



**Evaluation of the
Project Public Health
Ready Regional Criteria**

**Volume I:
Summary of Cross-case and
Comparative Findings**

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Preface

The Summary of Cross-case and Comparative Findings was developed by the Association for the Study and Development of Community (ASDC) for the National Association of City and County Health Officials (NACCHO) for the Evaluation of the Project Public Health Ready (PPHR) Regional Criteria. This is the first of two volumes on the evaluation findings. The second volume contains case studies of three PPHR regional sites.

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The cross-case analysis would not be possible without the collaboration of many people from the three PPHR and two non-PPHR regions, including each region's public health emergency preparedness coordinator, public health staff, and partners who were willing to meet with ASDC during site visits. The information they provided regarding their respective regions informed the cross-case analysis and case study reports.

Barren River District Health Department
Bowling Green, Kentucky
PPHR Recognized Region

Lincoln Trail District Health Department
Elizabethtown, Kentucky
Non-PPHR Region

Cambridge Public Health Department
Massachusetts Emergency Preparedness
Region 4B
Cambridge, Massachusetts
PPHR Recognized Region

Northwest Ohio Public Health
Preparedness Consortium
Toledo, Ohio
Non-PPHR Region

Northern Illinois Public Health
Consortium Inc.
Chicago, Illinois
PPHR Recognized Region

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Executive Summary

Project Public Health Ready (PPHR), a competency-based training and recognition program managed by the National Association of County and City Health Officials (NACCHO), provides technical assistance and support to local health departments (LHDs) to increase emergency preparedness and response. For LHDs to build capacity at the regional level PPHR developed criteria organized into three areas: emergency preparedness planning; workforce competency development; and exercises and real events.

With support from The de Beaumont Foundation, NACCHO contracted with the Association for the Study and Development of Community (ASDC) to conduct an evaluation of the regional PPHR criteria to determine their effectiveness in improving the preparedness and response of LHDs at the regional level. In general the PPHR program has been very useful to regions that are just beginning to work towards regional efforts by providing them support needed to build capacity; for those regions already engaged in regional efforts PPHR has provided them with a comprehensive framework and timeline for task accomplishment. The emergency preparedness planning, workforce competency development, and exercises and real events that regions participated in to meet the PPHR criteria have helped regions to:

- Increase sharing and understanding of public health responsibilities in regional response;
- Develop formal agreements to share resources;
- Increase sharing of and access to resources;
- Identify strengths, weaknesses and gaps in planning and regional capacity to foster the improvement of existing training and response plans; and
- Increase opportunity for training for LHD staff.

The evaluation was not able to make definitive conclusions about the impact that the criteria has on regional emergency preparedness and response because no common definition for such preparedness exists in the public health field. In addition, the criteria do not encourage regions to examine improvements in their capacity to respond over time and without empirical data showing competency and improvement through exercises and real events it is difficult to make definitive statements about a region's emergency preparedness and response.

PPHR regions were also compared with non-PPHR regions engaged in regional preparedness and response activities to assess differences and similarities. Overall the regions were very similar. However, one key difference was that non-PPHR regions engaged in more integrated preparedness planning (i.e., planning to coordinate preparedness efforts among emergency responders regionally and between emergency responders and the state) than PPHR regions. The PPHR criteria ask LHDs to define and clarify their role in the emergency preparedness within their region; they do not, however explicitly encourage an intentional process to build and strengthen relationships and integrate emergency responders. Integrated preparedness planning is intended to bring about an interlocking system where the emergency management plan is the core plan for

the region and all discipline-specific plans “fit” into the regional emergency management plan. Roles are clearly defined for all partners and the regional plan “fits” into the state plan. While PPHR regions did participate in some regional collaborative planning efforts with other emergency responders to build relationships and clarify their role in emergency response in the region, their emergency preparedness planning was not intentionally focused on integrating with other emergency responders in the region and with the state.

PPHR and non-PPHR regions discussed key components of regional preparedness and agreed that this integrated approach is essential to ensuring that emergency preparedness and response is coordinated at the regional level and is integrated with existing local and state emergency management systems. Integration is absolutely needed to achieve regional emergency preparedness.

To further refine and improve the criteria’s ability to help regions increase their regional preparedness and response capacities NACCHO may want to consider the following:

- Clarify the purpose and potential benefits of PPHR application.
 - If the program is intended to provide technical assistance to regions that are just beginning to engage in regional preparedness activities it would be helpful to tailor technical assistance and criteria to the level of readiness and capacity in region. However, if the program is intended to serve as a step toward accreditation, the criteria should focus more on measuring emergency response capacity (e.g., performance during exercises and real events).
- Encourage sustainability of PPHR efforts by requiring regions to establish policies and procedures to continue the processes begun during the application process.
- Amend the criteria to encourage integration of regional emergency preparedness and response efforts (e.g., measures of the strength of relationships).
- Reduce redundancy in the criteria by creating more linkages among the three areas.

To assist regions applying for regional PPHR recognition in the future, the evaluation team recommends that NACCHO:

- Publish some best practices used by regions to guide emergency preparedness and response both in times of emergency and non-emergency; and
- Provide support and technical assistance around relationship building to help regions mobilize the appropriate support from the LHDs, emergency responders in the region, and the state.

1. Introduction

Project Public Health Ready (PPHR)¹, a competency-based training and recognition program managed by the National Association of County and City Health Officials (NACCHO), provides technical assistance and support to local health departments (LHDs) to increase emergency preparedness and response. For LHDs to build capacity at the regional level PPHR developed criteria organized into three areas:

- *Emergency preparedness planning* - how LHDs and their workforce will respond to an emergency, including specific responsibilities and relationships with different agencies;
- *Workforce competency development* - competencies in basic public health emergency preparedness and response functions for all public health workers (i.e., leaders/administrators, professionals, and technical and support staff); and
- *Exercises and real events* - the practical assessment of emergency preparedness (e.g., bioterrorism, infectious disease outbreaks) through the use of tabletop drills, functional and full-scale exercises, other practice-based activities, or real events that test regions ability to respond to all-hazards (NACCHO, 2005a).

2. Evaluation Design

With support from The de Beaumont Foundation, NACCHO contracted with the Association for the Study and Development of Community (ASDC) to conduct an evaluation of the regional PPHR criteria to determine how effective they were in improving the preparedness and response of LHDs at the regional level. The evaluation of the PPHR regional criteria addressed the following questions:

1. How did the regions selected for case study implement the PPHR criteria to improve their overall preparedness?
2. What are the differences between overall preparedness in the PPHR regions and non-PPHR regions engaged in preparedness planning?
3. Do the criteria adequately measure regional preparedness?
4. Which of the criteria indicated successful collaboration and which did not?
5. Have the PPHR regions effectively demonstrated that they are capable of responding in a regional manner and how can this be measured?
6. What are some of the recommendations for improving the current criteria in the future?

