A Framework for Assessing Regional Public Health Preparedness

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Cover photo: 2004 Nisqually earthquake, Pioneer Square in Seattle, Washington

Contents

Introduction

Various tools have been developed over the past decade to assess public health preparedness at the local, state and federal levels. However, no tool has heretofore been developed to assess regional preparedness, nor has any clear conceptual framework been advanced to guide a consideration of preparedness at a regional level. The purpose of the *Assessing Regional Public Health Preparedness* project was to develop a compelling conceptual framework that includes an easy-to-use checklist to assess regional public health emergency preparedness. The goal is for Regional Health Administrators (RHAs) to use the framework to:

1. identify cross-border issues related to public health preparedness;
2. assist the Regional Emergency Coordinators (RECs) of the Office of the Assistant Secretary for Preparedness and Response (ASPR) of the U.S. Department of Health and Human Services (DHHS) in assessing the cross-border preparedness needs of their region; and,
3. work collaboratively with state and local public health leaders to identify and address cross-border preparedness issues.

This project focused on United States Public Health Service Region X (comprising Alaska, Idaho, Oregon, and Washington) and British Columbia. However, the conceptual framework and assessment tool were designed to be applicable in all regions across the United States.

Background

Recent incidents of man-made and natural disasters in the United States have tested the country's ability to respond and raised questions about what public health and emergency response agencies can do to prepare for catastrophic events. After the 2005 hurricane season, federal agencies and specialized task forces were appointed to review the federal, state, and local response to Hurricanes Katrina and Rita to make recommendations on how to improve preparedness and response efforts in future events. These reviews consistently recommended improved *regional* efforts (1, 4, 13, 14, 17, 18, 20, 21, 22). The White House report on lessons learned from Hurricane Katrina states that "the final structural flaw in our current system for national preparedness is the weakness of our regional planning and coordination structures" (22). As a result of this review, the report recommended that the Department of Homeland Security adopt a regional structure for preparedness and assign Regional Directors to coordinate and direct any response efforts during an event (22). The U.S. House of Representatives' bipartisan committee, which was appointed to review preparedness for and response to Hurricane Katrina reported that a "near failure of regional communications degraded situational awareness and exacerbated problems with agency coordination, command and control, logistics, and search and rescue operations" (21). Based in part on these findings, the U.S. Department of Homeland Security identified expanded regional collaboration as one of three overarching priorities for the nation in 2006 homeland security grant program guidance (18).

The White House report on lessons learned from Hurricane Katrina states that "the final structural flaw in our current system for national preparedness is the weakness of our regional planning and coordination structures."

Although the DHHS Regional Health Administrators (RHAs) were aware of several efforts to promote regional preparedness, there did not seem to be a common set of tools, checklists, or even a standard conceptual framework for defining and assessing "regional preparedness." In this project, we set out to (a) identify whether broadly useful tools had already been developed for assessing regional preparedness and (b) if they had not, to develop a new, coherent conceptual framework and associated tools to assist RHAs and their state and local public health partners to define and assess regional preparedness.

Methods

This project had four phases: (1) defining the scope and a conceptual framework for the project; (2) conducting a literature review; (3) soliciting expert opinion through key informant interviews; and (4) creating a checklist to be used by public health leaders as a tool to guide assessment of regional preparedness.

The first phase was accomplished through a series of meetings to define the scope of the project. The project team started this phase by developing a project logic model, which visually laid out the needed resources, activities, and outputs to accomplish the short-term and long-term outcomes. This logic model ensured that all stakeholders had the same expectations of the project. It also guided the project through implementation and evaluation phases (see Appendix III). The project team then worked to define regional preparedness; more specifically, to define what was meant by the term *regional,* and how *preparedness* would be measured. The project team also developed a conceptual framework to identify and focus the project on a critical set of specific dimensions of regional public health preparedness.

The Cross Border Workshop is an annual meeting of northwestern U.S. states and western Canadian provinces, which is convened by Washington State Department of Health and British Columbia with support from CDC.

The second phase was to conduct a literature review to survey available materials on regional preparedness. The literature review started with reviewing reports and journal articles and key documents that have influenced preparedness activities (e.g., Centers fro Disease Control and Prevention [CDC]'s Health Protection Goals (2), Department of Homeland Security's Target Capabilities (19), past reports from Trust for America's Health (15, 16, etc). The next step was to conduct *PubMed* and Internet searches looking for examples of preparedness activities, frameworks, metrics, and other tools; specifically looking for ways preparedness has been defined, measured, and evaluated. The project team also contacted national and local preparedness experts to inform the literature review.

The third phase was to seek out expert opinions. Key informant interviews were conducted with experts from a variety of professional backgrounds from Region X states and British Columbia (see Appendix IV). Twenty-three interviews were conducted by telephone, lasting between 30 to 60 minutes each. Informants provided expertise in four functional areas (public health emergency management; public health laboratory; epidemiology; and environmental health) and three cross-cutting issues (communications, legal issues, and governance). Informants included senior leadership officials in the region, including: state and provincial public health emergency preparedness directors; state epidemiologists; state public health laboratory directors; state and county environmental health directors; and Region X public health and emergency preparedness officials. An interview instrument was developed based on the conceptual framework to guide the key informant interviews (see Appendix V). After completing the interviews, themes were presented and further input was sought via a keynote presentation and a working session at cross-border working meeting of U.S. State and Canadian provincial health officials of the Pacific Northwest. The Cross Border Workshop is an annual meeting of northwestern U.S. states and western Canadian provinces, which is convened by Washington State Department of Health and British Columbia with support from CDC. The working group was asked to discuss two questions: 1) Are these findings consistent with what you think are the most important aspects of regional preparedness; and 2) How would you measure these aspects of preparedness? What metrics would you suggest?

From the information gathered from the first three phases, the project team completed the fourth phase, which was to develop a final checklist for assessing regional preparedness.

