Conceptualizing and Defining Public Health Emergency Preparedness

Since September 11, 2001, and the anthrax attacks that followed, a substantial federal investment—totaling well in excess of $5 billion—has been made to increase our nation's ability to prepare for, and respond to, public health emergencies. Yet despite anecdotal reports suggesting that progress has been made, it is unclear whether these investments have left the nation better prepared to respond to a bioterrorist attack, pandemic influenza, or any other large-scale public health emergency.

This situation is not because of a shortage of measures of preparedness. Over the past 5 years, federal agencies, state health departments, and various nongovernmental organizations have proposed and implemented myriad measures of public health emergency preparedness. But these efforts have not resulted in a clear picture of the nation's preparedness owing to ambiguous and uncertain preparedness goals, a lack of agreement about what the measures should aim at and how they should be interpreted, and a weak system of accountability for producing results.[1] Measures often vary considerably across agencies and shift dramatically from year to year, leaving state and local health officials, businesses, nonprofits, and citizens confused and perplexed by a maze of overlapping and sometimes contradictory requirements, checklists, and ideas about what constitutes preparedness.[2–4]

What our nation needs in order to bring coherence to the debate is a clear definition of public health emergency preparedness and an articulation of the key elements that characterize a well-prepared community. In this editorial, we propose a candidate definition of public health emergency preparedness and describe its key elements. Both the definition and the elements were developed by a diverse panel of experts convened by RAND in February 2007.

We propose the following definition: public health emergency preparedness (PHEP) is the capability of the public health and health care systems, communities, and individuals, to prevent, protect against, quickly respond to, and recover from health emergencies, particularly those whose scale, timing, or unpredictability threatens to overwhelm routine capabilities. Preparedness involves a coordinated and continuous process of planning and implementation that relies on measuring performance and taking corrective action.

In developing the definition, we considered what constitutes a public health emergency, what public health emergency preparedness requires, and who is involved in it.

WHAT CONSTITUTES A PUBLIC HEALTH EMERGENCY?

Public health emergencies are defined as much by their health consequences as by their causes and precipitating events.[5–7] A situation becomes emergent when its health consequences have the potential to overwhelm routine community capabilities to address them. Thus, the proposed definition focuses on situations "whose scale, timing, or unpredictability threatens to overwhelm routine capabilities." The definition is also aligned with the all-hazards approach to preparedness instead of focusing on a "disaster du jour" and thus allows for the optimal development of capabilities across scenarios and better prepares communities for the broad spectrum of potential risks.

WHAT DOES PUBLIC HEALTH EMERGENCY PREPAREDNESS REQUIRE?

PHEP should include a full range of prevention, mitigation, and recovery activities, not just those designed to enable responses to events. It also involves *operational* capabilities—the ability to quickly execute preparedness tasks. Although possessing capabilities requires capacity (infrastructure, personnel, plans, and so on), capacity alone does not ensure readiness. PHEP is not a steady state; it requires continuous improvement, including frequent testing of plans through drills and exercises and the formulation and execution of corrective action plans. PHEP also includes the practice of improving the health and resiliency of communities.

WHO IS INVOLVED IN PUBLIC HEALTH EMERGENCY PREPAREDNESS?

Responsibility for the preparedness of the nation's communities lies not only with governmental agencies but also with active, engaged, and mobilized community residents, businesses, and nongovernmental organizations. This aspect of the definition is informed by the fact that a large share of first aid, search-and-rescue, and other initial response activities are provided by on-site civilians prior to the arrival of response personnel.[8]

Involving a broad range of actors in PHEP requires coordination. Accordingly, the definition

characterizes PHEP as a "coordinated" effort in which partners' efforts are undertaken with awareness of the how they fit into the whole system.

CROSSCUTTING THEMES

As much as possible, PHEP should be integrated with and expand upon day-to-day public health practices and build upon existing systems, not developed de novo. PHEP should also involve scalable responses, with core building-block capabilities and functions that can be used during small, routine events and scaled up for larger events. Justice, accountability, transparency, and public engagement are essential in all aspects of PHEP.

ELEMENTS OF PUBLIC HEALTH EMERGENCY PREPAREDNESS

The short list of action-oriented elements (see the box on this page) shows what jurisdictions need to do in order to achieve this vision of PHEP, with each element pointing to specific and measurable aspects of PHEP. To be prepared to respond to public health emergencies, communities must attain the capability to perform each and every one of the elements specified.

Elements are grouped into 3 categories: preplanned and coordinated rapid-response capability, expert and fully staffed workforce, and accountability and quality improvement.

Preplanned and Coordinated Rapid-Response Capability

The first 2 elements involve assessing the characteristics of the community to identify and address gaps in planning. The element of community health risk assessment flows from the definition's inclusion of hazards and vulnerabilities as components of public health emergencies and emphasizes that whether an event becomes a public health emergency depends in large part on the preexisting characteristics and resiliency of the community and the affected population. The second element involves assessing potential legal and liability barriers that might hinder response (e.g., barriers to intergovernmental cooperation).

The next 3 elements under this heading involve identifying and notifying responsible parties of their functions in a rapid-response operation—including not only professional first responders (e.g., operations and logistics according to incident command system [ICS] roles) but also the broader public—in the most culturally competent and appropriate manner available.

