

Promoting Information Sharing for Multijurisdictional Public Health Emergency Preparedness

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Objective: The objective was to assess the planning needs of emergency management and public health professionals to provide a flexible and comprehensive planning tool. **Design:** This study first assessed the needs of emergency management and public health professionals via an online survey. On the basis of results of the assessment, pertinent information was collected and organized into an online resource tool. **Setting:** The assessment was designed to address the needs of local, state, and federal government administrators working in emergency management and public health. The online tool was designed for use by any entity that functions to promote public health in the event of an emergency. **Participants:** Sixty-four participants completed the assessment survey. Seven states were represented. Most participants were senior-level administrators or management-level employees and were employed in public health, emergency, or bioterrorism preparedness, or in emergency medical services. **Main Outcome Measure:** Needs assessment for preparedness tools. **Results:** The results of the survey identified a need for increased access to information (especially concerning liability issues and authority to enter into agreements) and high levels of interest in the availability of an online planning tool. The majority (80.7%) of respondents indicated an ability to locate and quantify resources within their own jurisdiction but only about half (42.9%) could do the same for resources outside of their jurisdiction. Finally, 71.9% reported having no assessment tool to measure emergency capacity and limitations. **Conclusions:** Planning for cross-border and multijurisdictional emergencies depends on access to pertinent information and the feasibility of attaining such information. The creation of a comprehensive guide to multijurisdictional

collaborations, with its self-assessment checklists, can easily provide such information to emergency. In addition, information sharing and increased collaboration can lead to increased utilization of emergency preparedness best practices.

KEY WORDS: emergency preparedness, information sharing, multijurisdictional collaboration

The emergency management failures experienced as a result of hurricane Katrina revealed a disappointing reality that despite fervent post-September 11 efforts to improve emergency response throughout the country, regional planning and coordination continued to remain gravely deficient.¹ Failure to effectively respond to large-scale public health emergencies reportedly stems from a lack of multijurisdictional planning according to multiple Federal government investigations.² The capacity for a community and its leaders to effectively respond to an emergency is contingent on their ability to formulate an emergency plan that allows for coordination, collaboration, and communication across any and all jurisdictional borders.

Emergencies themselves are unavoidable and are rarely contained within a single jurisdiction: tornados cross county lines, floods flow onto Tribal Nation lands, and hurricanes can ravage multiple states in the course

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of a single day. An additional layer of complexity that public health and emergency planners must consider lies in the diversity and magnitude of the various political agencies involved in responding to emergencies. International, federal, state, and local laws and regulations guide and influence all geopolitical interactions pertaining to emergency preparedness.³ Moreover, liability, financial reimbursement regulations, and access to resources and supplies such as medicine and clean water that are only available beyond one's borders are just a few of the potential legal barriers that can be mitigated through careful planning.⁴ Successful management of public health emergencies depends on pre-planned coordination and cooperation across both geographical and political jurisdictions, at levels prescribed by the nature of the emergency itself.⁴⁻⁶

During the planning process, access to pertinent and informative resources is vital to ensure the medical, legal, logistical, public health, and emergency preparedness at all levels of government.⁷ This can be problematic for smaller public health agencies, the very ones tasked to develop and carry out these multijurisdictional collaborations. State budget cuts and increased demand on operational resources for the latest public health need, such as H1N1 surveillance and testing, can severely restrict regional planning efforts. The research necessary to formulate a comprehensive plan can be expensive and highly time-consuming. Most Federal agencies provide information and guidance on regional planning. For instance, the Centers for Disease Control and Prevention offers legal advice and research relevant to regional planning³; however, given the vast amounts of information currently available in multiple locations, it is often difficult to find the specific information that is needed in a timely fashion.