No common definition of regional emergency preparedness and response exists in the public health field. Furthermore, the regional component of PPHR is the first and only formal attempt to identify the types of activities expected to result in regional preparedness and response. Therefore, a theory of change for the PPHR regional program was developed to guide both programmatic and evaluation efforts. A description of the theory of change is in Appendix A. The theory of change is depicted visually in the logic model in Appendix B. Data collected for the evaluation study were used to test this

¹ More information on PPHR can be found at www.naccho.org/topics/emergency/PPHR.cfm.

theory of change. The evaluation team conducted an in-depth study of three PPHR regions and compared them with two non-PPHR regions. To further strengthen the design and interpretation of the PPHR evaluation, an Advisory Committee of national, state, and local experts in emergency preparedness was convened. Each component of the evaluation design is discussed in more detail below.

2.1 In-depth Study of PPHR Regions

The evaluation team used an individual and cross-case approach to collect data to answer the evaluation questions. Three case studies of PPHR applicants were conducted. The three PPHR applicants selected for a case study were:

- Emergency Preparedness Region 4B (Cambridge Public Health Department, Massachusetts);
- Northern Illinois Public Health Consortium, Inc. (University of Illinois, Chicago); and
- Barren River District Health Department (Bowling Green, Kentucky).

These three PPHR applicants were selected because each has a unique regional organizational structure and approach to improving their regional preparedness and response. Region 4B was selected for a case study because it pools or *centralizes* resources and capacities of individual LHDs “in recognition that no single local public health department within a region would have the resources or capacities to respond” to an emergency event across multiple jurisdictions (NACCHO, 2005b). The Northern Illinois Public Health Consortium was selected for a case study because it *coordinates* “individual local public health departments, each with sufficient capacity to respond to a public health emergency within its jurisdiction” to improve regional preparedness and response (NACCHO, 2005b). The Barren River District Health Department was selected for case study because it *standardizes* LHDs’ preparedness functions across jurisdictions to improve regional preparedness and response. Local and regional standardized emergency operations plans allow local capacities to “be combined, without special effort, during an emergency incident and function to deliver a unified, cohesive regional response” (NACCHO, 2005b). Case studies of these three PPHR applicants are attached.

A case study approach was selected because:

- The approach provides a rich description and deep analysis of the ways in which the criteria were implemented, how they contributed to increased preparedness and responsiveness, and the extent to which the criteria had an impact on regional preparedness – information needed for making program improvements and for replicating successful efforts;
- The approach allows for inclusion of multiple sources of data (e.g., interviews, document review, direct observation of emergency planning meetings); and
- The approach can maximize learning through cross-site comparisons (e.g., Did the same criteria lead to increased preparedness across sites or were different criteria important depending on a region’s unique characteristics?).

Data for the case studies were collected through one-day site visits (August 10, 17, and 22, 2006) to the Barren River Region, Northern Illinois Public Health Consortium, and Region 4B, respectively, and document review (i.e., emergency response plans, communication plans, after-action reports, and PPHR application materials). During the site visit two members of the evaluation team interviewed between six and 11 individuals involved in the region's PPHR planning process, as well as community leaders and providers knowledgeable about the public health community and the impact of regional preparedness on the larger community. Interviewees were selected based on feedback from the regional representative coordinating their PPHR application. Interviewees not available during the site visit were interviewed via telephone at a later time. Interview questions used to collect data during these site visits are included in Appendix C. The evaluation team also attended a preparedness planning meeting in the Barren River Region.

2.2 Comparison with Non-PPHR Regions

Two one-day site visits to the Lincoln Trail District Health Department (Elizabethtown, Kentucky) and the Northwest Ohio Public Health Preparedness Consortium (Toledo, Ohio), two non-PPHR regions that were engaged in preparedness planning, were also conducted to assess differences and similarities between PPHR and non-PPHR regions. During the site visits one member of the evaluation team interviewed between 11 and 13 individuals involved in the region's PPHR planning process, as well as community leaders and providers knowledgeable about the public health community and the impact of regional preparedness on the larger community. Interviewees were selected based on feedback from the regional public health emergency preparedness coordinator. Interview questions used to collect data during these site visits are included in Appendix C.

The evaluation team also attended preparedness planning meetings (i.e., a Health Resources and Services Administration regional meeting in Elizabethtown and a meeting of LHD directors in Toledo) and reviewed their emergency response plans, communication plans, and after-action reports. Non-PPHR regions were visited on November 14 (Toledo, Ohio) and 16, 2006 (Elizabethtown, Kentucky).

These regions were selected because they represented an urban and rural region and because of their unique approach to public health preparedness. Similar to the Barren River District Health Department, the Lincoln District Trail Health Department was selected for case study because it *standardized* LHDs' preparedness functions across jurisdictions to improve regional preparedness and response. The Northwest Ohio Public Health Preparedness Consortium was selected because it blends the *coordinated* and *centralized* approaches to public health preparedness. It coordinates regional planning activities because all LHDs in the region are represented by a planner and have the resources to participate in planning. However, it also centralizes some resources that are not evenly distributed to LHDs in the region (e.g., N-95 masks, radiation detectors, water quality kits, etc.).

2.3 PPHR Regional Evaluation Advisory Committee

With the assistance of NACCHO, the evaluation team convened an Advisory Committee of national, state, and local experts in emergency preparedness. In addition to the expertise of NACCHO, committee members have provided ASDC with additional technical assistance and content expertise for the evaluation. Specifically, the committee has:

- Provided feedback on interview protocols;
- Provided recommendations on comparison regions and contacts within those regions; and
- Provided external perceptions of PPHR.

3. Organization of Summary Report

The purpose of this summary report is to answer the six evaluation questions described in Section 2 and to determine if the PPHR criteria facilitated change in regions in the manner described in the theory of change (Appendix A and B). Several of these evaluation questions required the evaluation team to make a determination about regional preparedness and response. As mentioned earlier, there is no common definition of regional emergency preparedness and response; the evaluation could not definitively address, therefore, evaluation questions 2 and 5 (see page 1).

In addition, although the evaluation did not specifically ask about contextual factors that had an impact on regional ability to implement PPHR, some key contextual factors emerged during data analysis. Section 4 describes key elements of infrastructure that were important to the PPHR application process and contextual factors that hindered regions in their PPHR application. These findings have implications for the evaluation question: *Which of the criteria indicated successful collaboration and which did not?* Similarities and differences between PPHR and non-PPHR regions are also examined in Section 4 to determine key contextual factors that supported or hindered the implementation of the PPHR regional criteria in multiple regions.

