texas Medical Branch and former Professor and Dean Emeritus of the UC Davis School of Veterinary Medicine, there are multiple, interrelated factors that contribute to the changing threats and hazards posed by modern food and agricultural production including:

- Animal husbandry practices that allow pathogens to enter the food chain at its source and flourish
- Increased importation of foods from countries less advanced in sanitation and hygiene
- Higher concentration and volume of food processing resulting in larger outbreaks of disease
- The growing market for ready-to-eat and novel food products
- Increased numbers of elderly and immunosuppressed consumers
- New and more-resistant food-borne pathogens being identified in the food supply (Murphy 1999: p. 22).

Consistent with funding streams for all other emergency management functions, the availability of government resources available to support public health preparedness and food and agriculture safety and security missions are also in decline. During the second half of 2011, local health departments throughout the US lost nearly 5200 jobs collectively; this was more than three times as many positions as they gained. Emergency preparedness programs in particular suffered a high degree of programmatic reductions (National Association of County and City Health Officials 2012). In sum, the increasing prevalence and complexity of public health and food and agriculture threats, combined with a reduction in available resources to combat these challenges, require collaborative approaches to building and implementing capabilities.

4 Key National Policy Developments in Capabilities-Based Preparedness

The previous sections of this paper have described the partnerships necessary to face our Nation's preparedness challenges. A *Whole Community* approach to

preparedness is the overarching philosophy and paradigm for emergency management. For public health and food and agriculture safety and security, the *One Health* approach is a complementary and more specific manifestation of the *Whole Community* philosophy. For emergency managers, how does the developing National preparedness policy arena in which they operate encourage or inhibit the application of the *Whole Community* and *One Health* approaches, specifically regarding public health preparedness and food and agriculture defense? Since the creation of the Department of Homeland Security (DHS), the federal government has put forth significant effort to offer guidance shaping the National preparedness mission for all-threats and all-hazards.

5 DHS and FEMA Capability Guidance

Presidential Policy Directive 8 (PPD-8) was released by the White House in 2011 and is the foundational policy document for the National vision on preparedness. As the most recent Directive addressing preparedness, it requires the development of a National Preparedness Goal that identifies the core capabilities necessary to prevent, protect against, mitigate the effects of, respond to, and recover from threats posing the greatest risk to National security (The White House 2011). The term "capability" can be described as the means to accomplish a mission, function, or objective based on the performance of related tasks, under specified conditions, to target levels of performance (US Department of Homeland Security 2011b: p. 1). Per the Post-Katrina Emergency Management Reform Act (PKEMRA), a capability may be achieved with any combination of properly planned, organized, equipped, trained, and exercised personnel that achieves the intended outcome." (109th Congress, 2nd session, 2006, §641).

The continued development and promulgation of capability guidance led by the Department of Homeland Security and FEMA have been invaluable across all levels of government. By using the guidance, State and local emergency management offices and their partners have been able to describe preparedness activities and capability development efforts using a fairly consistent context. However, current guidance, to include the 2011 National Preparedness Goal, is not consistent with the definitions of capability described previously. For example, in 2012, FEMA released the National Preparedness Report, as required by PPD-8. The Report offered several useful findings regarding National Preparedness and the efforts to build and enhance Core Capabilities across all levels of government. The Report also stated that many programs exist to build and sustain preparedness capabilities, yet the Nation lacks the means to determine the progress of those

efforts due to the lack of clear, objective, and quantifiable performance measures in the revised National Preparedness Goal (US Department of Homeland Security 2012a: p. vii). This is especially true for missions related to public health preparedness and food and agriculture defense. In additional to lacking clear performance measures, FEMA capability guidance does not describe how a jurisdiction can build capabilities through planning, organizing, equipping, training, and exercising. In sum, given the current structure of the Core Capabilities, there are a number of needed refinements to meet the intent of National Preparedness policy and encourage synergy between the Whole Community and One Health philosophies.

6 Public Health Preparedness Capabilities and Healthcare Preparedness Capabilities

In addition to the preparedness guidance released by FEMA, The Centers for Disease Control and Prevention (CDC) also provides capability-based guidance for the public health and medical community. The CDC's *Public Health Preparedness Capabilities: National Standards for State and Local Planning*, establishes national standards for public health preparedness capability-based planning and achieving state and local public health preparedness (Centers for Disease Control and Prevention 2011: p. 6). The CDC capabilities offer a level of specificity not currently found in the Core Capabilities described by FEMA and DHS. In January 2012, the US Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response (ASPR) released a set of Healthcare Preparedness Capabilities. The Healthcare Preparedness Capabilities assist healthcare systems, healthcare coalitions, and healthcare organizations with preparedness and response and an effective medical surge (US Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response 2012b: p. vii).

