**Title:** Network Mapping Standard Operating Procedure

**Purpose/Scope:** Public health emergencies increasingly require agencies, jurisdictions, and sectors to coordinate with each other. This SOP by the Region 3 Public Health Preparedness and Response (PHPR) Center outlines the steps involved in identifying the partners and chains of communication and coordination to create network maps. These maps visualize roles and responsibilities of key stakeholders and capture the chain of command through policies and procedures to identify silos, improve communication, and facilitate strategic decision-making by demonstrating how information and influence flow compared to an organizational chart. Mapping helps administrators, staff, and other stakeholders understand network structures, detect vulnerabilities, and optimize performance. This SOP is divided into 4 main steps and can be adapted based on the objectives of your network mapping.

This SOP assumes that PHPR network mapping is taking place with state-level health departments, though these procedures can be easily tailored when working with other lead agencies or at regional/local levels.

**Procedures/Steps***:*

**Step 1: Partner Mapping**

1. Identify core functions for partner mapping
    a. Convene state Public Health Emergency Preparedness (PHEP) Directors (in person or remotely) and identify and define PHPR functions to use for partner mapping
    b. Determine whether core functions covered by the 15 PHEP capabilities[1] are sufficient for identifying PHPR roles and responsibilities, or whether extending to a larger, possibly more specific set is preferred
        i. Functions should enhance PHPR efficiency and collaboration
        ii. Other functions to consider: Planning, Training, Administration, Environmental Health Services, Foodborne Diseases
2. Align roles and responsibilities
    a. Assign health department office/unit with corresponding function.
    b. It is preferrable to list a team email or phone number instead of individuals' contact information for continuity, particularly in case of staff turnover
3. Identify state agency partners and volunteer organizations involved in PHPR
    a. Name all relevant state agencies involved in PHPR activities, starting with state Emergency Support Function (ESF) structures for lead agencies

**Goal:** Characterize departmental office/division's roles and responsibilities across key functional areas in public health emergency preparedness and response

**Step 2: Scenario Design**

1. Design event-based scenarios for eliciting discussion on PHPR roles and responsibilities with health department teams
    a. Discuss primary goals and objectives for the network and stakeholder mapping process. Determine use cases and priorities for department.

---

[1] 2019 Public Health Emergency Preparedness and Response Capabilities: National Standards for State, Local, Tribal, and Territorial Public Health available at: https://www.cdc.gov/readiness/media/pdfs/CDC_PreparednesResponseCapabilities_October2018_Final_508.pdf

    b. Collect and review available state public health emergency preparedness and response plans
    c. Identify 3 key events for scenario development
        i. Event ideas: infectious disease event, spillover, environmental disaster, mass fatality, medical surge, cyberattack, etc.
        ii. Pull publicly available plans/SOPs/policies related to each scenario type
        iii. Review previous events (when possible) and consider: locality, catchment area/population, date/duration, location to other hazards, proximity to state lines (land or water borders), case counts, affected population, case definition(s), communication plan, and response data
2. Develop scenarios
    a. Create 3 scenarios
        i. Each scenario should begin with a scene setter and include at least two injects that require health department teams to respond, thus eliciting discussion on PHPR-related information sharing and coordination, see Appendix A- scenario template to assist in developing your scenarios.
        ii. Scenarios should link to preparedness and response plans (when available) and address different capacities to ensure the most complete map possible
        iii. Include probes and/or discussion questions to elicit discussion of information sharing and coordination processes activated in response to each inject
3. Facilitate scenario discussions with health department team
    a. Schedule scenario discussion with PHEP Director and health department team
        i. Ensure health department scenario team is representative of the functions you need to evaluate and map across each scenario. Potential core functions include: Epidemiology, Preparedness and Response, Planning, Surveillance/ Investigation, Emergency Management/Services, Communications, Laboratory, Hospitals/Surge.
        ii. Plan 45-60 minutes of discussion for each scenario
        iii. Document/collect responses to each inject and conduct any follow-up necessary for each scenario

**Goal**: Capture state-level communication and coordination pathways and partner for public health event preparedness and response

**Step 3: Develop Maps**

1. Create a Partner Identification Map to illustrate health department, state, external, and federal partners
    a. Use partner data collected in step 1 and 2 to create a map, using visuals that are best suited for the health department e.g., grids, responsibility assignment matrices, influence & relationship maps, flow charts, onion diagrams, organizational charts, etc.
    b. To support long-term use, maps are built using publicly available organizational structure plans and focus on offices/ agencies rather than individual staff members
    c. Hyperlinks to office webpages can be embedded to provide access to current contact information and support real-time use during emergencies
2. Create a State Event-Specific Extended Function Network Map
    a. Apply data collection from step 2 scenarios to create network map

        i. Analyze responses by taking note of chronological actions, plans that are activated in response to each event, notifications, hierarchies, flow of samples or information, key points for making decisions or declarations, etc.
        ii. Note commonalities between networks activated by each event to create a simpler map than depicting three disparate or overlapping networks; for instance, all public health emergencies may channel action through an emergency operations center, regardless of the threat
        iii. Select visual formats best suited for depicting findings from the above analysis, e.g., relationship maps, decision trees, flow diagrams, topology maps, node-link diagrams, Sankey diagrams, circular hierarchy diagrams, etc.
    b. Validate the accuracy and relevance of the map with the health department team
    c. Discuss ways in which health department teams may use network maps to strengthen internal PHPR functions, roles, and responsibilities
        i. Identify internal/external meetings, regular convenings, or advantageous entry points into which maps can be integrated
        ii. Determine how maps can best strengthen PHPR communication and coordination in the health department e.g., training staff, revising plans, onboarding new administrations, etc.