Section 5 provides information relevant to the evaluation question: *How did the regions selected for case study implement the PPHR criteria to improve their overall preparedness?* The impact of PPHR on the regional preparedness efforts and differences in the preparedness efforts of PPHR and non-PPHR regions will be discussed. The evaluation team found it difficult to draw definitive conclusions about the differences between overall preparedness in PPHR and non-PPHR regions because a definition of regional public health emergency preparedness does not exist. However, using the elements of the PPHR regional criteria the evaluation provides some information relevant to the question: *What are the differences between overall preparedness in the PPHR regions and non-PPHR regions engaged in preparedness planning?*

Key components of regional preparedness that may help to contribute to a shared definition of regional preparedness are explored in Section 6. Recommendations to

improve the PPHR criteria are offered in Section 7. In addition, Section 7 also offers insight into the evaluation question: *Have the PPHR regions effectively demonstrated that they are capable of responding in a regional manner and how can this be measured?*

4. Contextual Factors Associated with Implementing a Regional Approach to Emergency Preparedness and Response

This section reviews the elements of organizational infrastructure that supported the implementation of the PPHR criteria, the contextual factors that hindered the implementation of the PPHR criteria and the implications of these findings for the evaluation question: *Which of the criteria indicated successful collaboration and which did not?*

4.1 Factors that Supported the Implementation of the PPHR Criteria

Cross-case² and comparative findings suggest that organizational capacities (e.g., staff time, agency support, leadership body, and established relationships) needed to apply for PPHR recognition are similar to those needed to engage in non-PPHR activities to increase regional preparedness.

When applying for PPHR recognition it was helpful for regions to have certain elements of organizational infrastructure or capacities in place. Common capacities supporting preparedness efforts of LHDs that were critical to the PPHR application process included:

- **Staff time:** LHD staff that can dedicate time to preparing the application (e.g., the Barren River District Health Department dedicated their Disaster Response Coordinator to manage their PPHR application).
- **Agency support:** Support from an established lead agency in the community is needed to provide the resources (e.g., staff time) needed to prepare the application (e.g., the Cambridge Public Health Department was an established Advanced Practice Center³ in their region).
- **Leadership body:** A committee or department to oversee and advise staff during the process (e.g., the Northern Illinois Public Health Consortium established a PPHR Steering Committee).
- **Established relationships:** History of collaboration between public health and other emergency responders required to provide access to resources and information needed for the application (e.g., the Barren River District had an

² More information about each PPHR region included in the cross-case analyses can be found in *Volume II: Three Regional Case Studies of the Evaluation of the Project Public Health Ready Regional Criteria*.

³ Advanced Practice Centers (APC) are LHDs that are “developing cutting-edge tools and resources that will help [them] and other LHDs nationwide prepare for, respond to, and recover from major emergencies.” More information about the APC program, supported by NACCHO and the Centers for Disease Control and Prevention, can be found at www.naccho.org/topics/emergency/apc.cfm.

established team of key community partners⁴ that began meeting in 2003 to develop a regional healthcare response).

The non-PPHR regions also described similar capacities that facilitated their approach to achieving regional preparedness:

- Staff time: Both regions had a full-time regional public health coordinator and at least two additional public health staff to help them coordinate and conduct preparedness activities (e.g., training, planning meetings).
- Agency support: Support in both regions was critical in securing staff time and resources (e.g., meeting and office space) needed to conduct preparedness efforts.
- Leadership body: Both regions worked with a leadership body to help oversee and advise staff during the process. The diversity of emergency responders represented on the leadership bodies made integrated preparedness planning⁵ possible. The Lincoln Trail District Health Department was advised by Health Resources and Services Administration regional collaboration. The Northwest Ohio Public Health Consortium was overseen by their governance committee (i.e., of all LHD directors) and received guidance from their Regional Medical Response System, a collaboration of first responders, medical and mental health services, public health, emergency management, volunteers, and businesses.
- Established relationships: Both regions had established relationships with public health and other emergency responders within their region. For example, both regions partnered with the medical community to leverage additional support and resources for preparedness planning. This partnership helped to integrate hospital and public health preparedness plans.

4.2 Factors that Hindered the Implementation of the PPHR Criteria

Successfully addressing the contextual factors that hindered the implementation of PPHR in regions will help to facilitate preparedness efforts in PPHR and non-PPHR regions. Several contextual factors hindered the implementation of the PPHR criteria across regions:

- State requirements: State requirements for training and response of public health staff were different than those listed in the PPHR criteria. These differences made it especially difficult for LHDs that rely on the state for their drills and assessments of training competencies to meet PPHR criteria.
- Lack of authority: Lack of authority of the regional staff and regional infrastructure created difficulty for regional staff holding state or LHD staff accountable for PPHR requirements. The criteria were most easily applied by a regional public health body with authority over LHDs.
- Limited relationship with the state: A lack of connections between state and major metropolitan health departments, and regional staff made it difficult for regions to

⁴ The Barren River District Healthcare Emergency Area IV Response Team consisted of emergency management services, hospitals, police and fire personnel, county coroners, and mental health agencies.

⁵ For purposes of this report *integrated preparedness planning* is defined as collaborative planning to produce one regional plan for the purposes of coordinating elements of discipline specific response plans for all emergency responders in the region.

access the resources available for preparedness and response of LHDs. The comparison sites felt that having an established relationship with the state resulted in regular information sharing necessary for their preparedness efforts. For example, the Ohio Department of Public Health has provided regions with a list of targeted capabilities and tools to help them meet these targeted capabilities (e.g., an infectious disease manual that include templates for program planning to help the region target their epidemiology capabilities of surveillance and investigation, mass prophylaxis, and isolation and quarantine). These capacities include identifying steps to integrate the public health with the medical response to be more effective in preparedness and response.

Non-PPHR regions provided some insight about addressing these challenges. To increase buy-in from the state and other first responders, comparison regions used an actual example of an uncoordinated response (e.g., response efforts after Katrina) to highlight the importance of collaboration and integration. To address the lack of authority of the regional public health coordinator, the Northwest Ohio Public Health Preparedness Consortium developed a governance committee comprised of all the LHD directors that helped to give regional decisions made through the committee authority within the region. Non-PPHR regions felt that these strategies had been an essential facilitator of their preparedness efforts.

4.3 PPHR Measures of Collaboration

As indicated above, established relationships with the state and other emergency responders in the region facilitate activities that help regions prepare for an emergency event. The regional criteria measure the presence of relationships between agencies involved in emergency response by requiring that regions outline relationships in their communication plan, but do not measure the strength of these relationships. The relationship between the state and the region is not explicitly measured in the criteria. Some measures may indicate the presence of a relationship with the state (i.e., laboratory data and sample testing) but these measures vary by region. As discussed in Section 6 (Figure 2), it is important for regions to use an approach to regional preparedness that is integrated with the existing emergency management system in the region. Measures of the strength of relationships among emergency responders, and between emergency responders and the state, are critical to assessing the foundation of relationships that need to be in place for integration to occur.