Despite the difficulties involved in planning, increasing numbers of state and local government agencies are entering into mutual aid agreements and compacts to ensure that critically important resources are available in the event of an emergency. Emergency preparedness is not a recent phenomenon and there are many examples of existing agreements, compacts, and treaties available to public health officials as a foundation on which they can tailor their own plans and agreements. In 1986, the Agreement Between the Government of Canada and the Government of United States of America on Cooperation in Comprehensive Civil Emergency Planning and Management established the Consultative Group on Comprehensive Civil Emergency Planning and Management. This treaty was renewed in 2008 and has been the basis for other important agreements such as the Pacific Northwest Emergency Management Arrangement, which was passed by the US Congress in 1998,⁸ as well as the International Emergency Management Memorandum of Understanding (or "Compact")

created by the International Emergency Management Group in 2000.⁹

Currently, no official mutual aid agreement or treaty exists that provides for emergency response between the United States and Mexico.³ There are, however, several organizations working to facilitate shared cross-border initiatives such as the Pan American Health Organization, Arizona's Border Interoperability Project, the US-Mexico Border Health Commission¹⁰ sponsored by the US Department of Health and Human Services, and the US-Mexico Border Health Association sponsored jointly by the US Public Health Service and Pan American Health Organization. These groups exist because Article 1, Section 10 (also known as the "Compact Clause") of the US Constitution¹¹ allows for agreements between states, and also between states and foreign countries without congressional approval provided they do not impede federal power or alter the balance between state and federal power.³

In light of the examples of public health emergency preparedness collaborations depicting successful regional coordination and planning at international, national, and local levels, failure to implement plans for collaboration is not likely a result of too little information but, rather, difficulty incorporating the information into a cohesive, comprehensive plan that is understood and accepted by the people charged with its implementation. Past studies have attempted to build a foundational structure upon which emergency preparedness personnel can formulate an acceptable, comprehensive plan.^{2,5,12} However, considerations such as agreements and coordination with certain entities (eg, Tribal Nations) were not within the scope of these efforts.

The goal of this study was to conduct a needs assessment of public health emergency responders by addressing the difficulties in locating, assessing, and incorporating legal and procedural documents as they relate to emergency preparedness. This assessment, a survey to public health and emergency preparedness management in the United States, was designed to gain insight into their needs and to address what was missing in their respective preparedness plans. In addition, we were interested in conducting an exploratory analysis to compare whether responses to preparedness issues differed by the type of employment sector (eg, public health compared to others). On the basis of this survey, the second objective of this work was to compile a Web-based list of local, interstate, Tribal Nation, intrastate, and international examples of multijurisdictional collaboration. This list would serve as an easily accessible, comprehensive guide for those seeking information on regional planning. The goal of this resource tool for the future will be to promote planning, implementation, and need assessment for regional public health and emergency preparedness professionals.

Importantly, this tool will be a Web-based, interactive tool that allows for frequent review and revision as new resources become available.

● Methods

A literature review was conducted to form the basis of a comprehensive survey that could briefly assess the current needs of professionals involved in the process of preparing for cross-border emergencies. The pertinent literature consistently focused on key topics relating to multijurisdictional emergency preparedness including reasons for collaboration, agreements, interoperable communications systems, federal assistance programs, legislation, implementation, and inaccessibility of resources for research. Topics that the literature described as neglected or overlooked, such as agreements between counties within a single state,² and liability of emergency volunteers³ were also included for assessment in the survey.

This preliminary survey was then sent to an advisory committee for review. The committee consisted of academic, state, and local public health officials. Recommendations from the committee were incorporated into the final version of the survey. An iterative committee review process was employed such that after each round of changes was submitted another review occurred until the committee approved the content of the final survey. On the basis of the survey, our goal was to create an online, free, and easy-to-access resource tool for multijurisdictional collaborations.

Participants were provided with the following introduction to the survey:

Many communities, especially rural, face the challenge of dealing with public health emergencies from disasters. Resources to prevent, respond to, and recover from such events are limited. However, through partnerships with agencies outside your political jurisdiction, it may be possible to leverage capacity and response capabilities. The objective of this survey is to gather information to create a resource tool that will serve as a guide to develop multijurisdictional collaborations. This tool would be directed toward public health and emergency preparedness planners who are seeking ways to enhance their ability to respond to emergencies by partnering with other political jurisdictions. Examples of multijurisdictional collaborations could include agreements that are city to city, city to county, county to county, county to state, state to state, state to nation, state to province, and nation to nation. As the potential end-user of this resource tool, we are asking for your help. The questions below are designed to measure your interest in using such a tool and to ask for your assistance in identifying the specific elements that would make it most useful to you.