The remaining elements involve the ability to rapidly implement public health functions, including capabilities to detect, investigate, and identify health hazards; deploy mitigation and countermeasure strategies; and

Key Elements of Preparedness

A prepared community is one that develops, maintains, and uses a realistic preparedness plan, integrated with routine practices, having the following components:

Preplanned and coordinated rapid-response capability

1. *Health risk assessment*. Identify the hazards and vulnerabilities (e.g., community health assessment, populations at risk, high-hazard industries, physical structures of importance) that will form the basis of planning.
2. *Legal climate*. Identify and address issues concerning legal authority and liability barriers to effectively monitor, prevent, or respond to a public health emergency.
3. *Roles and responsibilities*. Clearly define, assign, and test responsibilities in all sectors, at all levels of government, and with all individuals and ensure each group's integration.
4. *Incident Command System*. Develop, test, and improve decisionmaking and response capability using an integrated Incident Command System (ICS) at all response levels.
5. *Public engagement*. Educate, engage, and mobilize the public to be full and active participants in public health emergency preparedness.
6. *Epidemiology functions*. Maintain and improve the systems to monitor, detect, and investigate potential hazards, particularly those that are environmental, radiological, toxic, or infectious.
7. *Laboratory functions*. Maintain and improve the systems to test for potential hazards, particularly those that are environmental, radiological, toxic, or infectious.
8. *Countermeasures and mitigation strategies*. Develop, test, and improve community mitigation strategies (e.g., isolation and quarantine, social distancing) and countermeasure distribution strategies when appropriate.
9. *Mass health care*. Develop, test, and improve the capability to provide mass health care services.
10. *Public information and communication*. Develop, practice, and improve the capability to rapidly provide accurate and credible information to the public in culturally appropriate ways.
11. *Robust supply chain*. Identify critical resources for public health emergency response and practice and improve the ability to deliver these resources throughout the supply chain.

Expert and fully staffed workforce

1. *Operations-ready workers and volunteers*. Develop and maintain a public health and health care workforce that has the skills and capabilities to perform optimally in a public health emergency.
2. *Leadership*. Train, recruit, and develop public health leaders (e.g., to mobilize resources, engage the community, develop interagency relationships, communicate with the public).

Accountability and quality improvement

1. *Testing operational capabilities*. Practice, review, report on, and improve public health emergency preparedness by regularly using real public health events, supplemented with drills and exercises when appropriate.
2. *Performance management*. Implement a performance management and accountability system.
3. *Financial tracking*. Develop, test, and improve charge capture,[a] accounting, and other financial systems to track resources and ensure adequate and timely reimbursement.

[a]Charge capture systems collect and analyze charges for medical care.

provide accurate and credible messages to the public during a crisis. The final element in this category involves the creation and maintenance of disaster-hardened supply chains.

Expert and Fully Staffed Workforce

The next element, having operations-ready workers and volunteers, emphasizes the need to develop people who can perform optimally under stressful circumstances, which represents a new role for much of the public health workforce. The next element, leadership, requires jurisdictions to take steps not only to recruit strong public health leaders but also to develop leadership potential within their ranks. This element is meant to highlight the role of leadership in developing and sustaining PHEP capabilities rather than just managing the response to emergent events.

Accountability and Quality Improvement

The final set of elements relates to accountability and quality improvement. This includes testing, practicing, and improving PHEP based on exercises, drills, and real events; establishing performance measurement and management systems that inform the public about system performance and provide incentives for improvement; and having systems to ensure fiscal accountability. The quality improvement ethos is also evident in most of the other elements, which enjoin communities to "develop, test, and improve" various capabilities.

CONCLUSION

The absence of a clear definition of PHEP makes it difficult to determine whether the nation is better prepared to respond to a bioterrorist attack or major disease outbreak now than it was 5 years ago. Moreover, without an agreed-upon definition, policymakers and other stakeholders will continue to struggle to determine what it will take to get ready for such attacks and outbreaks, as well as how to prioritize future investments.

The definition presented here provides a concise, broadly applicable vision of what a prepared community looks like, along with a short list of actionable and measurable steps for attaining that vision. At the most general level, the definition and action-oriented elements can help provide a set of shared terms for discussion among various governmental and nongovernmental actors about what exactly is involved in enhanced community preparedness. More specifically, the definition can provide a sound footing upon which to develop the kind of clear and coherent standards and metrics required by the recently signed Pandemic and All-Hazards Preparedness Act of 2006,[9] which in turn, are required for public health systems to be accountable to the public. Simply put, the definition can help ensure that in the future we can answer the question on everyone's mind: "Are we prepared and, if so, for what?" ■

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doi:10.2105/AJPH.2007.114496

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C. Nelson, N. Lurie, and J. Wasserman originated the article. C. Nelson supervised the research and led the writing process with S. Zakowski's help. All authors designed and facilitated the panel, helped to conceptualize ideas, and wrote and reviewed the article.

Acknowledgments

Expert panelists involved in the development of this public health emergency preparedness definition include: James S. Gilmore III, Chair; Georges C. Benjamin, MD, FACP; Mark Ghilarducci; Lewis R. Goldfrank, MD; Lawrence Gostin, JD; Shelley A. Hearne, DrPH; Nathaniel Hupert, MD, MPH; James J. James, MD, DrPH, MHA; Ana-Marie Jones; Kenneth W. Kizer, MD, MPH; Howard Koh, MD, MPH; John Lumpkin, MD, MPH; and Courtney Magnus.

We appreciate the support of Lara Lamprecht, MPH, William Raub, PhD, Richard Besser, MD, Craig Thomas, PhD, Joseph Posid, PhD, and RADM Craig Vanderwagen, MD, in addition to other officials from the Department of Health and Human Services, the Centers for Disease Control and Prevention, and the Department of Homeland Security with whom we spoke in preparing for the panel. We also thank Kristin Leuschner for her expert editorial assistance.

Human Participant Protection

This project was approved by the RAND Corporation Human Subjects Protection Committee.

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