4.4 Factors for Future PPHR Regional Sites to Consider

Based on the findings about factors that helped and hindered the implementation of the PPHR criteria a list of questions was developed, included in Figure 1, that may be helpful for regions to consider before applying for PPHR recognition. These questions are intended to help regions assess the impact that the key contextual factors discussed above may have on their PPHR application.

Figure 1: Key questions assessing contextual factors for regions to consider before applying for PPHR recognition

- ✓ What collaborative groups of agencies involved in emergency response exist in my community?
 - ◆ Which groups do I have an established relationship with?
 - ◆ How will I access and build relationships with other agencies involved in emergency response during the PPHR application process?
 - ◆ How will I continue these relationships after this process ends?

- ✓ What emergency response capacities already exist in my region?
 - ◆ Do regional emergency operations, emergency management, EMS, or hospital plans exist?
 - ◆ Do LHDs in my region have emergency response plans developed?

- ✓ What are the state requirements (e.g., training, response) for public health staff and other agencies involved in emergency response?
 - ◆ How will those requirements impact the region's planning process and response plans?

- ✓ How will the region develop or enhance the relationship(s) needed to access information, resources, and other general support from the state department of public health?

- ✓ How will my region support the application process?
 - ◆ How will my region access the authority needed to promote accountability during the process?
 - ◆ What types of resources will the region dedicate to the application process?

- ✓ Who will be involved in the application process to provide technical oversight and support in writing, researching, and organizing application materials?

5. Impact of the PPHR Regional Criteria on Regional Preparedness and Response

As previously mentioned, a universally accepted definition of regional preparedness does not exist. The lack of this definition has ability of the evaluation to draw definitive conclusions about the effectiveness of the criteria in improving regional preparedness and response. Regions had mixed perceptions about the impact of PPHR regional criteria on their response capacity. One region felt that because of the preparedness efforts they engaged in during their PPHR application process the region was more capable to respond. However, the other two regions did not feel that their response was improved through their PPHR efforts. Part of these regions' reluctance to

suggest that their regional response capacity improved was because their role in regional response was not well defined initially. In these regions, their regional staff served to support coordination and provide technical assistance to LHDs and was not directly involved in the incident command structure for regional response.

The criteria were useful in helping regions achieve the short-term outcomes, as illustrated in the PPHR theory of change. In addition, the components of planning, training, and exercising that are the focus of the PPHR criteria are consistent with the focus areas of the non-PPHR regions suggesting that these are critical activities needed for regions to prepare for an emergency event. This section describes similarities and differences between the PPHR and non-PPHR regions and the impact that the PPHR criteria had on PPHR regions preparedness efforts.

5.1 Comparison of Preparedness Activities Conducted by PPHR and Non-PPHR Regions

The overall regional preparedness activities of the PPHR regions are very similar to the non-PPHR regions. The major differences between PPHR and comparison regions are:

- PPHR regions are training staff to the nine core competencies of public health workers (Columbia University School of Nursing Center for Health Policy, 2001) and non-PPHR regions were training staff according to staff needs and state requirements; and
- Comparison regions were engaging in *integrated preparedness planning* to produce one regional plan to coordinate elements of discipline specific response plans for all emergency responders in the region.

Without thorough review of training curricula of PPHR and non-PPHR regions it is difficult to make a conclusive statement about the practical implications of the differences in workforce competency. However, the nine core competencies are broad and comprehensive standards for public health workers. Relying on staff needs and state requirements to drive training may not adequately cover all of the nine core competencies.

It is important to note that non-PPHR regions engaged in more integrated preparedness planning than PPHR regions. Integrated preparedness planning is intended to bring about an interlocking system where the emergency management plan is the core plan for the region and all discipline-specific plans “fit” into the regional emergency management plan. Roles are defined and clear for all partners and the regional plan “fits” into the state plan. While PPHR regions did participate in some regional collaborative planning efforts with other emergency responders to build relationships, their emergency preparedness planning was primarily conducted among public health agencies. Differences and similarities between the preparedness activities and the short-term outcomes that occur as a result of those activities in PPHR and non-PPHR regions are described in Table 1.

5.2 Impact of the PPHR Criteria on Regional Preparedness

Although the evaluation has provided no compelling evidence that the PPHR criteria are better than other approaches to regional preparedness, it did find that the criteria were useful for regions. Regions felt that the criteria offered them comprehensive guidelines and a timeframe to work on their regional preparedness. As predicted by the theory of change, the PPHR criteria have helped regions achieve the short-term outcomes. However, the capacity of LHDs, and the function and authority of the regional public health body made several of the criteria less relevant for regions. Criteria were less relevant for the two regional applicants that served to coordinate or centralize preparedness functions and resources and would not function as the incident commander or lead agency during an emergency event across multiple jurisdictions. Recommendations to improve the relevancy of the criteria for these types of regional public health bodies are discussed below (Section 7).

The collaborative development of a regional plan and the exercising of that plan have led to the following short-term outcomes:

- ***Increased sharing and understanding of public health responsibilities in a regional response.*** PPHR increased opportunities for LHDs and other agencies involved in emergency response to work together (e.g., peer-networking) and share information (e.g., training, exercises). As a result, two regions have developed an improved understanding of the roles and responsibilities of local, regional, and state health departments. Two regions also have an improved understanding of the roles and responsibilities of other agencies involved in emergency response in their region and have begun exploring how LHDs can interface more effectively with other agencies.
- ***Formal agreements (e.g., Mutual Aid Agreements) to share resources.*** Two regions have begun establishing formal agreements with other LHDs and agencies involved in emergency response to ensure that LHDs in the region will have access to needed resources in the time of an emergency. Mutual aid agreements have been established among 21 of 27 LHDs in Region 4B. The Barren River District Health Department is working to establish memoranda of agreement with community clinics to facilitate access to resources for a mass clinic, if needed.
- ***Increased sharing of and access to resources*** (e.g., equipment, communication systems, and personnel). In addition to developing formal agreements to increase access to needed resources, as described above, PPHR also increased the availability of needed resources in all three regions. In order to meet PPHR criteria regions identified needed resources and acquired them. Two regions improved their ability to communicate (e.g., satellite radios, conference call bridge), and the third region centralized the use of the Medical Reserve Corps to increase access to volunteers for all LHDs in the region.

The focus on developing workforce competency has led to the following short-term outcomes:

- ***Identified gaps and strengths in planning and regional capacity to allow for the improvement of existing training and response plans.*** In all three regions the PPHR criteria provided guidance and a framework to organize existing capacity, and to identify gaps and areas to improve. Regions became aware of gaps in training that need to be addressed and are actively working to ensure staff in their regions are receiving the appropriate training. Two regions indicated that their efforts to increase their workforce competency created a quality control process that had not existed or been formalized before PPHR. PPHR enhanced and encouraged the regions' ability to exercise multiple times over the past year, which helped to further identify gaps and strengths in planning and regional capacity. As a result all three regions refined their regional and local all-hazards plans and two regions formalized communications plans.
- ***Increased opportunity for public health staff to get training in the nine core competencies.*** In order to meet PPHR criteria, regions conducted training needs assessments, developed training plans, and began training public health staff. Although it was unclear whether or not PPHR resulted in increased workforce competence, all three regions have developed a training plan to ensure that all staff has the opportunity to get trained in the nine core competencies. Increased competency may be more accurately assessed over time and as regions continue to assess training needs.

