Ready, Willing, and Able: A Framework for Improving the Public Health Emergency Preparedness System

O. Lee McCabe, PhD; Daniel J. Barnett, MD, MPH; Henry G. Taylor, MD, MPH; Jonathan M. Links, PhD

ABSTRACT

Every society is exposed periodically to catastrophes and public health emergencies that are broad in scale. Too often, these experiences reveal major deficits in the quality of emergency response. A critical barrier to achieving preparedness for high-quality, system-based emergency response is the absence of a universal framework and common language to guide the pursuit of that goal. We describe a simple but comprehensive framework to encourage a focused conversation to improve preparedness for the benefit of individuals, families, organizations, communities, and society as a whole. We propose that constructs associated with the well-known expression "ready, willing, and able" represent necessary and sufficient elements for a standardized approach to ensure high-quality emergency response across the disparate entities that make up the public health emergency preparedness system. The "ready, willing, and able" constructs are described and specific applications are offered to illustrate the broad applicability and heuristic value of the model. Finally, prospective steps are outlined for initiating and advancing a dialogue that may directly lead to or inform already existing efforts to develop quality standards, measures, guidance, and (potentially) a national accreditation program.

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Key Words: disasters, public health, emergency preparedness

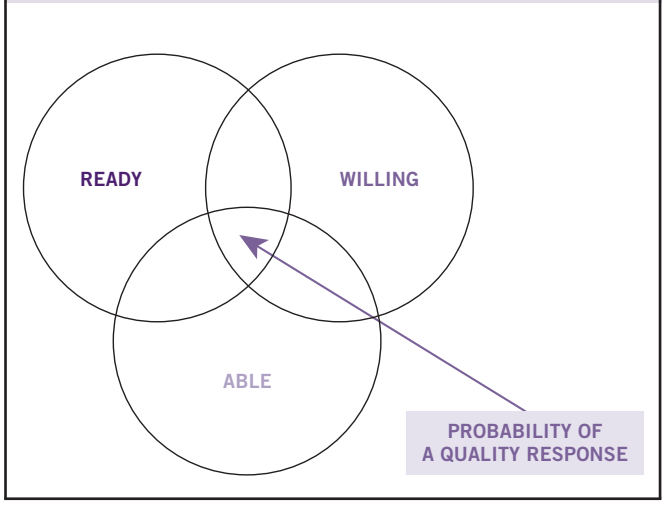
The mission of the public health emergency preparedness system (PHEPS)—to protect the health and safety of US citizens from intentional, unintentional, and naturally occurring threats occasioning emergencies or disasters—is a challenge of enormous magnitude. The limitations of the public health infrastructure, in general, have been well documented,[1-4] and the flaws of the emergency management system, including (but going well beyond) the PHEPS, were revealed in the wake of terrorist attacks and major storms during the past decade. These recognized gaps in the organization, utility, and direction of the PHEPS have fueled federal legislation in the form of the Pandemic and All-Hazards Preparedness Act of 2006 (PL 109-417)[5,6] which, in turn, has driven national research priorities toward improving response effectiveness and efficiency.[7]

Health officials and other leaders within the PHEPS have a daunting array of barriers to overcome to ensure high-quality emergency response when it is needed. Basic among these obstacles is achieving consensus on what constitutes and how to measure "preparedness"[8] and defining or offering parameters for effective and efficient response.[7] We endorse the approach of Derose and colleagues,[9] who, using the term *quality* in the broader context of quality measurement in public health, have adopted the Institute of Medicine's (IOM's) definition: "the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge." If "emergency response" is substituted for "health services," then the definition is applicable to the present work. Also endorsed is the approach of Nelson and colleagues,[10] whose definition of PHEPS underscores the importance of multistakeholder capabilities to prevent, protect against, quickly respond to, and recover from health emergencies, and who identify desired health outcomes as "reducing morbidity and mortality arising from intentional terrorist attacks, large-scale transmission of naturally occurring agents, or natural disasters." The benefit of casting emergency preparedness and response aims within a quality framework is that it permits us to apply standard quality assessment and improvement approaches to the field.[11-15]

