



San Francisco Department of Public Health Response to a Flood Tabletop Exercise

After-Action Report/Improvement Plan

Exercise Date: September 29, 2015

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EXERCISE OVERVIEW

Exercise Name	Response to a Flood Tabletop Exercise (TTX)
Exercise Dates	September 29, 2015
Scope	The scope was to provide a HSEEP-compliant tabletop exercise that focuses on SFDPH responsibilities during and after both an extended flood generated from El Niño.
Mission Area(s)	Response
Capabilities	EOC Coordination, Information Sharing, Community Preparedness, Public health and Healthcare System Recovery
Objectives	<ul style="list-style-type: none"> • Objective 1: The essential elements of information and means of dissemination to be exchanged with internal and external partners as well as public outreach is discussed during various stages of a flood. • Objective 2: SFDPH representatives are able to discuss the initial notifications, activation, and ongoing roles/responsibilities within SFDPH from awareness of a flood through recovery. • Objective 3: Participants are able to identify those populations most vulnerable to flooding in San Francisco and are subsequently able to formulate a high-level strategy to collectively address those populations. • Objective 4: SFDPH representatives are able to identify likely public health impacts following a flood and discuss a high level strategy for interventions of those hazards.
Hazard	Flood
Sponsor	San Francisco Department of Public Health
Participating Organizations	San Francisco Department of Public Health San Francisco Department of Emergency Management Public Utilities Commission Human Services Agency

**Points of
Contact**

Naveena Bobba
San Francisco Department of Public Health
Naveena.bobba@sfdph.org

Gretchen Paule
San Francisco Department of Public Health
Gretchen.Paule@sfdph.org

Teri Dowling
San Francisco Department of Public Health
Teri.Dowling@sfdph.org

Cyndy Comerford
San Francisco Department of Public Health
Cyndy.Comerford@sfdph.org

Matt Wolff
San Francisco Department of Public Health
Matt.Wolff@sfdph.org

EXECUTIVE SUMMARY

On Tuesday, September 29, 2015 22 exercise participants representing the San Francisco Department of Public Health (SFPDH), the Department of Emergency Management (DEM), the Human Services Agency, and the Public Utilities Commission (PUC) participated in a tabletop exercise that served as an opportunity to address coordinated public health response actions related to impacts of a flood to include considerations for vulnerable populations, environmental health, and sheltering. The exercise focused on four objectives, which included: information exchange during various stages of a flood; notifications, activations and roles and responsibilities; identification of vulnerable populations; and key public health considerations related to recovery and long-term health impacts of a flood.

The purpose of this report is to document exercise discussions, highlight the strengths to be maintained and built upon, identify potential opportunities for further improvement, and support development of future planning to support the Flood Response Annex of the Emergency Operations Plan (EOP).

Major Strengths

Although multiple strengths were demonstrated, the major strengths identified during this exercise were as follows:

- The City of San Francisco has been taking the El Niño threat seriously and has been convening agencies and developing strategies for response on a broad scale.
- DEM and SFPDH would take a proactive approach during a severe Flood Watch such as this and convene the key agencies early to discuss preparatory measures.
- SFPDH has effective means of reaching out to certain sectors of the business community (e.g. retail food establishments) to increase their awareness of a flood risk and to have them lean forward.
- In a power outage, some long term care facilities may be forced to evacuate. Laguna Honda Hospital has a relatively robust capability to support the receipt of patients from some of these facilities.

Primary Opportunities for Improvement

A discussion of the opportunities for improvement is provided in Section 3 of this document. The primary opportunities for improvement, including recommendations, are as follows:

- Outreach to external organizations
 - *Recommendation:* SFDPH should ensure easy to access lists of healthcare organizations and regulated business, are available to contact them during a Watch or Warning.
- Continuity of care for clinic patients
 - *Recommendation:* Explore effective means to communicate with clinic patient populations during a disaster. Consider implementation of an automated call-back system or emails to reach patients to provide instructions on alternate clinics and pharmacies.
 - *Recommendation:* As a component of COOP development, SFDPH should determine how resources will be shifted to clinic operations since it was cited as an essential service. In addition, if clinic facilities are impacted by a flood or other disaster, there should be backup options identified.
- Assessing impacts on vulnerable populations
 - *Recommendation:* Further considerations should be made towards assessing the impacts of vulnerable populations. This could include meeting with home health providers, methadone clinics, and dialysis centers to discuss potential impacts on their clients and explore means of continuity of care.
- Medical shelters
 - *Recommendation:* SFDPH should make medical shelter planning a priority for the upcoming El Niño season.
- SFDPH role in general population shelters
 - *Recommendation:* SFDPH should develop documentation that describes their role in the support of emergency shelters to include any guidance that would be delivered, and the extent of involvement of SFDPH staff.
- Messaging to residents and businesses
 - *Recommendation:* SFDPH should work with other city agencies to develop 311 scripts and FAQs which should include material about the prevention of mold growth, indoor heating/ventilation, maintenance of hazardous materials, and proper storage of food.

The objectives of this tabletop exercise were developed with the intention of increasing awareness of flood response activities and enhancement of the Flood Response Annex in preparation for the upcoming El Niño season expected during the winter/early spring of 2016.