Results

Defining Project Scope and Conceptual Framework

After reviewing relevant literature, and carefully considering how this project could add value to (and not duplicate) existing efforts to assess preparedness *within* States and at the national level, the project team defined regional preparedness as "a set of active systems, agreements, and procedures in place at a regional level (i.e., cross-state or international jurisdiction) to anticipate, respond to, and recover from natural and man-made disasters." For purposes of this project, then, the term *regional* refers only to that set of preparedness activities that *occur across state and international borders*. This restrictive interpretation of the term "regional" was adopted to reflect the findings of our literature review, which revealed that ample tools existed for assessing both intrastate and federal preparedness, but that no broadly applicable tools existed to define and assess interstate and international—i.e., cross-border—preparedness. An additional important aspect of our definition of regional preparedness addresses what we determined would constitute *evidence* of preparedness—in this case, a documented set of active systems, protocols, procedures, and agreements to facilitate collaboration during a response to a disaster or other health threat.

The project team defined regional preparedness as having a set of active systems, agreements, and procedures in place at a regional level (i.e., cross-state or international jurisdiction) to anticipate, respond to, and recover from natural and man-made disasters.

Next, the project team developed a multidimensional conceptual framework to guide the project and further define its scope. As the first dimension of our framework, the project team initially used the four elements of CDC's Health Protection Goals (detect/report; investigate; control/respond; and recover) to ensure that our regional approach would be consistent with this nationally promulgated model (2). The second dimension of the framework was based on the limited universe of elements that one might need to move across state and/or international borders during a public health response—namely, professional *staff* (e.g., laboratorians or epidemiologists); *supplies* (e.g., reagents, test kits, vaccines, medicines); *specimens/samples; data and information;* and *patients/evacuees*. We developed a matrix based on the intersection of these two dimensions (see Table 1), adding the cross-cutting categories of *communication, legal issues,* and *governance* as a sort of "third" dimension, to ensure that these overarching issues are considered in the general assessment framework.

To ensure comprehensive consideration of the public health activities that might be required in a cross-border response—which represents the core of what we would want to consider in terms or preparedness—we listed activities and issues that would likely be involved in each of the four CDC Health Protection Goal. This is represented by the bulleted items (e.g., surveillance; public health laboratory; quarantine) under each CDC Health Protection Goals in Table 1. We ultimately abandoned this approach for two reasons: (1) adopting the four CDC Health Protection Goals as a primary dimension of our model led to redundant elements being included at the next

Table 1. Conceptual Framework (version 1)

CDC Health Protection Goals	People and Resources				
	Staff	Supplies	Specimens/ Samples	Data/ Info	Patients/ Evacuees
Detect/Report • Surveillance • PH Laboratory					
Investigate • Epidemiology • Environmental Health • PH Laboratory					
Control/Respond • Evacuation • Mass prophylaxis/ vaccination • Quarantine • PH Laboratory					
Recover					
Cross-Cutting Areas					
Communication					
Legal					
Governance					

Table 2. Conceptual Framework (version 2)

Functional Areas	People and Resources				
	Staff	Supplies	Specimens/ Samples	Data/ Info	Patients/ Evacuees
PH Emergency Management					
Epidemiology					
PH Laboratory					
Environmental Health					
Cross-Cutting Areas					
Communication					
Legal					
Governance					

level (e.g., "laboratory" was considered to be a key element in three of CDC's four preparedness areas) without substantially adding value in terms of guiding an assessment of regional preparedness; and (2) a matrix developed using these subcategories of the four preparedness areas would be both needlessly complex and difficult (and discouraging) to use. After further consideration, the project team identified four public health functional areas that would likely be of critical importance in cross-border preparedness, response, and recovery: Epidemiology, Environmental Health, Public Health Laboratory, and Public Health Emergency Management. After identifying these key functions, the conceptual framework was reorganized around these functional areas instead of the CDC Health Protection Goals (see Table 2). Communication, legal, and governance were left as cross-cutting issues because each would have an overall impact on the movement of resources across all functional areas.

The matrix depicted in Table 2, then, represents our final conceptual framework for regional preparedness assessment. The project team used this matrix to organize the key informant interviews—both to determine *who would be contacted* for the key informant interviews (representing the functional areas listed in the matrix in Table 2), and *the kinds of questions that would be asked* (addressing issues of moving various kinds of people, information, and resources across a border for any given public health activity). Key informant interview questions asked representatives from each functional area on what already existed (in terms of protocols, standing agreements, and so forth) and what is still needed to move various resources and people across jurisdictions during an emergency and about the cross-cutting issues; (see Appendix V for key informant interview questions).

Literature review

Although recent federal studies have brought more attention to the concept of regional preparedness, public health and emergency response professionals have been working on this issue for over a decade. For example, as of May 2006, all 50 states, 2 territories, and Washington, D.C., are participating in the Emergency Management Assistance Compact (EMAC), which was approved by the U.S. Congress in 1996 (5). EMAC has traditionally been used by the National Guard and emergency management, but was more recently used to share public health personnel and resources during the 2005 hurricane season (5). EMAC is used to provide support from a neighboring state when a governor declares a state of emergency. More specifically, if a state needs assistance, EMAC facilitates the movement of personnel, resources, and equipment from or evacuees to, another state in the United States. Although this is useful, some events may not reach emergency status but could still benefit from assistance from another state. EMAC does not assist in non-governor declared emergencies or in international collaborations with neighboring jurisdictions in Canada and Mexico. Because of these gaps, certain states and neighboring jurisdictions in Canada and Mexico have developed additional agreements to complement EMAC.