7 National Preparedness Capability Guidance: Recommendations for Improvement

With the understanding that National capabilities-based preparedness guidance and programs remain works in progress, the following represents several areas for improvement to be considered in the continued refinement of the FEMA Core Capabilities and National preparedness policy in general. The proposed refinements are in the context of public health preparedness and food and agriculture safety and security capabilities.

7.1 Recommendation 1: Revise FEMA Capabilities-Based Preparedness Guidance to Better Incorporate the Whole Community and One Health Dynamics

The Core Capabilities in the National Preparedness Goal do not offer jurisdictions the needed direction to assist in building and measuring capabilities relevant for public health preparedness and food and agriculture defense. Through a collaborative revision effort, where multiple disciplines and subject matter experts contribute to describing capability components and critical measures, actionable preparedness guidance can be offered in support of the National Preparedness Goal. With this guidance in place, communities across the Nation can employ *Whole Community* and *One Health* approaches to forge creative and cohesive combinations of knowledge, skills, abilities, and equipment for activities such as:

– Conducting passive and active surveillance activities connecting the protection[2] and response[3] mission areas in regard to human, animal, and environmental health;
– Tracking and controlling movements of animal populations and food or agricultural products as warranted;
– Managing and distributing appropriate medical countermeasures and interventions;
– Meeting the demands of laboratory surge;
– Conducting epidemiological assessments in human and animal populations;
– Incorporating public health professionals in emergency management activities, incident command teams, and various operational constructs in advance of a significant event impacting human health or animal health; and,
– Developing additional capabilities as that can be classified as supporting or interfacing with the public health, animal disease, and food and agriculture safety and security missions

When re-scoping the Core Capabilities, an important aspect of capabilities-based preparedness to remember is that capabilities need to strike a balance between specificity and broadness to cover multiple threats and hazards. Capability descriptions should be broad enough in their application so they do not address single threats and hazards, but not so broad as to limit the ability to describe capabilities as related tasks, with performance targets and personnel organized,

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2 Per the National Preparedness Goal, Protection is defined as "the capabilities necessary to secure the homeland against acts of terrorism and manmade or natural disasters."
3 Per the National Preparedness Goal, Response is defined as "the capabilities necessary to save lives, protect property and the environment, and meet basic human needs after an incident has occurred."

equipped, trained, and exercised to achieve measurable outcomes. For example, a community living in an area prone to earthquakes, would not build an "earthquake" capability, instead it would coordinate development of multiple capabilities across the prevention, protection, response, recovery, and mitigation mission areas. A community would not build a "pandemic influenza" capability, but rather use the *Whole Community* and One Health perspectives to build a suite of coordinated capabilities including, but certainly not limited to medical surge; epidemiology and disease surveillance; dispensing countermeasures; and others as needed. Another example can be found in the management of animal disease emergencies or other food and agricultural threats and hazards. Unique capabilities are not needed to manage specific diseases among agricultural animal populations (such as Foot and Mouth Disease or Exotic Newcastle Disease) nor describe specific capabilities for protecting specific commodities (such as milk or processed meat). Rather, the Nation should facilitate efforts to build capabilities that address a wide array of pathogens that threaten animal populations or responding to an adulteration of the food supply along for the various phases of food production, regardless of the product in question.

To enable a broader set of stakeholders in public health and food and agriculture safety and security to contribute to local preparedness efforts and meet the intent of PPD-8, Core Capabilities guidance should inform planning, organization, equipment, training, and exercise and be assessed with clear, objective and quantifiable performance measures (The White House 2011). Efforts to build and implement capabilities can be prioritized by each community based on need using the output hazard vulnerability and risk assessment processes and then adapted and contextualized by the community using improved capability descriptions. The following represents some specific Core Capability areas where these changes can be considered in the context of the *One Health* and *Whole Community* philosophies.