This report is designed to support the building-block approach and improvement planning process of the HSEEP planning/training/exercising cycle by documenting observations and related recommendations in the following sections.

ANALYSIS OF CAPABILITIES

Module 1: Initial Flood Awareness and Preparedness, Roles, and Responsibilities

Initial Notifications:

The PHEPR director would forward the Flood Watch notification to the Integrated Steering Committee which includes all SFDPH directors. This group would initiate any internal preparedness measures like preparing facilities infrastructure for the possible flood. Many of the primary care clinics are located in vulnerable zones of the city where many of the most vulnerable populations reside (Bayview Hunters Point, Visitacion Valley, etc.). Other key partners that could be notified for awareness include the San Francisco Hospital Council, social services providers, homeless providers and organizations that provide home health and home delivered meal services. Businesses could be notified (i.e. those that are regulated/inspected by SFDPH) to review their emergency response plans during the Watch phase.

Continuity of Services:

It was suggested that each primary care facility perform a site assessment with facilities before or at the time of the flood watch to prepare for any flood prone areas and to ensure continuity of care at each clinic site. Additionally, sites should encourage personal preparedness among staff in anticipation of staff absenteeism. During the Warning stage it is assumed that clinics will be open the next morning, but there was concern among some that people (employees) may be advised not to come into work.

Citywide Coordination:

The San Francisco Department of Emergency Management (DEM) would be coordinating and planning for all aspects of a flood response, which would include putting any needed mutual aid in place and coordinating EMS and shelter resources. In addition, they would activate a storm incident management group with all of the key agencies to setup a conference call in anticipation of activation of the Emergency Operations Center (EOC).

Citywide Coordination/Shelter Planning:

DEM and the Human Services Agency (HSA) would be planning for sheltering operations. HSA has a flood protocol and they would be the lead agency for sheltering. HSA would work with DEM, the Mayor's office and the American Red Cross (ARC) to determine the support needs for shelters. HSA would poll existing homeless housing agencies to see what capacity they have to

support any of the homeless population that might need to be housed due to the flood. There is likely to be a large homeless population that would need sheltering.

Hospital Coordination:

SFDPH PHEPR staff would notify the hospitals of the potential for flood impact. Some facilities may be located in areas that are vulnerable to flood. Hospitals are very aware of the infrastructure vulnerabilities (e.g. backup power deficiencies) and will have internal plans and resources to support flood mitigation. Hospitals would coordinate with SFDPH for any additional resources needed.

Public Messaging:

SFDPH would add the flood watch notification to the SFDPH website. DEM would be coordinating general communications and messaging to the public through the existing joint information system (JIS). SFDPH would support the development of public health content for general public messaging. It was suggested that SFDPH and CCSF agencies send notifications of the Flood Watch to social services agencies that serve vulnerable populations. Environmental Health would utilize existing relationships with businesses and food vendors to send messaging surrounding food safety and storage during power outage, hazardous materials and storage and would send a reminder to review emergency response plans. It was recommended that SFDPH reach out to partners in preparation for the storm to provide preparedness recommendations and considerations. One consideration that was discussed was difficulty with maintaining effectiveness of public messages and avoiding messaging fatigue.

Emergency Operations Coordination:

The SFDPH Department Operations Center (DOC) would activate in preparation for the storm (following a Flood Warning). They would consider minimum staffing needs to maintain continuity of operations, particularly at clinics and service agencies. The main objectives of the DOC would be: 1) to ensure facilities are functional and safe; 2) to distribute communications to staff about what to expect when the Flood Watch escalates to a Warning; 3) to coordinate with hospitals by performing a HavBed poll and checking in with each hospital facility to see if they are activating HICS and to support storm preparation and damage mitigation; 4) to ensure continuity of clinic operations and working to determine staffing shortages and appointment cancellations; 5) to ensure the safety of staff by recommending alternate transportation methods and aligning staff communications with safety advisories.

Strengths

The following strengths were demonstrated:

Strength 1: DEM and SFDPH would take a proactive approach during a severe Flood Watch such as this and convene the key agencies early to discuss preparatory measures.

Strength 2: DPH is able to rapidly access information from reliable sources (e.g. NOAA/NWS) to determine DOC activation in a Flood Warning. Pre-event information sharing activities with hospitals and other CCSF agencies would be taken early.

Strength 3: SFDPH has means of reaching out to certain sectors (i.e., retail food establishments, organizations that store hazardous materials, medical cannabis, and tobacco) in the business community to increase their awareness of a flood risk.

Areas for Improvement

The following areas require improvement:

Area for Improvement 1: SFDPH should consider the development of an assessment tool for primary care facilities to conduct site assessments during a Flood Watch stage. This tool should take into account potential or projected impacts on service delivery as well as alternatives for continuity of care.

Area for Improvement 2: SFDPH should ensure easy to access lists of social service providers are available to contact them during a Watch or Warning. In addition, checklists of preparatory actions for certain business sectors could be developed (e.g. safe food storage messages for retail food establishments). With the expected heavy rain during the upcoming El Niño PUC may have some material that is being developed that can be leveraged.

Area for Improvement 3: The Housing Authority should receive information about flooding to develop plans to a flood based on the vulnerable populations housed at these sites.