In 1996, USPHS Region X States (Alaska, Idaho, Oregon, and Washington), British Columbia, and Yukon signed the only U.S. congressionally-approved international civil emergency prepared-

ness and response agreement, which is called PNEMA (Pacific Northwest Emergency Management Arrangement) (11). The fact that PNEMA has congressional approval is vital because the U.S. Constitution (Article 1, Section 10, Clause 3) asserts that "no state shall, without the consent of the congress,…enter into any Agreement or Compact with another state, or with a foreign power." An annex ("Annex B") to the original PNEMA document articulates implementing procedures for the arrangement (12). Annex B was signed by Washington State and British Columbia in June 2006. The Region X states also adopted a Public Health Laboratory memorandum of understanding (MOU), in 2004, which addresses laboratory surge capacity (3). Public Health Laboratories in Region X are working with the Centers for Disease Control and Prevention (CDC) to try to expand the MOU to include Public Health Laboratories in British Columbia.

Other regional (i.e., interstate, international) agreements include:

- *Great Lakes Border Health Initiative (GLBHI).* A group of health departments led by the Michigan Department of Health is working to develop an agreement between Michigan, Minnesota, New York, Ontario, and Wisconsin to facilitate information and resource sharing to improve regional disease surveillance efforts. The GLBHI began this process by reviewing the primary issues to be considered in an agreement. The identified issues include: "the authority of the province and states to enter into a cross-border agreement and the requirement of congressional authorization for U.S. states; the legal implications of information sharing with respect to individual patient privacy rights and disclosure; and the parties' recourse to obtain financial reimbursement for aid provided to another jurisdiction" (10, 13).

- *International Emergency Management Group/International Emergency Management Assistance MOU.* This MOU is a governmental agreement among the six New England states and five Eastern Canadian provinces, which includes: Connecticut, Maine, Massachusetts, New Hampshire Rhode Island, Vermont, New Brunswick, Nova Scotia, Quebec, Prince Edward Island, and Newfoundland and Labrador. The MOU establishes mechanisms for requesting assistance from another jurisdiction and getting reimbursement for providing assistance. It is focused on emergency response and is intended to complement EMAC (6, 7, 8).

- *Mid-America Alliance (MAA).* The MAA is a non-governmental entity whose mission is "to provide a framework for mutual assistance among states during a situation that stresses one individual state's resources but does not initiate a governor-declared state of emergency." The MAA is developing systems to enable states to share information, services and resources during an emergency. The MAA incorporates USPHS Regions 7 and 8, which includes the states of: Colorado, Iowa, Kansas, Missouri, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. It is intended to complement EMAC (9).

The literature review also showed that several intrastate regions and individual counties have developed agreements and tools to facilitate interstate/international coordination at a city or county level.

In sum, our review determined that substantial work has already been done and more is under way to facilitate cross-border collaboration and assistance in the event of a public health emergency. However, ***our review did not discover any conceptual structures or associated tools that might guide a systematic assessment of regional (i.e., cross-border) public health preparedness.***

Interview Findings and Recommendations

Themes from the informants' interviews on what was important for effective, efficient cross-border

collaboration overlapped across functional areas. Common themes were categorized by the resource and cross-cutting issue. Region X preparedness experts considered PNEMA, the Region X Public Health Laboratory MOU and EMAC as a framework to allow regional collaboration and exchange to occur. Informants also indicated that they rely on informal, relationship-based systems to accomplish this work. The discussions at the Cross Border Workshop validated the themes from the interviews. Based on strengths and gaps identified from interviews and feedback from the Cross Border Workshop, recommendations were developed for each of the resource areas.

An additional important finding from the Cross Border Workshop related to the various regional initiatives across the country (e.g., MAA, GLBHI) that were described at the Workshop. Although these initiatives have differing emphases and approaches regarding regional preparedness, there were *striking parallels with the conceptual framework that we developed through this project,* suggesting that our goal of developing a broadly useful (i.e., beyond the Pacific Northwest) assessment framework and associated checklist was both feasible and on-track.

Specific findings and recommendations are:

Staff

Region X Findings: Key informants agreed that sharing staff across borders during an emergency would be useful. EMAC, PNEMA (in Region X), and the Region X Public Health Laboratory MOU allow for the exchange of staff. PNEMA's Annex B lays out reciprocity for licensing and credentialing, dictates how workers' compensation and death benefits would be paid, and describes guidelines for employee liability. Key informants felt that additional legal issues need to be resolved regarding the exchange of staff. After reviewing the Region X agreements, key informants noted that in order to share staff they would need regional protocols explaining how to implement the exchange. In public health, job titles and qualifications are inconsistent among agencies and states/provinces; in order for exchanges to occur, consistency needs to be established in job titles and core competencies. Key informants referred to this as a need for *resource typing* of public health staff. Another suggestion from key informants was to ensure that public health workers were trained in incident command systems (ICS) so that they would better understand the command hierarchy and their role in relationship to it.

National Recommendations: Preparedness experts in Region X recommended the following under regional planning around sending staff to and receiving staff from another jurisdiction during an event: 1) Establish formal agreements and protocols between states/provinces to address the legalities of sending/receiving staff including: reciprocity for licensing and credentialing; agreements for handling workers' compensation and death benefits; and liability/malpractice insurance coverage. 2) Ensure consistent language in job classifications and responsibilities through staff resource typing—for example, if one state sends an epidemiologist to help with an outbreak investigation, the receiving state would be confident of this person's qualifications and skills, because it would be consistent with the epidemiologists in their state. (This is not currently the case.) This consistency will simplify the exchange by ensuring accurate use of staff qualifications; 3) Implement regular training for public health staff on preparedness initiatives and incident command.

Supplies

Region X Findings: Most public health resources are human resources; however, a variety of supplies could be shared across borders during an emergency event. EMAC, PNEMA, and the Region X Public Health Laboratory MOU allow for this exchange to occur and discuss reimbursement agreements. Key informants stated a need for resource typing of public health materials,

equipment, supplies, etc., so that there is consistency in how individual states/provinces in the region classify and track their supplies. If all states/provinces classified resources similarly, they could build a resource inventory that could be used to identify gaps in the region, which would simplify the process of requesting assistance from other jurisdictions. Key informants also agreed that managing logistics chains is not one of public health's strengths. Therefore, when drills and tabletops are conducted, public health staff need to exercise their logistics chain and determine how they would effectively distribute resources to another jurisdiction.