7.1.1 The Public Health and Medical Core Capability

In the National Preparedness Goal, the Public Health and Medical Core Capability involves the combination of multiple distinct, yet related, disciplines into a single capability. This combination significantly impedes measurability, and as such, preparedness efforts. Emergency medical services (EMS) personnel engaged in triaging disaster victims accomplish very different tasks and achieve very different objectives than epidemiologists, laboratory technicians, or individuals involved in the warehousing and distribution of medical supplies. Yet all of the above are collapsed into a single Public Health and Medical Capability and linked

to the same capability targets for the purposes of measurability. When considered as preparedness capabilities with distinct tasks, measures, personnel credentials, and equipment, a single Public Health and Medical Services core capability is too broad to lend itself to the creation of meaningful preparedness guidance and inform efforts to plan, organize, equip, train, exercise, and evaluate various preparedness activities.

Public health can be described in part as the science and art of preventing disease; the control of communicable infections; and the organization of medical and nursing services for early disease diagnosis and preventative treatment (Winslow as cited in Teitalbaum and Wilensky 2009: pp. 8–9). Public Health Emergency Preparedness (PHEP) can be described as the means by which public health and health care systems, communities, and individuals, prevent, protect against, quickly respond to, and recover from health emergencies, particularly those whose scale, timing, or unpredictability threatens to overwhelm routine capabilities (Nelson et al. 2007: p. S9). Whereas medical care is considered more focused on healing individual patients, public health has the broader focus of prevention and healing the health of the entire community (Schneider 2011: p. 8). The FEMA guidance should be revised to be consistent with the above definitions in a coordinated effort with HHS and CDC. Making these distinctions and giving a clear picture of Core Capability elements (such as related tasks or equipment) would encourage *One Health* and *Whole Community* dynamics at the State and local levels. Multiple disciplines within a community could better understand and contribute their respective resources to achieve shared preparedness targets.

7.1.2 Core Capabilities Addressing Food and Agriculture Defense

There is a lack of clarity regarding how food and agriculture safety and security capabilities (to include agricultural animal disease emergencies) fit into the National Preparedness Goal. An area warranting attention in future revisions of the Goal is the manner in which critical tasks and capability targets associated with food and agriculture safety and security and agricultural animal disease emergencies are represented. Based on the current version of the National Preparedness Goal, these capabilities are mapped to the Core Capability of Supply Chain Integrity and Security (Federal Emergency Management Agency 2011b: p. 20). Per the Goal, Supply Chain Integrity and Security is classified as a Protect mission and entails strengthening the security and resilience of the supply chain at critical nodes and during the transport of materials between those nodes (US Department of Homeland Security 2011a: p. 9). This mapping does not help meet the intent of PPD-8, i.e., the development of concrete, measureable, and prior-

itized objectives to mitigate the risk of specific threats and vulnerabilities (The White House 2011: p. 1).

Determining a set of concrete objectives and associated measures for the vast National supply chain is a difficult endeavor, assuming that the supply chain includes all the delivery systems for critical infrastructure and key resources. Food and agricultural production and emergency response involve a broad community of private and public sector entities. Yet they encompass considerably different network nodes, vulnerabilities, and protective measures than other infrastructure sectors, such as manufacturing supply chains, energy delivery systems, or banking and finance processes. If the definition of a capability is a distinct critical element (US Department of Homeland Security 2011a: p. A-1) or the means to accomplish a mission, function, or objective based on the performance of related tasks, under specified conditions, to target levels of performance (US Department of Homeland Security 2011b: p. 1), then the generalization of food and agriculture safety and security and animal disease emergency response as a single Core Capability in the Prevention mission space does not meet the intent of PPD-8.

7.1.3 Environmental Health Core Capability

Another example of a Core Capability that can be revised to become more in line with the *One Health* perspective is Environmental Health. According to the National Environmental Health Association, Environmental Health and Protection refers to protection against environmental factors that may adversely impact human health or the ecological balances essential to long-term human health and environmental quality, whether in the natural or man-made environment (National Environmental Health Association 1996). However, the National Preparedness Goal limits this mission to a Core Capability titled Environmental Response/Health and Safety. The Capability is defined as "Ensure the availability of guidance and resources to address all hazards including hazardous materials, acts of terrorism, and natural disasters in support of the responder operations and the affected communities." The targets for the Core Capability include:

- Conduct health and safety hazard assessments and disseminate guidance and resources, to include deploying hazardous materials teams, to support environmental health and safety actions for response personnel and the affected population
- Assess, monitor, perform cleanup actions, and provide resources to meet resource requirements and to transition from sustained response to short-term recovery." (US Department of Homeland Security 2011a: p. 13).