Module 2: Initial Flood Response

Impacts on Vulnerable Populations:

There could be many impacts on the vulnerable populations that SFDPH serves including, but not limited to: 1) access to social service organizations (e.g. meals, home health, visiting nurse services); 2) access to and dependencies on durable medical equipment (DME) or oxygen; 3) access to methadone maintenance (there are between 1,000-2,000 people who require daily dosing); and 4) access to dialysis facilities and equipment.

Continuity of Operations:

DOC staff would be working to determine what department essential functions and services should continue and what should be suspended based on which core functions of service would be needed and impacted. Some priorities would be to continue clinic services in areas that serve vulnerable populations and to provide staffing resources at shelters for the response.

Clinic Operations:

Some clinics may be forced to close due to possible power outages. It was recommended that if there were closures that staff be redirected to other open clinics. One gap in responding to possible closures is that there is no automated phone system or infrastructure in place to cancel a large number of appointments or to receive phone calls from clients.

Public Messaging:

Community Health Equity and Promotion (CHEP) and Environmental Health could send messaging to businesses, retail food establishments, and the public on recommendations for food storage, expected standards for food spoilage and impacts of long term power outages.

Additionally, they could communicate information to certain businesses on expectations of closures and reopening during a prolonged power outage.

Strengths

The following strengths were demonstrated:

Strength 1: CHEP and Environmental Health have established relationships and means to contact community partners with resources that could be leveraged to support the response. In some cases a vulnerability of these organizations could serve as a benefit to support the response (e.g. a business with extra food that will spoil if not consumed could be provided to feed a shelter population).

Areas for Improvement

The following areas require improvement:

Area for Improvement 1: Explore effective means to communicate with clinic patient populations during a disaster. Consider implementation of an automated call-back system or emails to reach patients to provide instructions on alternate clinics and pharmacies. In addition, in advance of the El Niño season, consider the development of templated messages to clinic patient populations based on the hazards and vulnerabilities of each clinic that includes instructions and alternatives if it is closed.

Area for Improvement 2: Formalize plans for public health nurses to assist with clinic patient contact and case management during a disaster such as in this scenario. Ensure that there is a process to contact the most vulnerable patients (e.g. those on dialysis, TB daily therapy, or methadone maintenance) through patient contact and emergency contact lists.

Area for Improvement 3: As a component of COOP development, SFDPH should determine how resources will be shifted to clinic operations since it was cited as an essential service. In addition, if clinic facilities are impacted by a flood or other disaster, there should be backup options identified.

Area for Improvement 4: Further considerations should be made towards assessing the impacts of vulnerable populations. This could include meeting with home health providers, methadone clinics, and dialysis centers to discuss potential impacts on their clients and explore means of continuity of care.

Module 3: Extended Flood Response

Sheltering:

If a flooding incident were to be prolonged there would be an increased need for sheltering general and vulnerable populations. SFDPH's role would be to support the basic medical needs of the shelter population by assisting with medical devices, medications, behavioral health, and medical triage/assessment. If there were a need to support a large population of vulnerable individuals with advanced medical needs, such as people on tube feeding, dialysis or oxygen, then it would be necessary to consider opening a medical shelter. SFDPH is working on developing a plan for medical sheltering. Additionally, it is assumed that the more people who present at shelters, that the risk for communicable diseases within the shelters will increase, which will necessitate prevention measures or guidance from SFDPH. Specifically, one expectation is that SFDPH would provide guidance on appropriate distancing of individuals in shelters to prevent disease transmission. Consider recommendations that sheltered individuals get vaccinated for influenza, pertussis, and tested for tuberculosis. There are medication replacement protocols in place and SFDPH would be able to support medication provisions to shelter populations that are SFDPH patients. SFDPH would not be able to provide medications to populations that are not SFDPH patients, but they would work with other providers (e.g. Kaiser) to get medications for those populations.

In an event such as this, emergency shelters would operate on a 24/7 basis. SFDPH does not have enough Public Health nurses to support prolonged and extensive medical shelter operation. They would be working to support medical staff needs through mutual aid and volunteers. It was suggested to partner with nursing schools to utilize graduate or pre-graduate nurses to serve some medical needs in the shelters. In theory, this could be an option however there are strict supervision requirements for using non-licensed nurses and this method could become too cumbersome to manage.

Power Outage:

An extended power outage could severely impact the most vulnerable populations in the city. There are many individuals that are dependent on food delivery and social services, and would likely be isolated in a power outage. Additionally, many long term care facilities do not have power outage plans or resources and would be challenged to provide adequate care to their patients. In a worst-case scenario these facilities could require evacuation if planning and mitigation was not performed early on in the power outage. Laguna Honda Hospital (LHH) has resources to potentially support these communities. LHH is licensed for 900 beds, but are only

using 700-750 so there is about a 20% availability for fragile populations. There are additional beds to support more patients but LHH would need resources and staff support to do so. If it was determined that a facility evacuation was necessary, it is SFDPH's expectation that a facility would send assets and staff to support patient needs.

An extended power outage could also present more issues with hazards as people may use candles, fires, and camping stoves inside their homes which present significant fire dangers and carbon monoxide poisoning.