National Recommendations: Informants stated that regional preparedness could be improved through the development of consistent language for classifying key public health supplies, materials, and equipment (i.e., resource typing). Consistent classification of supplies could support the development of a resource inventory that would ensure states/provinces are classifying and tracking materials, equipment, and supplies consistently. Informants also recommended that regional officials create formal or informal agreements to share supplies across borders, including issues of compensation and reimbursement.

Laboratory Specimens/Samples

Region X Findings: Exchanging specimens or samples is done occasionally among Region X states. For example, Alaska had an outbreak of *Vibrio parahaemolyticus,* which is a foodborne illness caused by eating raw or undercooked shellfish, commonly oysters. CDC reports that "in Asia, *V. parahaemolyticus* is a common cause of foodborne disease. In the United States, it is less commonly recognized as a cause of illness, partly because clinical laboratories rarely use the selective medium that is necessary to identify this organism" (http://www.cdc.gov). Alaska had never had a *Vibrio* outbreak, so its public health lab did not have the medium to test for it. Alaska was able to send samples to the Washington State Public Health Laboratory to run tests because the Washington State Public Health lab had the appropriate medium to test and correctly identify the organism. The Region X Public Health Laboratory MOU allows public health laboratories within the region to exchange specimens/samples if they are overwhelmed or unable to test the sample. Public health laboratory key informants were most concerned with transportation of specimens/samples during an emergency event, if the usual channels (i.e., USPS, FedEx, and UPS) were not available. No protocols are available for alternative methods of transporting specimens (within states or cross-borders). All key informants expressed concern over the uncertainty of when to follow "chain of custody" when collecting samples. They stated the need for protocols or, at a minimum, clarification for when they need to follow chain of custody procedures.

National Recommendations: Key informants recommended that regional officials develop a public health laboratory agreement that enables state labs to exchange specimens/samples when necessary during an emergency event; the agreement should incorporate issues of compensation and reimbursement. They also recommended that regional officials develop protocols for transportation of specimens during an event and protocols for when to follow chain of custody procedures.

Data/Information

Region X Findings: Data and information are exchanged across borders on a routine basis; technically and (for most information) legally, it is the easiest thing to exchange. Key informants acknowledged that the Health Information Privacy and Accountability Act (HIPAA) does complicate the exchange of information with personal identifiers, but felt that in an emergency HIPAA would not be a barrier—especially given that it was waived during the response to Hurricane Katrina. Currently, public health professionals in Region X exchange data and information through informal networks with their professional counterparts in other states/provinces. There was some concern that efforts to formalize this data exchange might inadvertently limit the types of data and informal

methods for exchanging data that have been successful in managing past events. Our informants asked, in other words, "Why change something that is working?" Other informants, however, were concerned about the ephemeral nature of informal agreements based on trusted personal relationships—specifically, that such agreements lasted only as long as those involved occupied their particular positions. In Region X, they rely on secure phone or fax lines or regular mail to exchange information with personal identifiers. They also can remove all personal identifiers and share that data electronically. Many key informants expressed interest in developing a capacity for secure electronic data exchange, such as having interoperable software that could be available to another jurisdiction during an emergency. There were, however, concerns expressed that the cost of developing and updating such as system would outweigh the benefits of having it.

National Recommendations: Experts in Region X recommended that regional officials explore the costs and benefits of creating formal or informal structures for exchanging data both as routine practice and during an emergency event. Regional agreements and systems for effectively and efficiently exchanging data during an emergency would facilitate a more effective response. Experts recommended that regional officials develop protocols for sharing data, such as: What data should be shared routinely in an emergency? When should it be shared? With whom should it be shared? Who owns the data after it has been shared? Informants recommended that regional officials explore the possibility of implementing a secure way to share personally identifiable data electronically. If a secure electronic database is not feasible, regional officials should discuss alternate methods of secure, efficient data exchange.

Patients/Evacuees

Region X Findings: Key informants stated that moving patients and evacuees across state borders within the United States happens routinely. The primary concern—regarding moving patients during an emergency event within the United States—is whether agencies have the capacity to transport large volumes of patients. The two major legal issues related to moving patients and evacuees mentioned by the informants are outside the state's authority: 1) ensuring comparable Medicaid and insurance coverage in other states, which is under the jurisdiction of the Centers for Medicare and Medicaid Services (CMS); and 2) transporting patients and evacuees between the U.S. and Canada, which would need to be approved at a federal level.

National Recommendations: Regions should discuss whether patients/victims can be safely and efficiently moved across borders during an emergency event. Regional and state health officials may wish to work with CMS to ensure that patients/victims would have consistent Medicaid and insurance coverage if they have to be transported to another state. States sharing a border with Canada or Mexico should consider working with federal partners to enable patients to be moved across the international border as needed.

Communication

Region X Findings: Communication is vital for preparedness and an effective response. There are several different aspects of communication to consider in regional preparedness efforts. In Region X, most key informants indicated that they have regular communication with their counterparts in other states. This was not true for environmental health because environmental health is organized differently in each of the states, sometimes falling under the health department and sometimes under another state agency. This organizational diversity makes it more difficult to identify counterparts in the surrounding states/provinces. Overall, key informants stated there are adequate systems in place for ongoing, routine communication across Region X. The concerns were rooted in

consistent risk communication to the public and the media; but many informants noted that, in Region X, there is a committee working to address this issue. Another concern was communication with special needs populations. Each state/province must address this issue, but there may be regional approaches to, for example, translating materials. The final communication concern was the lack of protocols for ensuring communication with staff in the field during a response—both in terms of communication infrastructure (e.g., satellite phones, etc.) and protocols for efficient, effective reporting and sharing of information during the response.