Using the aforementioned definition and these targets, the interaction between health of the environment and public health is limited to actions during the response and cleanup of a biological hazard and the safety of first responders. However, environmental health can also mean tracking public health emergencies and disease outbreaks at their source, preventing chronic disease caused by exposure to harmful agents, and informing mitigation efforts to create healthier living environments (National Environmental Health Association 2008: p. 2). Environmental Health can encompass tasks and activities across multiple missions, assisting with public health emergency prevention, protection, mitigation, recovery, and response. In practice, this would mean an approach to environmental health that holds to the *Whole Community* and *One Health* philosophies, involving field ecologists and veterinarians to assess the risks of environmental factors that promote disease emergence and identify early warning signs of disease transmission *before* a deadly pandemic or public health event emerges (Kahn 2011).

7.2 Recommendation 2: Revise Core Capabilities to Promote a Systems-Level Approach Connecting all of the Emergency Management Missions (Prevent, Protect, Respond, Recover Mitigate)

In its analysis of the draft FEMA National Preparedness Goal, George Washington University's Homeland Security Preparedness Institute (HSPI), concluded that "*...the overall categorization of the core capabilities into five Focus Areas reinforces the notion that each of the homeland security enterprise's missions is distinct from the other. While delineating responsibility is fair enough, a high-level policy document such as the Goal should advance a systems-based approach to homeland security preparedness efforts*" (Homeland Security Preparedness Institute Preparedness, Response, and Resilience Task Force 2011: p. 2). For a community to prepare for the threats and hazards it faces, building capabilities that are connected and complementary within and across emergency management missions is imperative.

A community's preparedness for any threat or hazard is not limited to building any single prevention, protection, mitigation, response, or recovery capability. As discussed previously, proficiency in multiple capabilities is needed to address any hazard and reduce vulnerability. However, the National Preparedness Goal does not encourage a systems-level approach to building capability, as evidenced by its generalization of capabilities and lack of specificity regarding tasks related to public health and food and agriculture defense. For example, The Goal includes a single Screening, Search, and Detection capability that encompasses, among other things,

screening cargo, people, and conveyances as well as detecting Weapons of Mass Destruction and emerging threats through laboratory diagnostics, bio-surveillance systems, and chemical, biological, radiological, nuclear and high-yield explosives (CBRNE) detection systems (US Department of Homeland Security 2011a: p. 13).

Ideally, the Screening Search and Detection Core Capability would be re-scoped with the *One Health* perspective in mind, helping multiple disciplines within a jurisdiction coordinate emergency management tasks and achieve outcomes spanning multiple mission areas. Currently, the National Preparedness Goal combines active and passive surveillance as a single target for its Screening, Search, and Detection capability (US Department of Homeland Security 2011a: p. 9), despite the fact that active surveillance requires a broader array of public health professionals to collect, compile, and analyze the data needed to determine the source of a biological agent (Hepler 2003: p. 4). For a community looking to address public health emergencies, a systems-level approach to building capability, consistent with the *One Health* perspective, could describe passive bio-surveillance activities in the Protect mission space, i.e., voluntary disease reporting from health care providers, and the escalation to active bio-surveillance in the Response mission, i.e., the active search for and identification of disease by trained epidemiologists and health care workers (Hepler 2003: p. 4).

In 2011, FEMA released a crosswalk of previous capability guidance to the new Core Capabilities. According to this crosswalk, efforts to respond to a major food or agriculture incident are part of a Supply Chain Integrity and Security Core Capability residing only in the Protection Mission Space (Federal Emergency Management Agency 2011b: p. 20). However, there is precedent for emergency management personnel to adopt an incident command system (ICS) structure and activate emergency operations centers (EOC) to coordinate *response* activities during food or agriculture-related incidents. Essentially, threats to food and agriculture necessitate coordination of actions across all emergency management missions (International Association of Emergency Managers 2012: p. 2). Logically, the capabilities put into play during food or agriculture emergency scenarios would not be limited to the Protection mission space, although efforts to secure and protect critical network production nodes would need to be coordinated with an incident response. While PPD-8 directs that the suite of Protection Core Capabilities should include the defense of agriculture and food (The White House 2011), PPD-8 also refers to response capabilities as capabilities necessary to save lives, protect property and the environment, and meet basic human needs *after an incident has occurred* (The White House 2011). If a confirmed event, such as an intentional or unintentional adulteration of the food supply or outbreak of a major animal disease, is threatening lives or affecting the economy then specific response actions will be required. Addressing the key connections among

all mission areas in a systems-based approach, consistent with *One Health* and *Whole Community* philosophies, meets the intent of PPD-8.