Continuity of Operations:

As the incident continued and conditions worsened, staff absenteeism would be an issue. It was estimated that 60-70% of SFDPH staff live outside of the city and it would continue to get more and more difficult to enter and exit the city in an extended flood scenario. There may be a need to support staff housing in order to ensure continued staffing support through the incident. Additionally, in bad storm conditions, schools are likely to be closed which presents issues with childcare for many staff. All public employees in California are designated as Disaster Service Workers as a provision of their employment agreement; however their ability to work is contingent upon the safe care of their immediate family first.

Strengths

The following strengths demonstrated:

Strength 1: SFDPH is able to address medication needs of clinic patients even outside of the community health clinic setting. In addition, through their existing hospital council, SFDPH is able to effectively work with other providers to address needs of their patients.

Strength 2: In a power outage, some long term care facilities may be forced to evacuate. Laguna Honda Hospital has a relatively robust capability to support the receipt of patients from some of these facilities.

Areas for Improvement

The following areas require improvement:

Area for Improvement 1: SFDPH should make medical shelter planning a priority for the upcoming El Niño season. Resources (equipment, supplies, and staff) as well as generators need to be identified for these shelters as well as the most feasible areas to establish them to care for the populations that will require things such as oxygen therapy, home dialysis, or tube feeding.

The establishment of a medical shelter for these purposes is expected to relieve medical surge on the hospitals.

Area for Improvement 2: SFDPH should develop documentation that describes their role in the support of medical shelters to include any guidance that would be delivered, the extent of involvement of SFDPH mental and behavioral health staff, procedures for medical assessments, and establishment of medical shelters.

Area for Improvement 3: While there may be complexities involved with utilizing non-licensed nurses, it still may be an option to pursue. Graduate nurses, in particular may serve as an effective support resource during an emergency or disaster. It is recommended that SFDPH meet with UCSF on this topic and weigh the pros and cons as well as review whether or not certain licensing requirements might be lifted during a declared emergency or disaster.

Area for Improvement 4: SFDPH will need to be able to end non-essential services in an emergency such as in this scenario and expediently reallocate personnel to only essential services. Provisions may need to be made to house and feed staff in the City for as long as possible to ensure they can get to work.

Module 4: Public Health Impacts and Recovery

Water Issues:

Environmental Health and PUC did not think that access to potable water would be an issue. A flood and extended power outage is not likely to impact the water infrastructure. There are emergency generators at pump stations and the water routing system is pressurized in a way that access to water for the majority of the city will not be an issue. The more likely concerns would be water main breaks, sewage and standing water issues. However, if there were a need for a boil water notice, then the State Water Resources Control Board (SWRCB) would be responsible for issuing the notice. The Health Officer could also issue a boil water notice. It was stated that many buildings over four stories would be affected by a power outage because the pump is dependent upon electricity. The water pressure is such that it can reach any fourth floor without a pump, but not the floors above. Many modern high rises have backup generators that will power a water pump, but there is greater concern over the older buildings.

Public Messaging:

Environmental Health would consider sending out public messages regarding health and safety hazards due to the sewage and standing water. Some basic messaging would include not to splash around, and/or to drink or bathe in standing water. They would recommend use of alcohol based hand sanitizer and would make sure that it was widely available. Additionally, during the recovery phase Environmental Health would be providing information on how to prevent and clean mold growth. In addition, Environmental Health will be able to provide inspection activities if requested by a homeowner, renter, or building owner. 311 will be a useful resource during recovery in providing this type of messaging and information to the community. Other hazards to advise the public about would be injuries due to high water and visibility issues and increased possibility for transportation/traffic accidents.

Potential HazMat Issues:

There may be some fuel and oil clean up needs particularly at gas stations and in homes (e.g. household cleaning products, oils, fuel, and paint) and businesses that have backup generators. Environmental Health would need to inspect and support businesses to ensure proper clean-up.

Debris Management:

There is likely to be a lot of debris as a result of the storm and the cleanup phase. There may be downed power lines and electrical hazards. There will be a lot of physical debris as well as many

wet moldy items. Department of Public Works (DPW) would be responsible for debris management and have done a lot of planning in this area.

Immunizations:

The recovery phase might present a need to advise the public on tetanus exposures and to offer tetanus shots.

Strengths

The following strengths demonstrated:

Strength 1: Lack of safe drinking water is unlikely to be a problem for San Francisco in this scenario. There is lots of redundancy in the water infrastructure in accordance with PUC.

Strength 2: Environmental Health has a good understanding of the types of hazards and related messaging for the public after a flood to include many preventive aspects of injury prevention and safe housing (e.g. prevention of mold growth).

Areas for Improvement

The following areas require improvement:

Area for Improvement 1: SFDPH could provide a role to work with residents and building owners/managers they interact with to address measures for prevention of mold prior to a flood.

Area for Improvement 2: SFDPH should explore enhancement of capabilities to communicate with residents on identification of mold hazards.

Area for Improvement 3: 311 is a good resource for residents and businesses to contact regarding guidance to prevent environmental health problems. Scripts and FAQs could be developed for prevention of mold growth, indoor heating/ventilation, maintenance of hazardous materials, and proper storage of food. There may be some information and resources available through the Asthma Task Force.