The challenges of ensuring a high-quality emergency response by the PHEPS include not only the lack of consensus on definitions and measures of adequate preparedness but also the spectrum of threats for which to prepare (eg, meteorological and geological events, weapons of mass destruction, accidental releases); the vast number of places and people that can be affected, including at-risk populations (ie, people with psychological, physical, socioeconomic, geographic, and/or demographic vulnerabilities); the number of stage/task categories to address (ie, prevention, mitigation, preparedness, response, and recovery); ensuring ethically

FIGURE

Probability of high-quality response as a function of overlapping constructs of the Johns Hopkins "ready, willing, and able" framework for preparedness improvement.



sound decision-making processes for the allocation of potentially scarce public health response resources[16]; compliance with prevailing laws (including any changes with emergency declarations); the volume and variety of organizations to coordinate (eg, public and private, federal, state, local); the range of assets required to meet diverse needs; and the diversity of staff roles, positions, and capabilities to manage within and across those organizations (eg, administrators, frontline responders, support personnel). An added dimension of complexity arises when global pandemics and disasters demand interoperable cross-cultural and transnational communication and response and compliance with global legal and regulatory mechanisms.

National plans for emergency preparedness and response presume that the personnel of local health departments will play a vital role in public health emergencies, and considerable progress has been made in identifying the core competencies for training the disaster workforce.[17-19] Data from at least 2 surveys suggest, however, that many health department workers are unlikely to report to duty under emergency circumstances.[20-22] Concerns among health officials about the adequacy of response have become so great that some states (eg, Maryland, South Carolina) have enacted laws that authorize license revocations, fines, and even imprisonment for health care professionals who disobey orders to work during public health emergencies.[23]

If the PHEPS is to prove capable of responding appropriately to the inevitable threats it will face, and if it is to rely on nonpunitive measures to achieve that capability, then it will need to bridge structural and functional schisms among the individuals, organizations, and communities of which it is composed. A "language barrier" exists that prevents the discussion and development of a unified approach to preparedness that could dissolve boundaries and be applicable to the diverse constituencies that make up the PHEPS. We believe that a common framework is needed to identify, organize the pursuit of, take action on, and evaluate the determinants of system attributes for increasing the likelihood of high-quality response. It would seem that the ideal framework for guiding such efforts should meet (minimally) 4 prerequisites; it should be *comprehensible in concept*, conveying in straightforward terms the parameters of preparedness, *comprehensive in application*, encouraging utilization across all component entities of the PHEPS, *productive as a heuristic*, promoting fruitful dialogue and scientific inquiry that tests and validates the model, and ultimately *generative of quality standards*, permitting cross-stakeholder assessment and improvement of criteria for competent emergency response. We offer for consideration a candidate model that we believe maps well with those specifications.

READY, WILLING, AND ABLE: A FRAMEWORK FOR PREPAREDNESS IMPROVEMENT

We propose that the commonplace expression "ready, willing, and able" (RWA) represents a simple, easily understandable framework for planning, implementing, and evaluating efforts to ensure high-quality individual and organizational responses to public health emergencies. This catchphrase has been used in the nursing literature for leadership succession planning[24] and for workplace redesign,[25] but, save for the title of proposed but never enacted federal legislation,[26] has not been applied systematically in the context of disaster preparedness. The above examples suggest the bridging relevance of RWA to individual, organizational, and governmental engagement; however, preparation of the public health workforce for emergency response to date has nearly exclusively focused, conceptually and operationally, on issues related to ability to respond. Of importance, explicit separation of *ability* to respond and *willingness* to respond is a relatively recent and useful phenomenon.[27,28] Thus far, the concept of *readiness* to respond has been used imprecisely, often to convey a general state of preparedness. We propose that readiness to respond actually holds vital, multidimensional, yet mostly underarticulated, meaning or meanings that, when combined with the factors associated with willingness and ability, completes a robust model for understanding and increasing the likelihood of high-quality emergency preparedness and response at every level of the PHEPS.

As shown in the Figure, we conceptualize our RWA framework as 3 equal-sized circles, each representing 1 of the 3 construct domains. The fact that the 3 circles are of equal size is meant to indicate their equivalent importance. A high-quality response occurs when the overlap among the 3 constructs is maximized, because potential for high-quality preparedness can be actualized only within this intersecting area.

RWA Constructs: Their Meanings and Relevance

We offer here working definitions of the RWA constructs. We begin with ability, the most understood and used of the terms, and end with readiness.