7.3 Recommendation 3: Federal Departments and Agencies with Homeland Security and Emergency Management Responsibilities Should Coordinate their Capability Guidance, Creating a Single Set of Preparedness Capabilities Spanning Prevention, Protection, Response, Recovery, and Mitigation Activities

The *Whole Community* philosophy encourages offices of emergency management, first responders, and public health-focused entities at the local level to forge partnerships and share resources to meet collective preparedness objectives. Thus, the capability descriptions coming from the Federal Government should lend themselves to such collaboration at the local level. A consistent and universal description of what constitutes a capability – to include common tasks, competencies, accreditations, and equipment – should be developed to address public health preparedness and food and agriculture defense. Infusing FEMA's core capabilities (including capabilities across the prevent, protect, mitigate, respond and recover missions) with the CDC Public Health capabilities (across domains such as Biosurveillance; Community Resilience; Countermeasures and Mitigation; Incident Management; and Information Sharing) (Centers for Disease Control and Prevention 2011: p. 3) would offer a single preparedness capability playbook for emergency management personnel at the State and local level. Federal preparedness grants could be easily aligned with this single set of guidance. For example, FEMA provides state and local governments with Non-Disaster Grants to assist states, urban areas, tribal and territorial governments, non-profit agencies, and the private sector in building core capabilities in support of the National Preparedness Goal (NPG) (US Department of Homeland Security 2012b). Similarly, the US Department of Health and Human Services administers funds for health care and public health preparedness activities to state and local public health systems through the hospital preparedness program (HPP) and the Public Health Emergency Preparedness (PHEP) cooperative agreements (US Department of Health and Human Services 2012a). The PHEP and HPP grants have been integrated for the benefit of State and local recipients, enabling them to conduct joint planning and exercising to achieve complementary preparedness capabilities. However, they remain individual programs and budgets with their own specific statutory requirements (US Department of Health and Human Services 2012a).

Thus, the Federal Government can set the Whole Community example for all levels of government by offering capability descriptions that are consistent and require multi-disciplinary coordination to achieve. Integrating Core Capabilities with the PHEP and HPP capabilities could be a significant step towards addressing many of the challenges faced by FEMA in grant management and measuring national preparedness. A coordinated effort across the Federal Government to develop a single set of capabilities would not only ease administrative and planning burdens at the State and local level, but encourage collaboration across disciplines as emergency management functions endeavored to meet their shared preparedness goals.

A single set of Federal preparedness capabilities addressing public health and food and agriculture safety and security would offer State and local communities a common problem statement and encourage *Whole Community* and *One Health* approaches to solving those problems. Yet the grant programs supporting the capability building could remain separately administered programs and budgets. For example, capabilities for livestock or animal disease emergencies, approved by FEMA, the CDC, and the US Department of Agriculture, would allow a local jurisdiction to seek funds or technical assistance from any of the aforementioned agencies to meet capability measures and engage the whole community to coordinate planning, purchases of equipment, training of personnel, and exercises.

8 Conclusion

The *Whole Community* approach to emergency management is critical given the increasing prevalence and impact of disasters and the need for broad stakeholder involvement in preparedness and operational activities. The *One Health* initiative offers a compatible perspective in the public health domain, engendering collaboration among physicians and clinical health care providers; veterinarians and animal disease specialists; epidemiologists; laboratory technicians; environmental specialists; and others in related disciplines. Taken together, these approaches provide the path forward for building prevention, protection, mitigation, response, and recovery capabilities for public health and food and agriculture safety and security for all communities and at all levels of government. To achieve this vision, the continued development of National preparedness policy is essential. The maturing suite of PPD-8 products must provide some specificity in the Core Capabilities to forge a common perspective among all communities regarding the capability elements (i.e., tasks, measures, equipment, and specialized personnel) that are needed for public health preparedness and food and agriculture defense.

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