Following these introductory instructions, the 10-item survey assessed 3 main topic areas: current status of emergency planning, interests in a resource tool to assist with multijurisdictional collaborations, and topics that a comprehensive resource tool should include. The first section focused on respondent's experience with, and current level of preparation for, interagency collaborations. Several questions were used to assess interest in a new resource tool, their willingness to be contacted for follow-up questions related to a resource tool, and their preference for type of contact. The final section assessed 11 topic areas of interests for possible inclusion in a resource tool. The stem question for this section was: "Which of the following areas would be important to include in a resource guide for multijurisdictional collaboration" with topics such as liability protection, credentialing, listed. Respondents were asked to rank their level of interest, on a scale ranging from 1 (no interest) to 5 (high interest), in each specific subject areas that they would like to see in a multijurisdictional resource tool and in the availability of such a tool. Participant information such as jurisdiction (Federal, Tribal, State, or Local), type of agency (eg, health department or emergency medical services), and personal/professional contact information was also collected. Cross-tabulations (chi-square test of independence with 1 degree of freedom, χ^2_1 , or the Fisher exact test for cases with small cell sizes) were used to determine whether public health officials compared with other responders differed in key areas related to emergency preparedness and cross-border collaboration.

Procedures

Survey software (SurveyMonkey) was used to make the survey so that it could be readily distributed, completed, and returned via the Internet. The use of Web-based survey software also allowed for reminder e-mails to be sent to nonresponders. The survey was distributed via e-mail to managers and administrators involved in public health and emergency preparedness. Potential respondents for the survey were solicited in 2 ways. First, for New York State, we contacted the Western New York Public Health Alliance,¹³ a regional nonprofit organization consisting of key community health members (eg, leaders from a local health maintenance organization, New York State Association for Rural Health) and the directors or commissioners of health for the 8 counties of Western New York and the New York State Association of County Health Officials to ask their members to participate in the survey. Second, as part of our work as a National Association of County and City Health Officials-funded Advanced Practice Center, we presented information about our current projects at the presummit meeting of the annual

Public Health Preparedness Summit as well as conferences in Pennsylvania and Minnesota. At these presentations, we asked interested parties to provide us with contact information. Participants who provide their e-mail addresses were given access to the survey. They also were given the opportunity to refuse to answer any survey question (ie, no questions were marked as required).

Participants

Sixty-four participants completed the survey from 7 states including New York, Washington, Indiana, Illinois, Idaho, Massachusetts, and Virginia. Slightly more than half of the participants were women (56.8%). Participants were professionals in public health (83.3% of respondents), emergency medical services (5.6%), and emergency or bioterrorism preparedness (11.2%). There were no gender differences based on employment type. Most respondents (60.5%) were senior-level administrators, with titles such as director (or commissioner) of public health. All others were at least management-level employees within their organizations or departments. The predominant jurisdiction of the respondents was "local" (98.1%).

● Results

Current status of emergency preparedness planning

Survey responses indicated that a large majority (94.8%) of respondents had been involved in multijurisdictional collaborations at some point in the past. There were no differences in involvement in collaborations based on type of employment (public health vs EMS/emergency/bioterrorism preparedness; the Fisher exact test, $P = .14$, NS). More than half (56.9%) reported that their agency had entered into legal agreements relative to multijurisdictional collaborations (ie, mutual aid agreements). There were no differences between participants who entered into legal agreements and those who did not, on the basis of type of employment ($\chi^2 = 2.4$; $P = .13$, NS). Despite this history of collaboration, the data indicated a lack of assessment tools and shortcomings in emergency planning. For example, many respondents (80.7%) stated that they had the ability to determine the location, availability, or quantity of critical resources within their own jurisdiction, but only 42.9% reported the ability to determine the location, availability, and quantity of critical resources outside of their jurisdiction. Importantly, the difference between knowledge within and outside one's own jurisdiction was statistically significant ($P < .001$); however, there were no differences based on type of employment for