Ability to Respond

Ability refers to the actual operational power (ie, skill, know-how) of an individual, organization, or community to perform a task if the requisite external circumstances require and allow it. The quality of performance may be inferred from actions observed during and following incidents. Numerous other attributes of performance (and its potential) cluster around this construct, including knowledge, competencies, and proficiencies. It encompasses both innate aptitudes and traits, as well as learned and modifiable capabilities such as that which may be gained by an emergency workforce through education, training, and other preparatory experiences. This domain is primarily a function of the cognitive and behavioral dimensions of preparedness.

Willingness to Respond

Willingness refers to the state of being inclined or favorably predisposed in mind, individually or collectively, toward specific responses. Numerous personal and contextual factors may contribute to the development of a willing responder. Individual staff members of a given organization and the staffs across multiple organizations in a community will hold a set of beliefs, understandings, and role perceptions that will factor strongly into response probability and performance. Presumably, training experiences that establish confidence in an individual's abilities to provide a competent response are correlated with becoming willing (or motivated) to provide those responses. In a PHEPS response context, the willingness or motivation of health providers to report to work during emergencies has been found to be scenario specific[27,29] and influenced by an array of risk perception modifiers apart from the actual hazard.[20-22,30] Willingness and likelihood of emergency response are also a function of sociological factors such as trusted relationships, political imperatives, and partnership reciprocity.[31-33] While involving mediating cognitive/attitudinal elements, this domain is primarily a function of the emotional/affective dimension of preparedness.[34,35]

Readiness to Respond

Readiness is a composite construct in our framework, indicating that an individual or collective of individuals, agencies, and so forth is available for prompt action, service, or duty, and an individual or collective possesses the human and material resources necessary for timely responses. The first part of our definition conveys the explicit meaning of potential for quick, functional response; the second part offers an implicit notion of structural supports that actually enable timely, purposeful responses. Thus, at the agency and system levels, readiness represents characteristics of the "staff, structure, and stuff" (beyond simple ability and willingness) that ultimately enable a high-quality response (eg, adequate and appropriate plans, policies, personnel, equipment, supplies). At the individual, family, and small-group levels, examples of the "structure" and "stuff" of readiness include personal/family preparedness plans and provisions (eg, water, food, preparedness kits). At the community level, leadership, planning, defined roles, resources, and coordinated plans for resource deployment translate to a culture of preparedness. At the systems level, readiness is exemplified by interoperative communications capability facilitated by 2-way radios and shared data systems (eg, a Web-based emergency operations center management and information system).

Interactive, Multilevel Influence of the RWA Constructs

Equally necessary in ensuring effective response, the construct domains and their constituent elements overlap, interact, and potentiate effects throughout the PHEPS. For example, training and experience not only improve ability but, by increasing familiarity with anticipated or actual scenarios, also increase the likelihood of immediate performance by individuals, communities, and organizations.[11,36-38] The 3 preparation domains of the RWA framework are seen as addressing both capacity and capability dimensions of the PHEPS. For example, readiness and willingness tie into system capacity (eg, surge capacity), whereas ability relates directly to capability in the course of response. In this regard, capability is predicated on sufficient capacity to perform these response activities in the first place. Our basic assumption is that synthesis of the RWA constructs, applied across multiple points of leverage in the PHEPS, will determine the probability of coordinated, comprehensive, and competent emergency response.

COMPREHENSIVE APPLICABILITY AND UTILITY

The practical utility of any conceptual model is dependent, in part, on the scope of its potential usefulness. Accordingly, to illustrate the broad relevance of the RWA framework, we apply it across the PHEPS constituents offered by the IOM[2]: governmental public health infrastructure, homeland security and public safety, academia, the health care delivery system, businesses, and communities.

General PHEPS Application

Table 1 provides a summary of the definitions of the RWA constructs along with preparedness criteria as they might be implemented across components of the PHEPS. The far left column lists the (IOM) entities of the PHEPS, with the cells at column/row intersections providing sample RWA preparedness criteria that may apply to the entities. This matrix approach is similar to the use of the Haddon matrix in emergency planning, a process we have described elsewhere.[40,41] For example, families, as vital constituents of communities, would demonstrate that they are implementing readiness by possessing the kinds of resources and assets mentioned earlier (eg, emergency preparedness plans with predetermined evacuation routes and meeting places identified, a list of emergency telephone numbers, "grab and go" kits containing water, nonperishable food supplies, and a radio with extra batteries). Note that family members may have volunteered for community emergency response teams (thereby implying willingness to participate in preparedness activities) or participated successfully in CPR training (thereby gaining valuable skills and ability), but they would not necessarily be fully prepared without meeting the separate criteria associated with readiness.