National Recommendations: Key informants stated the need for regional officials and state public information officers to develop consistent risk communication messages across the region. Informants also suggested that state and regional officials may be able to collaborate on efforts to reach special needs populations during an emergency; this collaborative effort would help maximize the use of state resources. Additionally, regional and state officials should consider developing a regional structure (perhaps based on NIMS processes) for effective cross-border communication—to and from staff in the field—during an emergency response.

Legal

Region X Findings: Regions have attempted to overcome a number of legal issues related to exchanging staff and supplies through MOUs and agreements (see discussion in sections about staff and supplies). In Region X, PNEMA has congressional approval, which may be the biggest legal hurdle for other regions to overcome. Region X just recently added an Annex to PNEMA to address more of these legal issues (especially around sharing staff). Much of the exchange, especially of data, that occurs in Region X is done informally via relationship-based networks. These informal systems can work well. The difference between informal and formal agreements—assuming that they both cover the same issues—is that with informal agreements there is a possibility of post facto litigation in terms of compensation. Those who are injured or seeking compensation may be uncertain about whether the informal agreement is binding. Relationship-based systems also may not be sustainable as staff change. However, informal agreements can and do often work well, though the legality of such arrangements has typically not been investigated thoroughly.

National Recommendations: Experts in Region X continually stressed the importance of PNEMA in allowing them to participate in regional preparedness planning. They suggested that regional and state officials across the United States—especially those sharing an international border with Canada or Mexico—should consider pursuing a congressionally approved regional agreement, similar to PNEMA. However, in absence of this agreement, state and regional officials should discuss the legal implications of exchanging resources and develop informal systems/agreements to address legal issues, including but not limited to reimbursement, compensation, staff licensing and credentialing (staff reciprocity), and exchange of data with personal identifiers.

Governance

Region X Findings: One of the biggest concerns in a multi-state emergency event is the decision-making structure for response and who would be the ultimate decision-maker. Effective governance during any event is vital. In Region X, several planning groups (that were developed from the annual Cross-Borders Workshop) and a Regional Emergency Management Advisory Committee (set forth by PNEMA) are working to develop systems and plans for regional preparedness and response. Key informants expressed interest in holding regionally planned and implemented drills/exercises, to work out some of these unknowns.

National Recommendations: Informants recommended that state and regional officials appoint a working group to lead and maintain regional preparedness efforts, adding that some regions may wish to pursue a congressionally approved regional agreement (see previous discussion about what should be included in this agreement). Informants emphasized the benefits of regional and state officials exchanging warning and notification plans and 24-hour contact lists with adjacent jurisdictions. Within these plans, informants recommended that state and regional officials incorporate a formalized structure for regional decision making during a multi-jurisdictional response. Finally, informants suggested that regions should hold an annual regionally planned and implemented drill or table-top exercise to test regional plans and continue to improve regional preparedness efforts.

Instrument Development

Based on the definition of regional preparedness, the conceptual framework, interview responses, and feedback from the Cross Border Workshop, a Regional Assessment Checklist (see Appendix I) was developed to be used by the HHS Regional Health Administrators and Regional Emergency Coordinators, in collaboration with their state and local public health partners, to assess the preparedness of their region and plan for future preparedness efforts.

The checklist is divided into seven sections, which encompass the public health resources that may need to be moved across borders during an event (staff, supplies, specimens/samples, data/information, and patients/evacuees) and cross-cutting issues that would influence the movement of these resources (i.e., communication and governance). (Note: legal issues are incorporated into the other sections.) The checklist items describe protocols, agreements, processes, etc., that should exist or should be considered for development in regional preparedness planning efforts. The next two columns of the checklist are to be used as an assessment of the existing structures in the region. The final three columns are the self-assessment, where regional and other officials can determine whether they have addressed the checklist item in their regional planning efforts. Appendix II shows an example of a partially completed checklist using information from PHS Region X.

This checklist was largely developed based on the expert opinions and judgments of senior public health officials in Region X and British Columbia. These key informants are certainly experts in their fields, and are often consulted about preparedness issues. However, there are clear limitations in relying on a select group of key informants to develop a generalized assessment framework. First, Region X has many established tools in place for regional preparedness—such as PNEMA, Annex B, a Public Health Laboratory MOU, and annual Cross Border Workshops—that are not in place in other regions. These tools undoubtedly influenced the key informants' opinions about what is needed. Public health professionals working in regions without these tools may have slightly different perspectives of what is needed for regional preparedness. Second, most of the key informants were from state or regional agencies, and so did not explore the state/local interface or what implications that interface may have for cross-border work. Lastly, analyzing qualitative data is somewhat subjective. To attempt to make this process as objective as possible and limit any bias, reviews of the findings and process were built in at many levels. Some other limitations existed outside the scope of our project that influenced the key informants' responses. First, currently no dedicated funding exists for regional preparedness initiatives, which makes resource-intensive recommendations seem unrealistic. Second, PNEMA's Annex B was being negotiated and signed during the interview process. Key informants were unsure of how this annex would change things.

Despite these limitations, the feedback received to date from colleagues involved in regional preparedness efforts elsewhere in the United States strongly suggests that the framework and associated checklist developed here in USPHS Region X will have broad utility in other regions.

Appendix I: Regional Assessment Checklist

Intended Audience and Use: The goal of this checklist is to provide regional officials—as they work with state health officials—a tool to aid in their regional planning efforts for public health preparedness. This checklist is not intended to be prescriptive and is not tied to any state preparedness funding.

Description of Checklist: The checklist is divided into seven sections, which encompass the public health resources that may need to be moved across borders during an event (staff, supplies, specimens/samples, data/information, and patients/evacuees) and cross-cutting issues that would influence the movement of these resources (i.e., communication and governance). (Note: legal issues are incorporated into the other sections.) The checklist items describe protocols, agreements, processes, etc., that should exist or should be considered for development in regional preparedness planning efforts. The next two columns are to be used as an assessment of the region. The final three columns are the self-assessment, where regional and other officials can determine whether they have addressed the checklist item in their regional planning efforts.