**Goal:** Create Partner Identification Map and State Event-Specific Extended Function Network Map

**References:**

1. 2019 Public Health Emergency Preparedness and Response Capabilities: National Standards for State, Local, Tribal, and Territorial Public Health available at: https://www.cdc.gov/readiness/media/pdfs/CDC_PreparednesResponseCapabilities_October2018_Final_508.pdf

**APPENDIX A**
**Template for Scenario Mapping**

**Objective**: Use progressive simulated scenarios, together with series of scripted injects to engage DoH divisions/offices that support key PHPR functions to map roles and responsibilities during public health emergencies using three scenarios.

**Goal:** Draft network map that connects divisions/offices across DoH and other agencies to their roles and responsibilities during each event and track how information and chain of custody flow. We will also aim to map against relevant preparedness/response plans.

**Approach:** Present basic info to introduce scenarios and engage DoH stakeholders. Identify a scenario where an event is detected either in one county or locality that escalates to state-level event (and may even spread across states) – can use different scenarios based on event selected and mix it up to determine roles/authorities/capacities. Consider a combination of the following capacities for each discussion: case identification; reporting and data sharing; laboratory testing; case management; communication, investigation; emergency management; interagency coordination; among others. Determine which events you want to develop into scenarios and with each event which functions you want to evaluate, so you have variety across each.

**Key Terms**

- *Scene Setter*: Will be the introduction to the scenario for all participants. Should provide triggering event(s) that impacts the rest of the scenario.
- *Injects*: Provides new information to move the scenario forward and test the response. Goal is to trigger decision-making and/or discussion; test specific plans/roles/capacities; and to keep the scenario dynamic. Consider 2-3 injects for each scenario.

**<u>Example: Natural Disaster Scenario</u>**

Scenarios can be developed using this template and presented in PowerPoint or in whatever format makes discussion most interactive with DoH stakeholders. Consider 4-5 questions per inject.

| **Scenario 1: Natural Disaster Scenario**<br>**Functions Evaluated:** Emergency operations; Local health districts/ departments; Long-Term Care Coordination; Drinking water; Hospital/Surge movement; Critical Infrastructure; EMS; Epidemiology; Surveillance & investigation; Medical countermeasures distribution and dispensing |
|---|

**Scene Setter:** Short paragraph describing Category 1 hurricane (or relevant weather disaster for your area) making its way to Region X. As of (provide time) on (provide date), the National Hurricane

Center projects Hurricane (provide fictitious name) will make landfall along (provide location) within (provide timeline). The NWS issues a hurricane warning for counties in these areas, storm surge warning for counties near (provide locations) and a statewide flood watch. By (provide time), Hurricane (name) has strengthened to Category 2, with a forecast of 100 mph sustained winds, 5-7 feet storm surge, and 4-8in rainfall.

**Inject 1**: Provide update on Hurricane in impacted counties, possible impact statewide. Could address flooding, power outages, voluntary evacuation orders for low-lying zones, EOC activation.

Possible Questions:

1. What triggers a Governor's statewide emergency declaration?
2. Once the Governor declares an emergency, which services and response actions would be deployed?
3. Which agencies/entities are notified to activate once the declaration is made?
4. How would decisions about long-term care evacuation be communicated between counties and the state?
5. What notifications occur to assess and respond to disruptions in water systems, power, and roads?

Functions being tested: Emergency operations; Local health districts/ departments; Long-term Care Coordination

**Inject 2**: Affected counties are requesting guidance on water testing (including whether to issue boil water advisories) and dealing with flooding at municipal wastewater treatment plants and care facilities (e.g. dialysis centers, long-term care facilities). One major hospital reports flood damage, etc.

Possible Questions:

1. How would state authorities be notified of damage caused by flooding?
    a. How are decisions about flood triage and response communicated within and between agencies?
    b. How is evacuation & sheltering coordinated with affected and at-risk areas? Who has lead authority?
2. What notifications are made when roads, utilities, and water systems are compromised?

Functions being tested: Drinking water; Hospital/Surge movement; Critical Infrastructure; EMS

**Inject 3**: Emergency rooms and hospitals have flagged concerns about increasing cases of gastrointestinal illness in children and carbon monoxide poisoning due to overuse of generators.

Possible Questions:

1. How would a surge in illnesses be communicated to state authorities?
    a. What notifications would occur to appropriately respond to these public health concerns?
2. How are decisions about allocation of PPE, medical countermeasures, non-pharmaceutical interventions, and other resources communicated to and from state agencies?

Functions being tested: Epidemiology; Surveillance & investigation; Medical countermeasures distribution and dispensing