TABLE 1

Definitions of RWA Constructs With Application to Component Entities of the PHEPS

PHEPS components	Ready The status of being available for prompt functional response, action, or service, by virtue of possessing the structural supports and resources to enable such timely responses; poised and equipped	Willing The status of being inclined or favorably disposed in mind toward specific responses; motivated and confident	Able The status of having the operational knowledge and skills to perform a task successfully, if the necessary external circumstances require and allow it; trained and competent
	Sample Markers for RWA Constructs Applied to PHEPS Components		
Governmental Public Health Infrastructure			
Local, state, regional, and national public health agencies, including local and state health departments and CDC	Preestablished vertical and horizontal alliances among system's emergency agencies; interagency mutual aid agreements with interoperable communication tested and upgraded regularly; telephone trees and transportation schemes to bring staff to work	Agency staff willing to respond to emergency events (affidavits and surveys indicating intent, validated by drills or actual response); voluntary attendance at trainings and exercises; personal participation in community preparedness programs, Red Cross, etc	Agency staff trained in NIMS, CBRNE, and PFA
Media			
Print, radio, television, and Internet (Twitter, smart phones and Net 2.0+, SMS text messaging, and World Wide Web, etc)	Media outlets with appropriate capacity and capability for timely risk communication to the public; content based on information from public health agencies; advisors available from public health sector	Media leadership and frontline workers demonstrating that they have adopted or are willing to adopt values inherent in a risk communication approach that balances facts and uncertainty	Media representatives having the skills to deliver messages consonant with CDC risk communication guidance
Homeland Security			
DHS, FEMA, Army, Navy, Air Force, other uniformed services **and Public Safety** Municipal and state police; county sheriffs, private security, National Guard; municipal, county, state, and Federal Emergency Management Agency	Preestablished vertical and horizontal alliances among system's emergency agencies; having interagency mutual aid agreements with interoperable communication; having telephone trees and transportation schemes to bring staff to work	Survey data indicating high percentage of agency staff willing to respond to emergency events (ideally validated by actual response); voluntary attendance at trainings and exercises	Agency staff trained in NIMS, CBRNE, PFA
Academia			
Schools of public health (including Centers for Public Health Preparedness sites), medicine, nursing, and allied health sciences; higher education (eg, public and private systems; colleges and universities, community colleges, and professional schools); pre-K to vocational and technical schools	Available infrastructure to develop and support just-in-case and just-in-time training; faculty who have arranged to be subject matter experts	Faculty motivated to develop and teach courses; faculty who have approached public health and public safety agencies, offering their services	Faculty with abilities in the competency domains being taught; faculty able to provide subject matter expertise
Health Care Delivery System			
Local health departments, teaching hospitals, community hospitals, outpatient clinics, independent practitioners	Hospitals and medical facilities meet (or have appropriate corrective actions to meet) benchmark 5 set forth by SEARO/WHO to ensure facility safety and resilience by mitigating impact of disasters on functionality (eg, impact from structural damage, loss of equipment and supplies, loss of staff, surge volume[39])	Hospital leadership makes public statements of support; ensures functional capacity of facility in disaster contexts	Hospitals provide uninterrupted, urgently needed health services on a regular basis; staff members attend training; leadership attends seminars (and knows the jargon)
Businesses			
Employers, businesses and merchants, not-for-profit entities, individual partnerships, corporations	Formal emergency and continuity of operation plans; key documents (eg, emergency policies and procedures) maintained in fireproof/waterproof containers; organization enhances readiness via company-wide exercises/drills; disaster-specific policies/procedures	Business willing to distribute assets (eg, water, food); personnel volunteering to aid in emergency response	All personnel have participated in basic and applied PSA training programs; know where to turn for specialized advice, counsel, and support
Communities			
Individual citizens, families, formal and informal social groups, community-based organizations, FBOs	Tested emergency preparedness plans with evacuation routes and predetermined meeting places; families with emergency telephone numbers, "grab and go" kits with water, nonperishable food supplies, radio with extra batteries, etc	Enrollment in CERT teams; sign up for classes (whether attend or not); discussion with peers; write letters to editor, blogs, etc	Received preparedness training; certified in appropriate first aid and emergency procedures such as AED, 9-1-1, "stop-drop-roll"; know where to turn for specialized advice, counsel, and support