CONCLUSION

This report augments existing planning/training/exercising programs related to coordinated response to severe flooding in San Francisco. The strengths validate established aspects of the plans while the opportunities for improvement provide information to enhance, refine, or improve existing plans and systems. The exercise planning team developed detailed objectives and tasks to ensure that the most critical needs to identifying and addressing the public health needs of vulnerable population were met. It is anticipated that the improvement plan will be incorporated into the efforts of each participating city agency to strengthen the Flood Annex to the EOP.

During the participant hot wash and online feedback several strengths and opportunities for improvement were identified, including:

- *Streamlining communication and public messaging*
- *Avoid public messaging fatigue by having one single most important message. “spare the air” campaign was used as an example*
- *Planning and communicating with vulnerable populations*
- *Planning for employee absenteeism and shift operations*
- *Active outreach to high risk populations*
- *Facilities planning*
- *EOPs for all clinics outlining expectations for continuity of care*
- *Resource Management*
- *Continuum of operations and care*
- *Sustainability of DOC operations*
- *Staffing resources and needs*
- *Leaning forward and planning ahead*
- *Interagency cross training*
- *Downtime procedures – assess new capacity and vulnerabilities*
- *DOC coordination during an incident with such a large scope*

- *Long-term and sustained nature of the incident*
- *Personal preparedness among staff*
- *Public messaging*

APPENDIX A: HARVARD EVALUATION TOOL METRICS

Table A.1: EOC Activation

General Task	Specific Action	Metric	Detailed Observations	Overall Performance for General Task
	(Yes/No)			
	(check all boxes and fill in spaces as appropriate)			1= Unsatisfactory 5= Good 10=Excellent
Activation/Mobilization of EOP	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Activated EOP at the appropriate time (Please list time activated__)	This was a TTX and not a functional event, so while the EOP was not mobilized, DOC activation and use of EOP was discussed.	8
	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Communicated clearly to all relevant parties that the EOP had been activated	All discussed the need to activate the DOC and emergency protocols.	9
	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	EOP required use of ICS	Use of ICS was discussed.	7
Activation/Mobilization of JIC	<input type="checkbox"/> Yes <input type="checkbox"/> No	Identified/Discussed clear trigger(s) for Activation/Mobilization of JIC	Activation of the JIS was discussed by DEM as well there were significant discussions of public messaging and information sharing.	8
	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Identified/Discussed how PIO and other appropriate staff are assigned and briefed	PIO identification and assignments were not covered as a part of this exercise.	N/A

General Task	Specific Action (Yes/No)	Metric	Detailed Observations	Overall Performance for General Task
Assessment of personnel capabilities and needs for optimal response to the incident	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Determined whether available personnel would be sufficient for the response	Yes, there was extensive discussion about personnel resources.	10
	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Discussed overall number and skill mix of personnel needed for response to the event	Yes, different skill levels and needs of staff was discussed.	8
Decision to activate EOP	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Communicated clearly to all relevant parties that plan had been activated	Activation processes were discussed but EOP was not specifically discussed.	5
	<input type="checkbox"/> Yes <input type="checkbox"/> No	Identified clear trigger(s) for decision to activate EOP	Activation triggers were discussed but EOP was not specifically discussed.	N/A
Identification/Assessment of strategies to estimate personnel needs for optimal response to the incident	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Identified/Discussed strategies to determine whether available personnel will be sufficient for the response	General staffing issues and strategies were discussed.	7
	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Stated/Discussed strategies to assess/identify overall number and skill mix of personnel needed to respond to the event	General staffing assessment was discussed but specific strategies to operationalize this process was not discussed.	5

Table A.2: EOC Incident Response

General Task	Specific Action		Detailed Observations	Overall Performance for General Task
	(Yes/No) (check all boxes and fill in spaces as appropriate)			1= Unsatisfactory 5= Good 10=Excellent
Assessment of severity of the incident	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Identified potential disruption to critical infrastructure	Disruptions to critical infrastructure was discussed extensively.	9
	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Identified potential for significant media response and/or public reaction	Yes, public reaction, media and messaging were discussed extensively.	9
Assessment of the population initially affected by the incident	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Assessed specific characteristics of affected groups	High risk and vulnerable populations were discussed and the needs of these individuals were considered extensively.	9
Conduct incident action planning (IAP)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Identified strategies and tactics to meet incident objectives for each operational period	Planning for incident objectives and priorities was discussed. The development of an IAP was not discussed.	5
Coordination and integration of response partners to support the response	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Discussed/Identified how to integrate response partners into the response	Coordination with DEM and HSA as well as other health care response partners was a major component of discussion.	8
Decision to activate EOP	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Communicated clearly to all relevant parties that plan had been activated	Activation protocol was discussed but activation of EOP was not specifically discussed.	5