Staff

Checklist Item	Existing Structures	Comments	Self-Assessment		
			Yes	No	Partially (explain)
Consistent language in job classification and responsibilities across the region through staff resource-typing.					
Protocols for sharing staff across borders.					
Agreements for sharing staff (e.g., licensing and credentialing, workers' compensation and death benefits, and liability/malpractice).					
Regular training for public health staff on preparedness and incident command systems.					

Supplies

Checklist Item	Existing Structures	Comments	Self-Assessment		
			Yes	No	Partially (explain)
Resource typing through regional resource inventories.					
Multi-jurisdictional agreement to share laboratory supplies in an event, including issues of compensation and reimbursement.					
Multi-jurisdictional agreement to share other relevant equipment, including issues of compensation and reimbursement.					

Specimens/Samples

Checklist Item	Existing Structures	Comments	Self-Assessment		
			Yes	No	Partially (explain)
Agreement to exchange specimens/samples during an event, including issues of compensation and reimbursement.					
Protocols for transportation of specimens/samples during an event.					
Protocols for chain of custody.					

Data/Information

Checklist Item	Existing Structures	Comments	Self-Assessment		
			Yes	No	Partially (explain)
Agreement and systems for exchanging data in a response.					
Protocols for secure, efficient data exchange (ideally electronically).					
Protocols for sharing data: what should be shared, who owns the data, when it should be shared, with whom, etc.					

Patients/Evacuees

Checklist Item	Existing Structures	Comments	Self-Assessment		
			Yes	No	Partially (explain)
Transport of patients/ evacuees between state borders within the US.					
Transport of patients/ evacuees between US and Canada.					
Ensuring Medicaid and insurance coverage in other states.					

Communication

Checklist Item	Existing Structures	Comments	Self-Assessment		
			Yes	No	Partially (explain)
Systems in place to ensure consistent risk communication messages across the region.					
Communication with special needs populations.					
Protocols for effective interstate communication during response in the field.					

Governance

Checklist Item	Existing Structures	Comments	Self-Assessment		
			Yes	No	Partially (explain)
Multi-jurisdictional agreement to offer assistance to adjacent states/provinces in an event.					
Agreement and systems in place to exchange emergency, warning, and notification plans and 24-hour contact lists with adjacent jurisdictions.					
Established working group to lead the process.					
Annual regionally planned/managed drills (including exercising logistics chain).					
Formalized structure for regional decision making in a multi-jurisdictional response.					

Appendix II: Regional Assessment Checklist (Example from PHS Region X)

Intended Audience and Use: The goal of this checklist is to provide regional officials—as they work with state health officials—a tool to aid in their regional planning efforts for public health preparedness. This checklist is not intended to be prescriptive and is not tied to any state preparedness funding.

Description of Checklist: The checklist is divided into seven sections, which encompass the public health resources that may need to be moved across borders during an event (staff, supplies, specimens/samples, data/information, and patients/evacuees) and cross-cutting issues that would influence the movement of these resources (i.e., communication and governance). (Note: legal issues are incorporated into the other sections.) The checklist items describe protocols, agreements, processes, etc., that should exist or should be considered for development in regional preparedness planning efforts. The next two columns of the checklist describe existing structures in USPHS Region X, but could be used by any region as an assessment of what it already has in place. The final three columns are the self-assessment, where regional and other officials can determine whether they have addressed the checklist item in their regional planning efforts.

Disclaimer: This is an example of how the checklist columns can be filled in. It is not intended to be a formal assessment of Region X.

Staff

Checklist Item	Existing Structures in Region X	Comments	Self-Assessment		
			Yes	No	Partially (explain)
Consistent language in job classification and responsibilities across the region through staff resource-typing.		National Incident Management System (NIMS) offers a framework for resource-typing, suggesting the need to categorize resources based on standards of capability and performance.			
Protocols for sharing staff across borders.	PNEMA says that staff can be shared in an event.	Specific protocols could be added to PNEMA.			
Agreements for sharing staff (e.g., licensing and credentialing, workers' compensation and death benefits, and liability/malpractice).	EMAC, PNEMA, Annex B.	In the US, hospitals are private, so there would need to be agreements with the hospitals stating that they would accept credentialing from other states.			
Regular training for public health staff on preparedness and incident command systems.		In public health, training on preparedness is more prevalent than training on incident command.			

Supplies

Checklist Item	Existing Structures in Region X	Comments	Self-Assessment		
			Yes	No	Partially (explain)
Resource typing through regional resource inventories.		NIMS offers a framework for resource-typing, suggesting the need to categorize resources based on standards of capability and performance.			
Multi-jurisdictional agreement to share laboratory supplies in an event, including issues of compensation and reimbursement.	Region X Public Health Laboratory MOU.	In Region X, the Public Health Laboratory MOU gives permission for this, but does not describe how to implement it.			
Multi-jurisdictional agreement to share other relevant equipment, including issues of compensation and reimbursement.	PNEMA, Annex B.				

Specimens/Samples

Checklist Item	Existing Structures in Region X	Comments	Self-Assessment		
			Yes	No	Partially (explain)
Agreement to exchange specimens/samples during an event, including issues of compensation and reimbursement.	Region X Public Health Laboratory MOU.	In Region X, the Public Health Laboratory MOU gives permission for this, but does not describe how to implement it.			
Protocols for transportation of specimens/samples during an event.		Could be added to Region X Public Health Laboratory MOU.			
Protocols for chain of custody.		Could be added to Region X Public Health Laboratory MOU.			

Data/Information

Checklist Item	Existing Structures in Region X	Comments	Self-Assessment		
			Yes	No	Partially (explain)
Agreement and systems for exchanging data in a response.	Informal, relationship-based networks.	There are some existing electronic systems: Health Alert Network (HAN), The Epidemic Information Exchange (EpiX), Web-based Emergency Operations Center (WebEOC), Laboratory Response Network (LRN).			
Protocols for secure, efficient data exchange (ideally electronically).	Informal networks using secure fax and phone lines.				
Protocols for sharing data: what should be shared, who owns the data, when it should be shared, with whom, etc.		Could be added to PNEMA.			