AED, automated external defibrillation; CBRNE, chemical, biological, radiological, nuclear explosive; CDC, Centers for Disease Control and Prevention; CERT, community emergency response teams; DHS, Department of Homeland Security; FBOs, faith-based organizations; FEMA, Federal Emergency Management Agency; NIMS, National Incident Management System; PFA, psychological first aid; PHEPS, public health emergency preparedness system; RWA, ready, willing, and able; SEARO/WHO, South-East Asia Regional Office/World Health Organization.

We believe that the RWA model is potentially useful beyond the PHEPS, including potential application to the overall National Infrastructure Protection Plan (NIPP) of the Department of Homeland Security under which critical infrastructure and key resources are identified in 18 sectors, including the health care and public health sectors.[42] In this regard, the RWA framework may resonate more with public health practitioners than the NIPP that is familiar to public safety professionals.

Potential Use in Research

Ideally, a theoretical model will stimulate research, generate hypotheses, and advance its premises through stages of basic, applied, translational, and dissemination research, a process that is often forged in the crucible of productive debate between the model's proponents and opponents. We can foresee such a developmental pathway leading one day to an evidence base that could inform a broadly applicable model of emergency preparedness. We are in an early-to-intermediate stage of applied investigation and RWA model refinement, a description of which provides an illustration of the heuristic value of the model.

Specific Community-Based Application in Behavioral Health

One of our ongoing projects (supported by the Centers for Disease Control and Prevention) focuses on the development of a strategy to extend the capacity and capability of the PHEPS to accommodate event-driven behavioral health surge. We are particularly concerned about this type of service demand for multiple reasons:

1. Even for emergencies that may be defined as strictly "physical" or "biological," such as a dirty bomb or an epidemic, the responses of individuals and collectives are highly influenced by emotional, cognitive, and social-psychological processes.

2. There is overwhelming evidence[43-46] that the majority of injuries or trauma in most disaster settings are psychological, as opposed to physical, with ratios ranging from 4:1 to as much as 50:1—ratios consistently reflected in Homeland Security's National Planning Scenarios.

3. Among the implications of this disproportion in reactions is that the capacity of medical facilities to serve genuine physical health emergencies (versus those presented by people who are psychologically affected but physically uninjured) may be compromised, particularly under conditions of diminished facility staffing.

4. Individuals with preexisting mental illnesses represent an important, highly vulnerable population.

5. PHEPS personnel are themselves at risk in emergencies.

Our institutional approach to addressing prospective surge problems has been to train faith-based organizations in psychological first aid (PFA) and in community disaster mental health planning. Training in PFA competencies is intended to prepare participants to be paraprofessional responders in and extenders of the state of Maryland's Professional Volunteer Corps and to motivate clergy and lay community leaders to collaborate in formal, sustained disaster planning sessions with representatives from their local health departments. Our academic health center has served as a catalyst to promote these faith-based organizations/local health departments training and planning partnerships. Details of the partnership model and the PFA curriculum-development process have been published elsewhere.[47-49]

To illustrate the applicability of the RWA framework to surge problems and to our ongoing project, we summarize in Table 2 markers of quality preparedness as they actually were and are being developed. The columns are the domains of readiness, willingness, and ability (to plan for and respond to public health emergencies), and the rows are the 3 components of the PHEPS participating in the study.

One finding from the research using this logic model suggests that individuals and organizations are reluctant—in other words, not willing—to either volunteer as prospective emergency responders or engage in community preparedness planning until their perceived self-efficacy as responders and planners (a presumptive marker for being able) is established through training.[47] Role-relevant education and experience seem to provide a cognitive-behavioral foundation from which individuals and organizations, and possibly even larger social systems, generate a collective willingness to act.