As you can see from the evidence presented above, the PPHR criteria have helped regions to meet the short-term goals described in the theory of change. However, it is unclear what impact the PPHR criteria had on external communication with other agencies during an emergency event and a planning process for all-hazards preparedness that can be sustained in the region.

Table 1. Preparedness activities and short-term outcomes in PPHR and non-PPHR regions

Preparedness Activities	Preparedness Activities/Outcomes in PPHR Regions	Preparedness Activities/Outcomes in Comparison Regions
Planning	<ul style="list-style-type: none"> • Process to identify gaps and strengths in planning and regional capacity • Understanding of LHDs unique and shared responsibilities during a regional response • <i>Collaborative</i> planning to develop a public health regional plan 	<ul style="list-style-type: none"> • Process to identify gaps and strengths in planning and regional capacity • Understanding of LHDs unique and shared responsibilities during a regional response • <i>Integrated</i> preparedness planning to develop a regional emergency operations plan that outlined the capacity and roles and responsibilities for all emergency responders
Collaboration	<ul style="list-style-type: none"> • Formal agreements to share resources • Access to needed resources 	<ul style="list-style-type: none"> • Formal agreements to share resources • Access to needed resources
Training	<ul style="list-style-type: none"> • Staff training in the nine core competencies 	<ul style="list-style-type: none"> • Staff training is focused on state requirements and staff needs • Do not train staff in the nine core competencies
Exercising	<ul style="list-style-type: none"> • Conducts regional exercises • Improve existing training and response plans based on data 	<ul style="list-style-type: none"> • Conducts regional exercises • Improve existing training and response plans based on data
Sustainability	<ul style="list-style-type: none"> • Commitment to continue process • Institutionalized policies for information and resource sharing • Institutionalized practices for planning 	<ul style="list-style-type: none"> • Commitment to continue process • Institutionalized policies for information and resource sharing • Institutionalized practices for planning

6. Framework for an Emerging Definition of Regional Preparedness and Response

Although a universally accepted and consistent definition for regional preparedness and response does not currently exist, participants from the three PPHR and two non-PPHR regions contributed to the development of a definition by discussing key components necessary for regional preparedness and response. The key components of regional preparedness and response in at least three regions are included in Figure 2.

Figure 2: Key components of regional preparedness

- ✓ An approach integrated with the existing emergency management system in the region
- ✓ Access to and support of decision makers and those with authority in the region during an emergency (e.g., local government, county administrators)
- ✓ Relationship with the state (e.g., support from decision makers) to access additional funding, resources, and technical support for the region
- ✓ Understanding of the roles, resources, and capabilities of all agencies involved in emergency response
- ✓ A common language used to communicate between agencies involved in emergency response
- ✓ Commitment and resources to continually assess and improve existing components

In addition to discussing key components of regional preparedness, site visit participants from the three PPHR and two non-PPHR regions emphasized and helped to clarify the importance of coordination, centralization, and standardization in approaches to public health preparedness and response. Effective coordination of resources and capacities results in the timely mobilization of appropriate people and materials and creates a unified and cohesive regional response.

Centralization and standardization are two processes to achieve coordination that can be used by regions based on their needs and capacities. Regions that have authority over LHDs or an established body of LHD directors may be able to more easily standardize elements of local response plans to facilitate their coordination. Regions that have disparate resources among LHDs may choose to centralize some of their resources to facilitate their coordination.

7. Recommendations

Several recommendations to refine and improve the criteria's ability to identify activities that help regions increase their regional preparedness and response capacities were generated. NACCHO may want to consider the following recommendations that came from two or more regions:

Emphasize communications and relationship development. Communications are an important first step in developing the relationships needed to implement the PPHR criteria. Developing relationships takes time and with a process with a fixed timeframe, NACCHO may want to consider creating a two-step application process to allow regions to take the time needed for developing relationships and provide tools and technical assistance to regions to assist them with this difficult task.

The first step of the process could focus on helping regions identify and build relationships and systems of communication between key players involved in emergency response in their region. Tools and technical assistance in this step could focus on helping regions assess emergency response resources, build collaborative working relationships with the key players in their region, and develop consistent and accessible methods of communication. Non-PPHR regions felt that well-developed communication mechanisms resulted in consistent messages at the local and regional level increasing credibility and legitimacy of locally developed communications.

The second step of the process could focus on taking action to improve the coordination of emergency response in the region and meet PPHR criteria with the help of their new collaborative partners. Without the proper foundation of trust, regions will not be able to access the knowledge or resources to improve preparedness and response of LHDs.

Emphasize the development of policies and procedures (e.g., policy stating that all LHDs in the region will exercise three times a year individually and twice a year as a region; standardized procedures to guide the development, evaluation, and corrective actions for exercises). Several of the criteria for Goal 1 were not relevant to regions based on the capacity of LHDs, and the function and authority of the regional public health body. NACCHO may want to consider revising the criteria to have more focus on policies and procedures that guide training and response as opposed to developing a regional plan for response. For example, criteria guiding regions to develop policies for staff training and a plan for the implementation and monitoring of that policy would be more applicable to regions with different capacities. In addition, such policies would continue to be implemented over time and not just be a one-time effort conducted to meet PPHR criteria requirements (e.g., the training policy would continue to build competence over time).

Prepare regions for the application process. All three regions indicated that the PPHR application process is time consuming. For example, one region indicated that the application process had required a full-time commitment from their regional coordinator.

Regions would be better able to judge if they have the capacity to apply if NACCHO provided them with an estimate of time and staff resources. This may be difficult to provide because estimates vary greatly depending on the amount of work that a region needs to meet the criteria. However, NACCHO may consider offering different objectives or staggering objectives to allow regions to prioritize the criteria that best meet their needs.

Link the PPHR criteria with criteria, tools, and activities that LHDs do everyday to improve the applicability and usefulness to LHD staff. Many of the criteria seek to improve aspects of public health practice that are important in times of non-emergency (e.g., communications, epidemiological surveillance). All three regions have provided some examples of how tools developed for PPHR can be used to improve daily public health practice. For example, the Barren River Health District developed communication templates that can be used in daily communications. A non-PPHR region set up flu clinics as PODS to use this yearly activity as an opportunity to exercise. By compiling these examples and others from PPHR regions, NACCHO could make a valuable contribution to the field of public health by identifying and publishing best practices to guide public health practice in both daily public health practice and in times of emergency.