Patients/Evacuees

Checklist Item	Existing Structures in Region X	Comments	Self-Assessment		
			Yes	No	Partially (explain)
Transport of patients/evacuees between state borders within the US.		This happens routinely between Region X states with little difficulty.			
Transport of patients/evacuees between US and Canada.		This would fall under the jurisdiction of federal governments.			
Ensuring Medicaid and insurance coverage in other states.		This would fall under the jurisdiction of federal governments.			

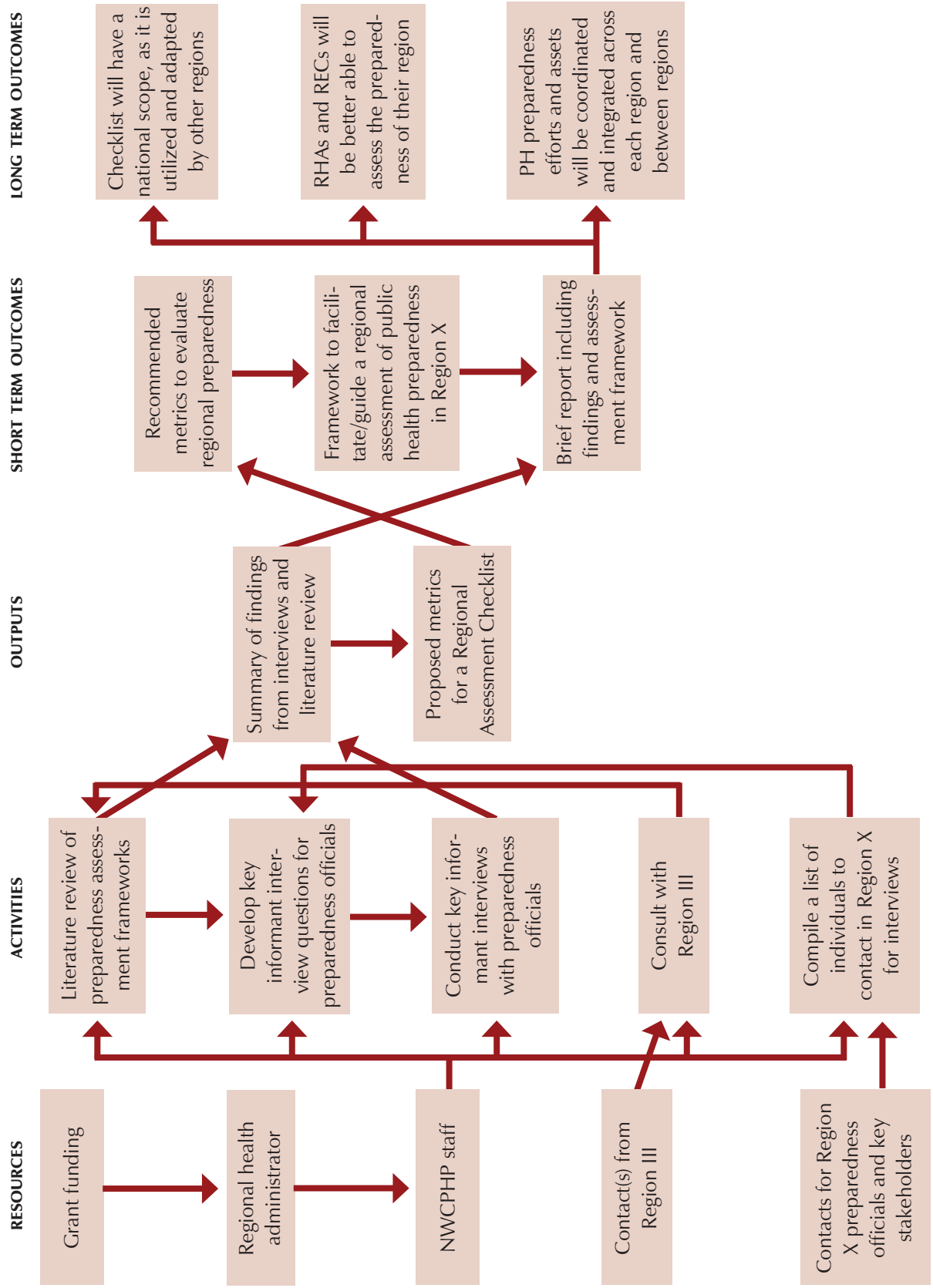
Communication

Checklist Item	Existing Structures in Region X	Comments	Self-Assessment		
			Yes	No	Partially (explain)
Systems in place to ensure consistent risk communication messages across the region.	Ongoing conference calls with PIOs and cross-border workgroup.	NIMS processes and concepts of a Joint Information Center (JIC) could be adapted for this purpose.			
Communication with special needs populations.		Included as a requirement in the 2006 CDC guidance to the states.			
Protocols for effective interstate communication during response in the field.		NIMS processes could be adapted to develop regional protocols for communication of public health workers in the field.			

Governance

Checklist Item	Existing Structures in Region X	Comments	Self-Assessment		
			Yes	No	Partially (explain)
Multi-jurisdictional agreement to offer assistance to adjacent states/provinces in an event.	PNEMA.	PNEMA is the only regional agreement with Congressional approval.			
Agreement and systems in place to exchange emergency, warning, and notification plans and 24-hour contact lists with adjacent jurisdictions.	PNEMA.				
Established working group to lead the process.	PNEMA; cross-border workgroups.	PNEMA sets up a working group, which meets annually. Region X has annual cross-border meetings to discuss regional collaboration. Several working groups have developed as a result.			
Annual regionally planned/managed drills (including exercising logistics chain).					
Formalized structure for regional decision making in a multi-jurisdictional response.		NIMS processes could be adapted to develop regional decision-making structures.			