Potential Use in Quality Assessment and Improvement Standards

We can envision public health system research activities such as that which we are conducting being complemented by RWA-driven quality assessment and improvement initiatives. As noted earlier, there is no unified view of what constitutes quality standards for effective, efficient, and coordinated emergency response across the multiple actors, agencies, and institutions that make up the PHEPS. Our informal perspective on what constitutes high-quality response is the right people doing the right things in the right way in the right place at the right time at the right scale. Our perspective and that of others on high-quality preparedness, however, require tools to quantify and operationalize the concepts. Historically, there has been little consistency in instruments that purportedly assess public health preparedness[8]; recently, the National Association of County and City Health Officials has concluded that it "has become imperative for the field of public health preparedness to develop an effective means for measuring preparedness."[50]

If standards (and validated metrics for their assessment) can be developed to formalize conceptualizations of quality, they will need to flow logically from a conceptual model of preparedness that incorporates factors necessary and sufficient for quality response. This generic assessment process does not preclude the likely need to develop jurisdiction-specific measures of quality, which could roll up into more robust elements to

quantify the extent of adherence to quality standards of preparedness. Any conceptual framework likely will evolve as a result of broad discussion, tool development, trial application, information feedback, iterative advancement, and consensus building. Although the RWA framework will not necessarily follow this evolutionary course, it may represent a useful way to initiate a dialogue that could directly lead to a standardized quality-assurance system or inform extant initiatives to develop one. Along the latter lines, members of the Public Health Accreditation Board have recently approved and issued for vetting formal local domains, standards, measures, and scoring guidance to support the development of a national, voluntary accreditation program for public health departments (http://www.phaboard.org). The Public Health Accreditation Board initiative is not specific to preparedness; however, the National Association of County and City Health Officials's Project Public Health Ready, conducted in cooperation with the Centers for Disease Control and Prevention, is a preparedness-focused program through which state and county health departments can endeavor to meet national public health preparedness standards.[51]

Illustration of Possible Stages and Steps

We can envision broad-based application of RWA to the PHEPS entailing a progression from characterization to guidance, standards setting, gap analyses, and, potentially, accreditation of agencies and ultimately the entire system. A neutral leader/convener could be funded to organize, coordinate, and facilitate the following basic steps of a staged plan to explore the feasibility of the model:

1. Convert RWA constructs to sector-specific preparedness standards and benchmarks.
2. Identify the discrete sectors that have a stake in emergency preparedness.
3. Assemble stakeholders in each sector to discuss the model, brainstorm ideas, and reach consensus on how criteria for each of the RWA elements may be operationalized for their respective organizational missions.
4. Convert/customize the criteria to organization- and sector-specific benchmark statements.
5. Develop objective descriptors that denote or can serve as

TABLE 2

RWA Markers of Preparedness for a High-Quality Emergency Response, by PHEPS Stakeholders Collaborating in a CDC-Funded Research Project

PHEPS component	Ready	Willing	Able
LHDs			
4 LHDs in rural Maryland	LHDs possess vital contact and resource information abstracted from FBO-developed disaster plans[a]; LHDs have a cadre of faith leaders serving on disaster advisory boards	LHD emergency planners are willing to mediate/coordinate regionwide sharing of human and material resources (based on preestablished mutual-aid agreements)	LHD representatives have been trained in disaster mental health interventions; ability to deploy emergency resources is enhanced by FBO information provided in joint planning sessions
AHC			
Johns Hopkins School of Public Health; Johns Hopkins School of Medicine; Johns Hopkins Hospital and Health System	AHC response readiness is increased during emergencies through MOUs identifying key contacts at and resources available from FBOs in immediate geographic area of Johns Hopkins Hospital	Emergency management administrator of Johns Hopkins Hospital and faculty members are willing to conduct training sessions in disaster planning and to continue to develop AHC/FBO mutual aid agreements	Hospital's ability to serve genuine, disaster-related medical needs of community is enhanced because psychologically affected but physically uninjured people are more likely to seek out PFA-trained clergy
FBOs			
Individual FBO members	Individual clergy members are available to provide emergency PFA services when called on through state ESAR/VHP registry; selected individuals are ready to serve NIMS-identified roles for FBO; families have stockpiles of water, food, first aid kits, etc	Individual PFA-trained clergy are willing to submit formal applications to Maryland Dept of Health and Mental Hygiene for approval as volunteers in state's ESAR/VHP and to be listed on a volunteer call list	Clergy members have enhanced skills as first responders following participation in a competency-based training curriculum in disaster ministry and PFA
FBO community, facilities, and leadership (eg, pastors, lay ministers)	FBOs have completed community disaster preparedness plans that identify who will do what, when, under various emergency scenarios; available resources of communities are catalogued; all FBO leaders now have contact information facilitating immediate access to EMS, EMA, LHD, fire, and police	FBOs willing to make special effort to safeguard welfare of community's at-risk populations in disasters (eg, each FBO has 1 volunteer who has formal title of Disaster Mental Health Coordinator committed to maintaining contact information for all county mental health agencies)	FBO leaders and their communities have new knowledge and skills in disaster response (with intention to augment same through drills and exercises)

EMA=emergency management agency; EMS=emergency medical services; ESAR/VHP=Emergency System for Advance Registration of Volunteer Health Professionals; FBOs=faith-based organizations; LHDs=local health departments; MOU=memoranda of understanding; NIMS, National Incident Management System; PFA=psychological first aid.