General Task	Specific Action (Yes/No)		Detailed Observations	Overall Performance for General Task
	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Identified clear trigger(s) for decision to activate EOP	General activation triggers were discussed but not regarding the decision to activate the EOP	2
Identification of appropriate spokesperson	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Identified/Discussed how to identify subject matter experts	Not discussed.	N/A
Identification of public information needs	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Identified/Discussed how public information needs would be identified	Public information needs and messaging strategies were discussed.	9
Identification or assessment of flow of information to leadership	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Discussed how and from whom information would be obtained	Not discussed.	N/A
	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Discussed how information would be relayed to EOC/UC	Not discussed.	N/A
Management of internal personnel resources needed for response	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Recalled appropriate staff to respond to the incident within critical timeframe	Management of internal personnel resources was discussed. Particularly, the issue of staff absenteeism and safety recommendations.	7
Management of internal personnel resources needed for the response	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Discussed how to anticipate staffing needs until the incident is concluded	Strategies to address increased staffing needs was discussed throughout each incident module.	9
Management of safety issues during the response	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Discussed/Identified safety personnel needs	Management of personnel safety was discussed and strategies were identified to address some safety issues.	5

General Task	Specific Action (Yes/No)		Detailed Observations	Overall Performance for General Task
Re-assessment of number of people affected by the incident	X Yes <input type="checkbox"/> No	Reassessed specific characteristics of affected groups	Specific characteristics of impacted groups were discussed as well as a vulnerability index map was presented to display the areas of the most impacted by this incident.	6

APPENDIX B: IMPROVEMENT PLAN

This improvement plan template has been developed specifically for SFDPH and the CCSF agencies that participated in the Response to a Flood Tabletop Exercise conducted on September 29, 2015. SFDPH should utilize this table to organize the opportunities for improvement to augment and manage their own corrective actions.

Issue / Area for Improvement	Corrective Action	Primary Responsible Organization	Organization POC	Start Date	Completion Date
Site Assessments prior to a Flood	Consider the development of an assessment tool for primary care facilities to conduct site assessments during a Flood Watch stage. This tool should take into account potential or projected impacts on service delivery as well as alternatives for continuity of care.	DPH Facilities / Ambulatory Care	Kathy Jung/ Leslie Dubbin/		
Outreach to Partners	Ensure easy to access lists of social service providers are available to contact them during a Watch or Warning. In addition, checklists of preparatory actions for certain business sectors could be developed (e.g. safe food storage messages for retail food establishments).	DPH PHEPR / Environmental Health	Teri Dowling / TBD		
Inclusion of Housing Authority	The Housing Authority should receive information about flooding to develop plans to a flood based on the vulnerable populations housed at these sites.	DPH PHEPR	Teri Dowling		
Communications with Patient Populations	Explore effective means to communicate with clinic patient populations during a disaster. Consider implementation of an automated call-back system or emails to reach patients to provide instructions on alternate clinics and pharmacies. In addition, in advance of the EI	DPH Ambulatory Care	Leslie Dubbin/ Rosemary Lee		

Issue / Area for Improvement	Corrective Action	Primary Responsible Organization	Organization POC	Start Date	Completion Date
	Niño season, consider the development of templated messages to clinic patient populations based on the hazards and vulnerabilities of each clinic that includes instructions and alternatives if it is closed.				
Continuity of Care	Formalize plans for public health nurses to assist with clinic patient contact and case management during a disaster such as in this scenario. Ensure that there is a process to contact the most vulnerable patients (e.g. those on dialysis, TB daily therapy, or methadone maintenance) through patient contact and emergency contact lists.	DPH Ambulatory Care	Leslie Dubbin/ Rosemary Lee		
COOP	As a component of COOP development, SFDPH should determine how resources will be shifted to clinic operations since it was cited as an essential service. In addition, if clinic facilities are impacted by a flood or other disaster, there should be backup options identified.	DPH Ambulatory Care	Leslie Dubbin/ Rosemary Lee		
Assessing Vulnerable Populations	Further considerations should be made towards assessing the impacts of vulnerable populations. This could include meeting with home health providers, methadone clinics, and dialysis centers to discuss potential impacts on their clients and explore means of continuity of care.	DPH PHEPR	Teri Dowling/ Cindy Lambdin		
Medical Shelter Planning	Make medical shelter planning a priority for the upcoming El Niño season. Resources (equipment, supplies, and staff) as well as generators need to be identified for these	DPH PHEPR	Cindy Lambdin		

Issue / Area for Improvement	Corrective Action	Primary Responsible Organization	Organization POC	Start Date	Completion Date
	shelters as well as the most feasible areas to establish them to care for the populations that will require things such as oxygen therapy, home dialysis, or tube feeding.				
Medical Shelter Planning	Develop documentation that describes their role in the support of medical shelters to include any guidance that would be delivered, the extent of involvement of SFDPH mental and behavioral health staff, procedures for medical assessments, and establishment of medical shelters.	DPH PHEPR	Cindy Lambdin		
Staffing Resources	While there may be complexities involved with utilizing non-licensed nurses, it still may be an option to pursue. Graduate nurses, in particular may serve as an effective support resource during an emergency or disaster. It is recommended that SFDPH meet with UCSF on this topic and weigh the pros and cons as well as review whether or not certain licensing requirements might be lifted during a declared emergency or disaster.	DPH Ambulatory Care	Leslie Dubbin		
COOP	End non-essential services in an emergency such as in this scenario and expediently reallocate personnel to only essential services. Provisions may need to be made to house and feed staff in the City for as long as possible to ensure they can get to work.	DPH PHEPR	Naveena Bobba		
Outreach Prior to a Flood	Provide a role to work with residents and building owners/managers they interact with to address measures for prevention of mold prior to a flood.	DPH Environmental Health	TBD		