Enhance the criteria to address sustainability, and facilitate coordination and integration of preparedness efforts. It was suggested that the criteria require regions to develop a maintenance plan that describes how planning, staff, and resources will be sustained. In addition, non-PPHR regions felt that building capacity within partner agencies by cross-training volunteers and staff from LHDs, EMS, hospitals, community-based organizations (e.g., American Red Cross), and emergency management was an important indicator of sustainability for both planning and training. To leverage the resources needed to sustain preparedness efforts it was suggested that regions explore ways to integrate emergency response planning across the region from other disciplines (e.g., fire departments⁶, hospitals). Ensuring that regions approach emergency preparedness planning in a way that is integrated with or fits with other emergency responders in the region and at the state, is an important component of regional preparedness (see Section 6). As previously mentioned, the PPHR criteria measure the presence of relationships but do not assess the strength of relationships (i.e., Does public health communicate and work with other emergency responders? How?). Looking at the type and frequency of joint efforts between emergency responders (e.g., who participates in exercises, cross-trainings and how frequently) may begin to show strength of relationships and determine if a foundation for integration exists.

To facilitate coordination, one non-PPHR region developed a planning recommendations document that suggests elements LHDs could consider standardizing to improve coordinated response in the region. One non-PPHR region also developed an interim step to coordinate response while they were getting public health staff trained in

⁶ The webpage for the “FIrefighting REsources of Southern California Organized for Potential Emergencies” (FIREScope), an initiative to unify resources to combat the spread of wild fires in Southern California, provides resources on integrating emergency responders (www.firescope.org).

emergency response. The Northwest Ohio Public Health consortium uses a Public Health Incident Response Strike Team, a team of six trained public health staff (e.g., two epidemiologists, two environmental health specialists, and two registered nurses), to support local jurisdictions during public health emergency response operations by providing technical information, surveillance, monitoring, evaluation, control methods, team and responder safety, and to support public information operations. Engaging diverse community sectors in planning is another way to encourage coordination and integration of preparedness efforts. Non-PPHR regions engaged special population agency directors, front-line staff, and consumers in developing a comprehensive plan to address special populations, as well as representatives from the mental health community in planning efforts to provide support to victims and first responders.

Although only one region made the following recommendation, the evaluation team felt that *clarifying the purpose and potential benefits of PPHR recognition with regions may add value to the program*. The program is currently seen as a step towards an accreditation process, a peer-to-peer learning process, and a way to bring recognition to regions improving preparedness and response of LHDs. Because of the large investment regions make to apply for PPHR recognition, it is important for NACCHO to be able to present clearly the purpose and potential benefits to regions interested in recognition.

The evaluation team itself also has two recommendations that NACCHO may wish to consider to improve their PPHR regional criteria.

Focus the criteria on regional exercises to measure improvements in regional preparedness and response over time. Regardless of the existence or absence of a national definition of regional preparedness and response, an indicator of regional emergency preparedness is the ability of a region to come together during a regional exercise. Although exercises are often seen as most successful when regions come away with knowledge of areas to improve, the gaps identified should become narrower and more focused as regions' capacities for preparedness and response on a regional level increase. In addition, exercising may be a valuable way for regions to demonstrate improvements over time (i.e., weaknesses identified in an exercise are addressed through after-action adjustments and consequently show improvement during the next exercise). Increased capacity to respond may also become evident over time if regions continue to make progress. As mentioned previously, the PPHR criteria could ensure that regions continue to make progress by focusing on the development of policies and procedures which are more sustainable and more easily institutionalized.

Tailor technical assistance and criteria to the level of readiness and capacity in a region. In order to provide appropriate support and helpful benchmarks for regions, NACCHO may want to consider the already existing readiness and capacity of a region to coordinate and mobilize response.

- Readiness: Existing preparedness efforts, leadership, funding

- Capacity: The internal capacities of LHDs in the region (e.g., staff) and the region as a whole (e.g., governance) and their external capacities to work with other emergency responders

Regions with a high level of readiness and capacity may need help refining the more complex elements of their regional response (e.g., institutionalization of plans and policies), whereas regions that begin with limited capacity and readiness may need to focus on developing internal and external capacities and implementing basic elements of a regional response (e.g., identifying key emergency responders in the region). Therefore, NACCHO could develop criteria based on a developmental framework that describes appropriate expectations for regions based on their level of readiness and capacity. This developmental framework could allow comparisons of progress and effectiveness across regions, and would enable NACCHO to tailor training and technical assistance to each region's stage of development, and provide more appropriate targeting of outcomes based on stage of development.

Tailoring the criteria would allow regions to use PPHR in different ways. For example, the Northwest Ohio Public Health Consortium could use the criteria to focus on increasing their workforce competency. The Lincoln Trail District Health Department may want to use the criteria to develop capacity among LHDs to engage in preparedness efforts.

Additional recommendations from members of the PPHR Regional Evaluation Advisory Committee can be found in Appendix D.

8. Conclusion

Overall, the criteria of PPHR provide a framework that helps regions develop a regional plan, increase training opportunities for LHD staff, and enhance their ability to exercise. Site visit participants had mixed perceptions about whether or not the criteria helped regions to increase their overall capacity to respond. However as mentioned previously, it may be most appropriate to expect changes in regional response capacity from regions that began the PPHR process with high levels of readiness and capacity. For regions with limited capacity and readiness it may be more appropriate to measure their achievement of short-term or interim outcomes (e.g., development of a regional plan).

The criteria are a critical first step towards achieving standardization and quality in the field of public health preparedness. Currently, these criteria are the only effort on the national level to provide a framework for quality assurance in the field of public health emergency preparedness. In addition, the components of planning, training, and exercising are consistent with the focus areas of the non-PPHR regions suggesting that these may be critical activities needed for regions to develop the capacity for regional response. The evaluation found that PPHR had an impact on only the short-term outcomes illustrated in the PPHR theory of change. Unfortunately, the evaluation cannot make definitive statements about the impact of the long-term outcomes of preparedness

efforts that focus on planning, training, and exercising because of the lack of consensus about a definition for regional emergency preparedness in public health. This issue is not unique to emergency preparedness or PPHR but is a problem with the entire field of public health.

PPHR regional criteria were valuable for regions because they helped to build capacity in regions that were just beginning to engage in preparedness efforts and because they provided a comprehensive guideline and timeline for regions that helped to move their preparedness efforts along. These findings suggest that PPHR is most useful to build the capacity of regions just beginning to engage in preparedness efforts, and offers accountability, bench marks, and comprehensive guidelines that can be used as a needs assessment for regions that are looking to further enhance their regional preparedness efforts.

To increase the broad applicability of the criteria, NACCHO may want to consider ways to modify or refine the criteria so that they develop the public health capacities needed for an integrated approach to regional emergency preparedness and response (e.g., identifying the capacity and roles and responsibilities for all emergency responders). Since limited public health infrastructure is a recognized problem throughout the nation, a more integrated approach to regional preparedness will help LHDs access, utilize, and leverage existing community resources. An integrated approach may help LHDs better address the challenges that they are having implementing an incident command structure.