[a]Plan content is organized as follows: general assumptions, roles and responsibilities, operations and response (with SWOT [Strengths, Weaknesses, Opportunities, and Threats] analysis), communications, preparedness tools and resources, and plan evaluation.

markers for those benchmarks. (By "objective," we mean statements worded in a manner that would allow a neutral observer/reviewer to infer level of compliance with the sample descriptors of a given benchmark [eg, "full compliance," "partial compliance," "noncompliance"].)

6. Draft, validate, and refine sector-specific benchmark measurement tools.

7. Develop tools to quantify the process described in item 1.

8. Invite stakeholders from other sectors to evaluate all intrasector efforts from a systems-based, intersector standpoint.

9. Apply tool(s) to selected organizations, agencies, and institutions, and gather feedback data on strengths, weaknesses, and opportunities for improvement.

10. Revise, refine, and ultimately establish the validity and reliability of the tool and the metrics derived from them; continually seek to eliminate any conceptual or operational flaws.

11. Finalize the consensus-based standards and develop/disseminate guidance.

12. Codify guidance/standards, elements, and tools.

13. Distribute the materials and protocol for broad application and improvement, including the development of more useful approaches to all-hazards education, training, drills, and exercises.

These stages and steps represent a human enterprise involving numerous stakeholders generating and consolidating information in multiple ways, including reviewing prior work so that the relevant efforts of others can be built upon. Other fundamental activities to advance the RWA or any alternative model include convening planning sessions; conducting both open and targeted feedback mechanisms; assembling nationally recognized experts and technical advisors from diverse sectors; convening panels and workgroups in specialty areas of preparedness; and presenting and honing the model at established national, regional, and state meetings of key stakeholder groups.

Finally, we believe that certain basic values and principles would be useful to guide the initial process. These include keeping efforts simple; aiming for incremental but continuous improvements; focusing on key levers of influence (eg, applying state-of-the-art/science methods for teaching core competencies); identifying cross-cutting themes (eg, safeguarding at-risk populations, using current information technology); and ensuring coordinated emergency response by soliciting extrasector input on all intrasector planning efforts. A similar cross-sector, multimodal strategy was used successfully to generate input for a consensus-based national agenda for behavioral health workforce development.[52]

CONCLUSIONS

We propose that a comprehensive set of prerequisites for preparedness can be generated and organized under the combined terms *readiness*, *willingness*, and *ability*, and that the ensemble of associated assessment metrics constituting an index of quality of preparedness could be applied throughout the public health emergency preparedness system. We envision formal standards for high-quality emergency response being developed through a longitudinal process involving input of stakeholder time and talents at the individual, community, organization, and system levels. We believe our framework has the potential advantages of conceptual simplicity, functional practicality, broad applicability, and ready testability. Furthermore, it conveys the benefits of both uniform conceptual language and diverse constituency representation. Whether the RWA model per se is suitable, we believe the stakes are too high to delay engaging in a sustained dialogue to craft a national blueprint for coordinating quality-improvement activities in the PHEPS.

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About the Authors

Author Affiliations: O. Lee McCabe, Daniel J. Barnett, and Jonathan M. Links are with the Center for Public Health Preparedness, Preparedness and Emergency Response Research Center, Johns Hopkins University Bloomberg School of Public Health. Henry G. Taylor is with the Center for Public Health Preparedness, Preparedness and Emergency Response Center, Department of Health Policy and Management; Health Department, Cecil County, Maryland.

Correspondence: Address correspondence and reprint requests to Dr O. Lee McCabe, Department of Mental Health, Johns Hopkins Hampton House, 624 N Broadway, Suite 390, Baltimore, MD 21205 (e-mail: lmccabe@jhsph.edu).

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