Issue / Area for Improvement	Corrective Action	Primary Responsible Organization	Organization POC	Start Date	Completion Date
Community Outreach	Explore enhancement of capabilities to communicate with residents on identification of mold hazards.	DPH Environmental Health	TBD		
Information for 311	311 is a good resource for residents and businesses to contact regarding guidance to prevent environmental health problems. Scripts and FAQs could be developed for prevention of mold growth, indoor heating/ventilation, maintenance of hazardous materials, and proper storage of food. There may be some information and resources available through the Asthma Task Force.	DPH Environmental Health	TBD		

APPENDIX C: EXERCISE PARTICIPANTS

Organization	Name
SFPDH/EH	Patrick Fosdahl
SFDPH/EH	June Weintraub
SFDPH/EH	Stephanie Cushing
SFDPH/EH	Cyndy Comerford
SFDPH/Transitions	Barry Zevin
SFDPH/PHEPR	Cindy Lambdin
SFDPH/Ambulatory Care Clinics	Rosemary Lee
SFDPH/Ambulatory Care Clinics	Leslie Dubbin
SFDPH/CHEP-Outreach	Thomas Knoble
SFDPH/Behavioral Health	Annette Quiett
SFDPH/Laguna Honda Hospital	Quoc Nguyen
Human Services Agency	Ben Amyes
DEM	Rob Stengel
PUC – Wastewater Enterprise	Andrew DeGraca
DEM/EMS	Mike Dayton
SFDPH/PHEPR	Tara Connor
SFDPH/PHEPR	Doug Walsh
SFDPH/PHEPR	Amy Ovadia
SFDPH/PHEPR	Naveena Bobba
SFDPH/PHEPR	Gretchen Paule
SFDPH/PHEPR	Teri Dowling
SFDPH/PHEPR	Matt Wolff

APPENDIX D: PARTICIPANT FEEDBACK

Exercise participants were asked to provide brief feedback on an online questionnaire following the exercise. 14 participants responded to the questionnaire. The following questions were asked of the respondents.

Briefly describe the 1 or 2 strengths demonstrated by the discussion in today's exercise as it relates to public health/environmental health response to a flood. What are other strengths you observed in the discussion?

- *There were lots of participants who were engaged and thinking through the issues.*
- *I thought there was a very valuable discussion/consensus regarding "pre-messaging" to the public and the City's vulnerable populations so that the public can prepare and protect themselves and their families prior to a Warning and Watch.*
- *It was helpful to hear what each department's concerns were (e.g. clinic safety and continuity, environmental hazards - hazmat and food service) so DPH can assist in coordinating to alleviate those concerns.*
- *It was helpful to hear where departments/partners have less concern due to prior education or information (e.g. EH food service emails, messaging, education; PUC water supply).*
- *The prompt triggered people to consider issues related to a flood response they may have not initially considered (ex: pertussis, flu, tetanus immunizations). If conducting an immunization campaign at a shelter, this will require a great deal of planning.*
- *People seemed to be very engaged. Was helpful to hear from various disciplines (PUC, communicable disease, environmental health, human services agency). There was good discussion.*
- *There was a commitment to working together to protect our most vulnerable populations.*
- *Environmental health and emergency shelter mechanisms seemed especially strong.*

Briefly describe the 1 or 2 challenges experienced as it relates to public health/environmental health response to a flood. What are other challenges you observed?

- *Communications was the biggest challenge with the public, staff, and other stakeholders.*
- *I have some concern about coordination and communication with DPH clinics, especially those in vulnerable areas. How will they communicate to their clients that they are unable to open and what if clients are injured on their way into those clinics?*
- *Concern over the safety of staff members in all departments returning to work - will there be enough staff to secure a facility? To open a clinic? To do to restaurants to ensure their using proper food handling?*