9. References

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National Association for City and County Health Officials. (2005a). *Project Public Health Ready Fact Sheet*. Retrieved October 11, 2006 from <http://www.naccho.org/topics/emergency/documents/PPHRFactSheetDecember2005FINAL.pdf>

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Appendix A: Description of the Regional Project Public Health Ready Theory of Change

Appendix A: Description of the Regional Project Public Health Theory of Change

The PPHR criteria were developed to create change in the capacity of regions to prepare for and respond to emergency events. This theory of change is depicted visually in the *Overall Logic Model for the Regional PPHR*. According to this theory of change regions are expected to develop preparedness and response on a regional level by:

- Refining or developing a regional plan;
- Building the capacity of their staff through a comprehensive training needs assessment and subsequent training plan; and
- Participating in exercises and using the lessons learned from the exercises to improve future response capability

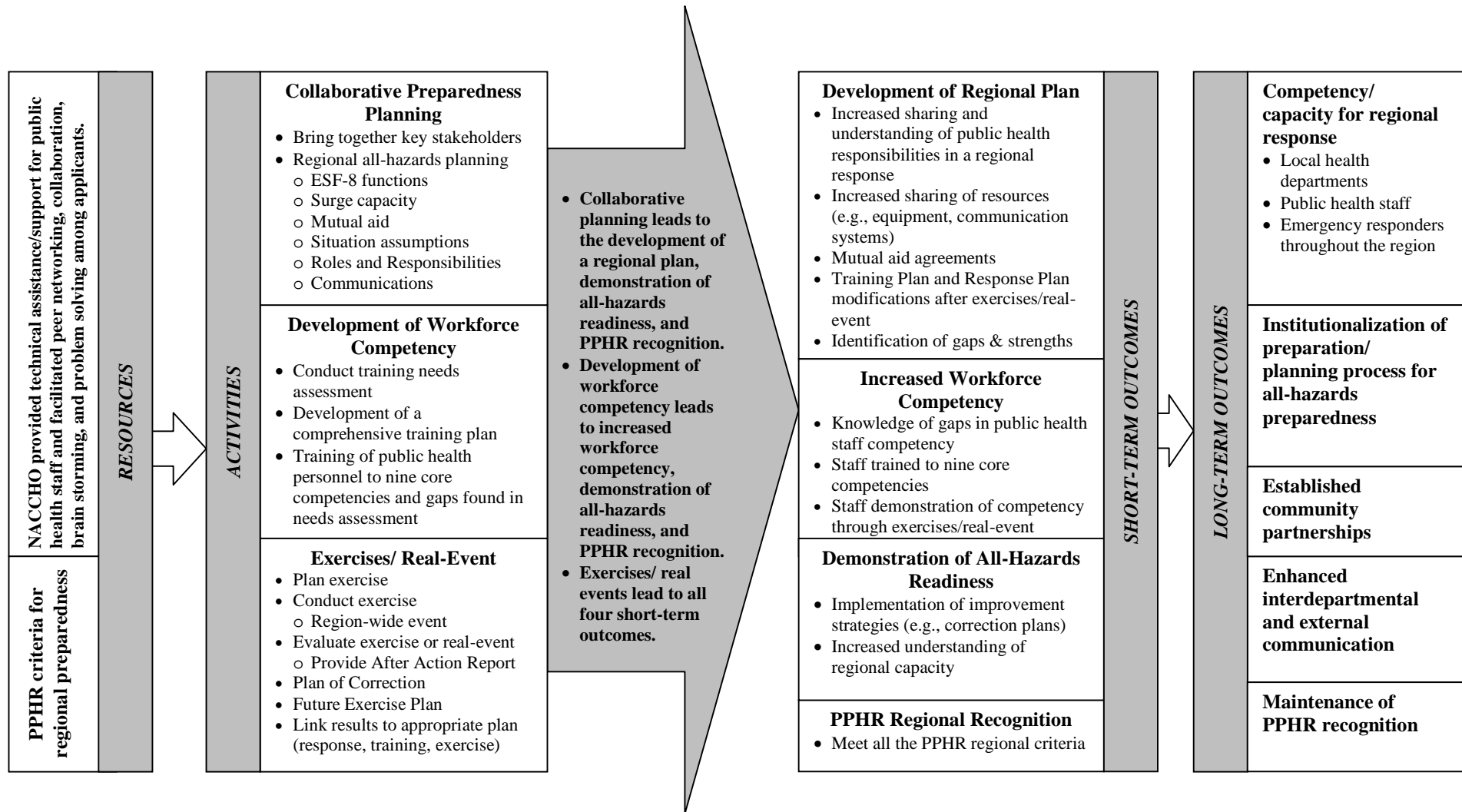
To understand their role and responsibility in emergency response at a regional level LHDs must partner with other agencies in their region involved in emergency response including hospitals and other acute and long-term health care facilities (e.g., nursing homes), fire departments, police departments, emergency management systems, and community-based organizations (e.g., Red Cross).

By collaboratively planning for an emergency event with other agencies, LHDs can develop a better understanding of both their unique and their shared responsibilities during a regional response, gain access to increased resources (e.g., equipment, communication systems), develop mutual aid agreements, and identify gaps in planning and regional capacity and strengths to allow for the improvement of existing training and response plans. LHDs are increasing the competency of their workforce to meet the core bioterrorism and emergency response competencies (e.g., communication roles) (Columbia University School of Nursing Center for Health Policy, 2001). Training based on the core competencies will help prepare staff to respond more effectively to an emergency event.

Exercises and real events are an important way for regions to demonstrate all-hazards readiness. By exercising as a region, agencies will reap the benefits that come from collaborative planning as well as develop an increased understanding of regional capacity. By collaboratively developing a regional plan, increasing workforce competency, and demonstrating all-hazards readiness, a region can develop the competency and capacity for regional response and thus be recognized as meeting the requirements for PPHR. The PPHR criteria can identify the community partnerships needed for a regional response, can raise awareness of the need for interdepartmental and external communication, and highlight the value of a planning process for all-hazards preparedness that can be sustained in the region.