either knowledge about resources within one's jurisdiction ($\chi^2 = 1.4$; $P = 0.2$, NS) or outside ($\chi^2 = 2.3$; $P = 0.12$, NS). Less than half (40.7%) reported having a plan to access those resources and this did not differ among public health responders and other groups ($\chi^2 = 1.6$; $P = 0.20$, NS). Overall, 71.9% of survey respondents stated that they had no assessment tool to measure emergency capacity and limitations, while 58.9% of respondents reportedly had no plan to handle population surges in the event of a public health emergency. A majority (70.2%) of respondents indicated that their agency had access to an interoperable communications system that enables communication with agencies outside of their jurisdiction.

Interest in the creation of a resource tool

The majority (74.2%) of those surveyed indicated an above average or high level (a response of 4 or 5) of interest in an easy-to-use guide to multijurisdictional public health collaborations. Response to the survey was positive, with 86.0% agreeing to participate in any follow-up survey. Most respondents (93.2%) indicated that e-mail was the best way to contact them for future surveys. The fact that 86% of participants agreed to be recontacted (and provided complete contact information) indicated a willingness to collaborate.

Topics of interest for inclusion in resource tool

The survey indicated several areas that public health and emergency preparedness administrators report would be most important for inclusion in a resource tool. Issues related to liability and the law were the most commonly endorsed topics for inclusion (see Table 1). This was followed closely by tools to assess readiness to handle population surges and examples of mutual aid agreements. Topics that respondents had the most interest in were typically the same as the most frequently reported as lacking (eg, legal matters and assessment/planning tools).

Creation of a multifunctional resource tool

An online Web-based interactive resource tool was created on the basis of the survey. The Web-only design of the tool allows for frequent review and updating as new information becomes available (updating of the resource tool is completed by the second and third authors). Given that the tool is a dynamic tool, its exact size and content are updated as new information becomes available. In its current version (Version 2.0), it exists as an 80-page document that includes 7 key topics. The first sections discuss background on multijurisdictional collaborations as well as reasons for

TABLE 1 • Which of the Following Areas Would Be Important to Include in a Resource Guide for Multijurisdictional Collaboration?

	1 = No Interest, 5 = High Interest					Response Average
	1	2	3	4	5	
Liability protection	0% (0)	0% (0)	13% (8)	24% (15)	63% (39)	4.50
Legal authority to enter into agreements	0% (0)	7% (4)	8% (5)	32% (20)	53% (33)	4.32
Tool to assess population surge readiness in a public health emergency	0% (0)	4% (3)	15% (9)	42% (26)	39% (24)	4.15
Examples of public health mutual aid agreements	0% (0)	6% (4)	21% (13)	29% (18)	44% (27)	4.10
Credentialing	2% (1)	0% (0)	20% (12)	45% (27)	33% (20)	4.08
Examples of existing multijurisdictional collaborations	0% (0)	2% (1)	23% (14)	44% (27)	31% (19)	4.05
Assessing current agency capacity/limitations	0% (0)	3% (2)	29% (18)	37% (23)	31% (19)	3.95
A list of critical resources (ie, shelter, food, etc) that would be needed in an emergency	3% (2)	9% (6)	26% (16)	23% (14)	39% (24)	3.84
Compensation	2% (1)	13% (8)	21% (13)	32% (20)	32% (20)	3.81
Case histories of successful multijurisdictional emergency preparedness partnerships	2% (1)	6% (4)	35% (22)	34% (21)	23% (14)	3.69
Examples of interoperable communication systems (ie, 800 MHz to 900 MHz)	2% (1)	15% (9)	26% (16)	34% (21)	24% (15)	3.65