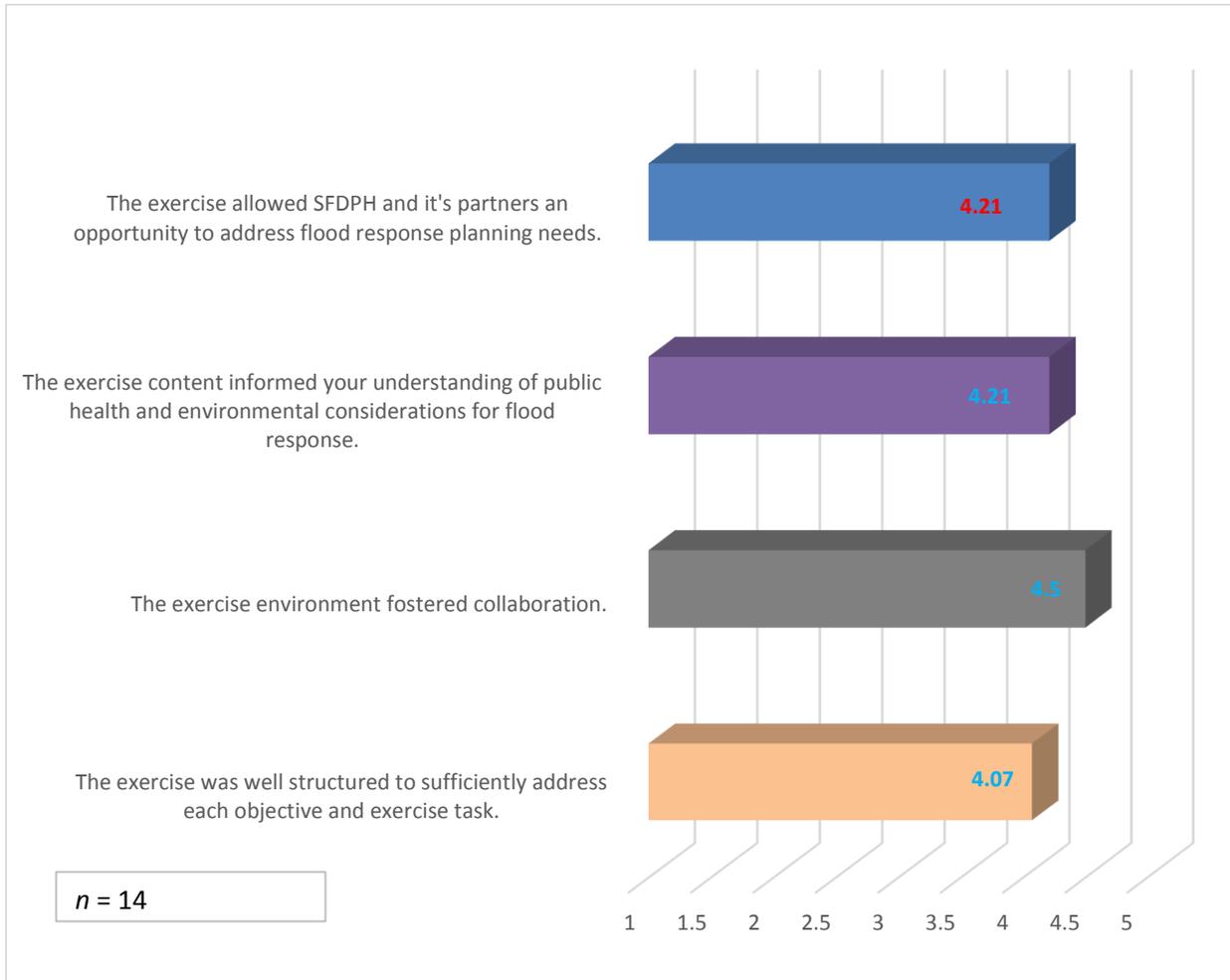
- *Initially, the transportation and employee availability may be an issue. Loss of power will probably cause the most problems. Residential care and daily medical needs patients may be a major resource issues.*
- *Finding a location to provide services*
- *The discussion focused more on broad strategies like coordination, public messaging, etc. but not much on individual agency's own preparedness operational response.*
- *The Housing Authority is a key partner and was missing from the discussion.*
- *Securing long-term 24/7 sheltering with services.*
- *There is a concern over covering shift; staffing our response when individuals may not be willing/able to come to work in flood conditions will be a major challenge.*
- *Vulnerable populations will suffer greatly in a power outage and I don't think the city will have adequate resources to address their needs.*
- *Main challenge in my area of homelessness is that we do not have the resources to deal with everyday emergency and crisis in this population.*

What are 1-2 solutions that can be implemented prior to the upcoming El Nino season to collectively enhance SFDPH and its partners' response to a flood?

- *All departments and staff review basic emergency preparedness response plans; recommend that all staff have their own emergency plans for home and family and that they review them.*
- *Send out info about floods that has already been developed, ensure ongoing communication by those at the table.*
- *Provide information externally to the public and stakeholders leveraging DPH contacts with community groups.*
- *Provide internal training and information to staff regarding expectations and roles.*
- *Write out roles and responsibilities for all partners.*
- *I think working on DOC staffing (including back-up staff) will help enhance communication during the actual El Nino. Also, educating staff members on their roles and responsibilities will be helpful and reduce confusion/possible injury.*
- *Pre-messaging/education to the general public, clinics, and hospitals will be valuable.*

In addition to identifying strengths and weaknesses, participants were asked for feedback on the structure and delivery of the exercise. Ratings were generally good for all aspects of the exercise ranging from 4.07 to 4.5 on a scale of 1-5 (5 being the highest).

Figure 1: Exercise Ratings



APPENDIX E: ACRONYMS

Acronym	Meaning
AAR	After Action Report
BART	Bay Area Rapid Transit
CCSF	City and County of San Francisco
CHEP	Community Health Equity and Promotion
COOP	Continuity of Operations Plan
DEM	Department of Emergency Management
DME	Durable Medical Equipment
DOC	Department Operations Center
DPW	Department of Public Works
EOC	Emergency Operations Center
FAQ	Frequently Asked Questions
HICS	Hospital Incident Command System
HSA	Human Services Agency
HSEEP	Homeland Security Exercise and Evaluation Program
LHH	Laguna Honda Hospital
NOAA	National Oceanic and Atmospheric Administration
NWS	National Weather Service
PG&E	Pacific Gas and Electric
PHEPR	Public Health Emergency Preparedness and Response
PIO	Public Information Officer
PUC	Public Utilities Commission
SFDPH	San Francisco Department of Public Health
SWRCB	State Water Resources Control Board
TTX	Tabletop Exercise