**Appendix B: Overall Logic Model for Regional Project
Public Health Ready**

Appendix B: Overall Logic Model for Regional Project Public Health Ready



<p>CONTEXTUAL FACTORS</p>	<ul style="list-style-type: none"> • <i>Pre-existing regional plans and collaborations</i> • <i>Regional stream of funding for preparedness</i> • <i>Belief in PPHR quality improvement process</i> 	<ul style="list-style-type: none"> • <i>State-wide organization of public health system (e.g., structure, authority)</i> • <i>Social, economic, political conditions</i> • <i>Capacity of local public health departments</i>
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Appendix C: Site Visit Interview Questions

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Site Visit Interview Questions for PPHR Regions

A. Regional preparedness planning process and collaboration

- How is the region organized to respond to public health emergencies?
Probe: Who is involved, who is not involved and should be, why? Are key officials involved in the planning? How were regions organized and functioning before PPHR (specifically public health infrastructure and other emergency responders)?
- What processes are in place for funding, planning, communication, decision-making and accountability?
Probe: Did they build on an existing plan, existing collaboration? What is the impact of state policy on planning process or plan format (e.g., home rule)? How are preparedness activities funded (e.g., CDC, HRSA)?
- How have the processes for funding, planning, communication, decision-making and accountability facilitated relationship-building among the constituent local health departments and between the regional site and the state?
Probe: How have relationships built through this process helped or hindered preparedness? How has the state supported this process?
- Who is doing the work to help the region meet PPHR requirements (e.g., writing, implementation)? A funded FTE or additional duties for a staff?
Probe: Is there a lead agency? How is the capacity of local health departments in the region? Are the same people that are writing the plan and after action reports responsible for implementing them?

B. Role of PPHR regional criteria in achieving the above accomplishments

- How do the criteria affect the region's preparedness?
Probe: What value is PPHR bringing to your efforts? What benefits to regional preparedness planning and/or implementation are you seeing or do you anticipate seeing from the PPHR regional criteria?
- Which measures are most useful for increasing regional preparedness and why?
- Which measures were less useful for increasing regional preparedness and why?
Probe: Are all criteria relevant for regions?
- How can the criteria be improved?
Probe: Content? Directions? Format? Examples? If you had to do it over again, would you? Why?

C. Lessons learned when planning to implement and/or implementing the PPHR regional criteria

- What works and what doesn't when preparing a regional response to emergencies?
Probe: How is this different than an individual public health departments' response?
- What problem-solving strategies were used to overcome challenges and what were the solutions?
Probe: Partner turnover, state support, limited resources, keeping people engaged, differing regional boundaries among regional partner organizations (e.g., EMS)
- What unintended benefits/consequences were part of the process?
Probe: Will PPHR benefit everyday public health?
- Did the PPHR meet its stated goals? What were the intended and unintended outcomes?
Probe: How do you know that PPHR has increased your region's ability to respond to a public health emergency?
- How will you maintain your progress (i.e., process and program) once you achieve PPHR recognition?
Probe: Infrastructure to institutionalize what has been accomplished through PPHR (e.g., staff)? Organizational agreements? Level of commitment (e.g., FTE) to nurture relationship? Re-recognition?

Site Visit Interview Questions for Non-PPHR Regions

A. Regional preparedness planning process and collaboration

- What infrastructure exists in your region to support regional public health preparedness? What was the purpose for your region coming together to pursue preparedness and response on a regional level (e.g. state mandate, local needs, insufficient resources at an individual level)?
 - Funding: How does your region fund its preparedness efforts?
 - Regional staffing: Who works on regional preparedness? How often? How is staffing supported and determined?
 - Other infrastructure/resources: What other resources does your region dedicate to improving regional preparedness? Are these resources pooled or coordinated?
- What are the key components of public health preparedness that your region is working on?
 - Planning: In planning, what guidance does your region use (e.g., existing plan, existing collaboration)? Do you have a regional plan? If not, how are you standardizing plans, if at all, among constituent local health departments? What is the impact of state policy on planning process or plan format (e.g., home rule)? How are preparedness activities funded (e.g., CDC, HRSA)?

- Collaboration: Who is involved in planning, training, and exercising? Who is not involved and should be, why? Are key officials involved in the regional preparedness efforts?
- Formal relationships: Is your region formalizing relationships through Mutual Aid Agreements, other means?
- Training: Are there regional training requirements or training requirements that are standard for all agencies in the region? How are training requirements determined (e.g., based on core competencies, based on gaps identified during exercising, NIMS compliance)? Training needs assessment? Training needs coordinator?
- Exercising: Does the region exercise (e.g., agencies coordinate and/or participate in exercises)? How often? What type of exercise (e.g., tabletop, full-scale)? What were the results? Who plans the exercise? Who funds the exercise? Who participates in the exercise? Are all regional (public health) agencies equally involved in the exercise?
- Real events: How has the region responded to a real event (e.g., standardization of functions, coordination or centralization of functions and resources)? Was your response recorded for reflection and improvement purposes (e.g., after-action report)? What, if anything, has the region done with the lessons learned?
- Does your region measure any of these key components? If yes, how? How are measures used for reflection/to improve preparedness and response?
- How are you defining success (e.g., a regional plan, coordinated policies, coordinated resources, etc.)? What does regionalization mean to you?

B. Factors helping and hindering regional response

- In addition to the infrastructure we discussed, what support systems are available to your region to help improve public health preparedness and response (e.g., political support to regionalize)?
- What are the challenges that your region faces when responding to emergency events? How are these different than the challenges faced by local health departments in your region? How can your region address these challenges?
 - Coordinating with state? Lack of direction or guidance from state?
 - Mobilizing staff or volunteers?
 - Limited resources?
 - Coordinating with other community partners?

C. Perceptions of PPHR

- Have you considered using PPHR to work on regional preparedness? Why or why not?
- What would it take to implement the PPHR criteria in your region?
 - Leadership buy-in?
 - Resources?
- What are your perceptions of PPHR recognized sites and regional criteria?
 - Do you see any additional value for PPHR sites? If yes, what is different than in your region?

- How do the state and other public health staff perceive PPHR recognized sites and regional criteria?

Appendix D: Recommendations from Advisory Committee Members

Appendix D: Recommendations from Advisory Committee Members

Based on their participation in the evaluation, their experience with the PPHR regional criteria, and their review of the final evaluation report, three Advisory Committee members provided recommendations to further refine and improve the criteria's ability to capture activities that help regions increase their regional preparedness and response capacities. Their recommendations are summarized below:

- Amend the criteria to measure both the vertical and lateral fit that defines regional preparedness. The plan at the local area for the local discipline (e.g., local public health plan) should fit into the emergency management plan for the locale – this is the lateral fit. In addition, the emergency management plan for the locale should fit into the state management plan – this is the vertical fit.
- Clarify whether a region needs to show competency in an area to be recognized, or if it is adequate to demonstrate that they are working towards competency.
- Integrate the three pillars of plan, train, and exercise into a cyclical process instead of having them as separate and independent goals. There is a need to specify linkages between the criteria and to create a process to ensure that regions continually engage in the preparedness cycle.
- Emphasize the development of policies and procedures that are imperative when crossing jurisdictions. Policies and procedures provide partners with an understanding of what is expected of them.
- Effective evaluation of the components of regional public health emergency preparedness and response is needed throughout the entire process.
- Amend the criteria to measure the inclusion of other key officials (e.g., elected officials, county officials), not just health officers and other public health officials, in emergency preparedness and response efforts.