APPENDIX III: LOGIC MODEL



Appendix IV: Key Informants by State and Category

Key Informants	Category
Washington	**Emergency Management**
John Erickson, Director, Public Health Emergency Preparedness and Response, Washington Department of Health **Romesh Gautom,** Director, Washington Public Health Laboratory **Laura Blaske,** Communication Systems Manager, Washington Department of Health **Colonel Ronald (Ron) Weaver,** Joint Chief of Staff, Washington National Guard Bureau **Jo Hofmann,** State Epidemiologist, Washington Department of Health **John Kobayashi,** NWCPHP Clinical Faculty	Wayne Dauphinee (BC) John Erickson (WA) Mike Harryman (OR) Jim Mackin (AK) Brian Mahoney (OR) Nan Newell (OR) Randy Shaw (OR) Andy Stevermer (Region X) Darce Vassar (ID) Allan Visnick (OR) Ron Weaver (WA) Angela Wickham (ID)
Oregon	**Epidemiology**
Michael (Mike) Harryman, Interim Public Health Emergency Preparedness Manager **Brian Mahoney,** State Strategic National Stockpile Coordinator **Nan Newell,** Strategic Project Coordinator **Randy Shaw,** Public Health Emergency Preparedness Liaison/ Planner **Allan Visnick,** Hospital Preparedness Coordinator **Bill Emminger,** Director of Environmental Health, Benton County Health Dept; Chair, Environmental Health Directors Association **Melvin (Mel) Kohn,** Oregon State Epidemiologist **Michael (Mike) Skeels,** Director, Oregon Public Health Laboratory	Jay Butler (AK) Jo Hofmann (WA) John Kobayashi (UW) Mel Kohn (OR)
Idaho	**Laboratory**
Angela Wickham, Director, Public Health Emergency Preparedness, Idaho Department of Health and Welfare **Darce Vassar,** Manager, Public Health Preparedness, North Central District Health Department, Idaho **Richard Hudson,** Director, Idaho Public Health Laboratory	Romesh Gautom (WA) Mike Skeels (OR) Richard Hudson (ID) Bernd Jilly (AK)
Alaska	**Environmental Health**
Jim Mackin, Director, Public Health Emergency Preparedness, Alaska Department of Health and Social Services **Jay Butler,** MD, Alaska State Epidemiologist and Chief **Kristin Ryan,** Director, Division of Environmental Health, Alaska Department of Environmental Conservation **Bernd Jilly,** MD, Chief, Alaska Public Health Laboratories	Bill Emminger (OR) Kristin Ryan (AK)
British Columbia	**Legal**
Wayne Dauphinee, Director, Emergency Management Branch, British Columbia Ministry of Health	Ellen Miyasato (Region X)
Region X	**Communication**
Ellen Miyasato, Assistant Regional Counsel, Region X, US DHHS **Captain Andrew (Andy) Stevermer,** Regional Emergency Coordinator, Region X, DHHS	Laura Blaske (WA)

Appendix V: Key Informant Interview Questions

The interview will address the following overarching issues with specific questions as to your role in <INSERT FUNCTIONAL AREA>.

- In your area of expertise, what would constitute regional preparedness?
- What would need to be in place to improve regional preparedness?
- How should regional preparedness be measured (e.g. response time in drills or exercises, public health worker competencies, resource inventories, completion of written agreements and plans, etc.)?
- What regional collaborations is your state/province involved with?
  - Do you have agreements in place? What do they address? How are they being used?
  - Do you have regular meetings with state representatives to discuss preparedness efforts? What is accomplished? Is it useful?
- In your opinion, would assessing regional preparedness be useful? If so, in what areas would it be practical (e.g., staff, supplies, information sharing, communication, governance, etc.)?

Resource	Specific Interview Question
Staff	Has there been the need to—or do you ever foresee a situation in which you would—share staff across state/international borders? What systems need to be in place to facilitate this? (ALL)
	Are there any other issues regarding sharing staff across state/international borders? (ALL)
Supplies	What, if any, supplies could be feasibly shared across state and international jurisdictions? What systems need to be in place to facilitate this? (ALL)
Specimen	Do regional approaches need to be considered for sharing samples/specimen during an outbreak? If so, are there any agreements in place about sharing samples/specimens? (Epidemiology, Environmental Health, Public Health Lab)
	If not, has this been done in the past? If so, how? (Epidemiology, Environmental Health, Public Health Lab)
Data/ Information	Are there regional protocols for exchanging data/information during an emergency? (e.g. criteria for what data will be shared, timeline for sharing the information.) (ALL)
	Are there regional approaches or agreements to data collection (e.g. criteria for what data will be collected, timeline for collecting the information, protocols for investigation)? (EPI)
	If not, have you shared data in the past across state or international jurisdictions? If so, how was this done? (ALL)
Patients/ Evacuees	Are there regional agreements to facilitate moving victims/patients across state/international borders? (Emergency Management)
Communication	Are there regional protocols/approaches for communicating and coordinating consistent messages to the media regarding risk and public protocols? (ALL)
	Are there regional protocols/approaches to alerting the public—consistency of messages and findings, timeliness of messages? (ALL)
	Are there regional approaches to individual roles in dealing with the media and answering questions from the public? If so, how is this coordinated? (ALL)
	Are there efforts to have ongoing communication with regional partners during non-crisis times? (ALL)
	How are surveillance and investigation concerns reported to regional partners? (Epidemiology, Environmental Health, Public Health Lab)
Legal	What legal assistance and/or barriers exist that may aid or inhibit your work across state and international jurisdictions? (ALL)
Governance	Are regional efforts occurring to create a directory of contact information and decision trees for quick response in case of an emergency? (ALL)
	What governance structures are necessary to enact these regional efforts? Are these in place already? (ALL)

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