Values in bold font indicate the most commonly endorsed response for each item.

cooperation. Examples of successful collaborations are highlighted in section 3. Sample agreements, programs, and key local, state, federal, and international legislation are the focus of the fourth section. Information about agreements with Tribal Nations is also included in section 4. Legal backgrounds (including sections on mutual aid, the Patriot Act, Search and Seizure, Isolation and Quarantine) are part 5 of the guide. Implementation strategies (including information on credentialing health care professionals, and National Incident Management System) are included in part 6. The final section covers resources for conducting research. In the Appendix, the resource tool includes writable/printable PDF assessment checklists for 11 different preparedness domains (eg, staff, supplies, communication). The free online tool is available at <http://sphhp.buffalo.edu/emergency-preparedness/research/guide.pdf> or tool number 1690 at <http://www.naccho.org/toolbox/>. Given that some users could be interested in an offline version, the tool is also available on an interactive CD (available for free from the authors upon request).

● DISCUSSION

The main objective of this work was to assess the current strengths and weaknesses of public health emergency response capabilities. The goal for the survey was to create a Web-based, dynamic resource tool that would not duplicate current resources and that would address existing emergency planning deficiencies. It is important to point out that the online resource tool was de-

signed to be adaptable to each jurisdiction's needs and also have the capacity to evolve as new information becomes available and to change as a result of comments from users. A benefit of the online version is the cost-efficient revision process (unlike printed versions that incur costs with each edition). Another strength of this project is the willingness of the respondents to participate in the formulation and improvement of the resource guide as shown by the participation in the current survey as well as the reported willingness to participate in improving the guide via future surveys. The results of the survey demonstrated that despite significant instances of multijurisdictional collaborations, the majority of respondents reported that their jurisdictions had limited resources available to facilitate cross-border collaborations. The survey also indicated a high concordance for both strengths of current preparedness issues (eg, communications) and weaknesses (eg, information on liability, examples of mutual aid agreements).

While every local and state health department will be subject to their own operating procedures, laws, rules, and regulations, these tools serve as a necessary function. They enable all stakeholders to have a "starting point" for the development of their own, location-specific tools to better prepare for public health emergencies. The survey, guide, and checklists were tailored specifically to convey or obtain information in the simplest format to ensure ease of use for departments with very limited resources. It should be noted that while emergency preparedness was the main focus of this particular study and the outcome was a multijurisdictional guide to emergency preparedness, the topics inscribed within can be applied to many types of events

such as disease outbreaks, immunization clinics including point of dispensing clinics, and other public health activities involving 1 or more governmental or non-governmental agencies.

The need for continuous revision was frequently discussed in the literature. One such study stated, “[...] participants and colleagues noted several potential uses of this preparedness-assessment framework that we did not anticipate, specifically, its use in considering the need for cross-border agreements across county lines within a state and across boundaries between local governments and tribal lands.”² As more stakeholders invest and participate in the creation of a comprehensive multijurisdictional tool, the potential usability and adaptability increase. Compiling the vast amount of information into 1 place, creating checklists and providing additional resources into a Web-based resource provides practitioners with an easily accessible, efficient public health emergency preparedness resource.

Limitations

This work should be considered within the framework of its limitations. Although the survey was directed to responders from all types of jurisdictions, the majority of respondents were from the local government level. The majority were in management or senior leadership positions, and their knowledge of resources within their jurisdiction was good; however, detailed knowledge of state and federal resources was more limited. The survey focused primarily on questions involving a relatively small domain of topics that could be of interest to public health responders. Thus, it is possible that other domains in the public health emergency response arena were not adequately covered. Given that the survey was widely available, it is also not possible to determine response rate. We know that of the participants who responded, completion rates were very high for multiple-choice questions (85.7%) and that a majority (57.8%) completed optional, open-ended responses. Despite these limitations, the survey enabled us to create an evidence-based resource tool that is freely available for public health emergency planning at multiple jurisdictional levels. Future work is planned to assess

the actual use of the resource tool and identify areas in which improvements should be made.

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