Enhancing Public Health Preparedness: Exercises, Exemplary Practices, and Lessons Learned, Phase III

Task B2: Final Report
Promoting Emergency Preparedness and Readiness for Pandemic Influenza (PREPARE for PI)

Pilot Quality Improvement Learning Collaborative

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WR-491-DHHS
June 2007
Prepared for Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response
ACKNOWLEDGMENTS

The authors wish to thank each team member from Baltimore City Health Department, Georgia Division of Public Health, Genesee County Health Department, Multnomah County Health Department, and Virginia Department of Health for their time, valuable contributions, and dedication to helping us develop a deeper understanding of how to implement quality improvement in public health. In addition, we greatly appreciate the insight and support from the senior leaders of the participating health departments. We also thank Kris Saarles and David Ross from Public Health Informatics, Craig Thomas from CDC, Patrick Libbey from NACCHO, and Lee Thielen from the Multistate Learning Collaborative, who observed our final Learning Session and provided valuable feedback. And we are especially grateful for the support, feedback, and insights provided by our project officers, Lara Lamprecht from the HHS office of the Assistant Secretary for Preparedness and Response (ASPR), and Carol Chang from the Robert Wood Johnson Foundation.
INTRODUCTION

This report summarizes the activities of the PREPARE for PI pilot learning collaborative and describes the activities of the participating agencies and their evaluation of the activities. We also provide recommendations for next steps to promote quality improvement in public health.

In a previous task, we summarized the state of quality improvement (QI) in public health and reasons to pursue quality improvement activities in public health preparedness (Seid et. al., 2005). As is the case with other areas of public health, there is substantial variation across agencies in performance in emergency preparedness. There have been few systematic efforts within public health agencies to close identified gaps in preparedness, or to define a consistent approach for improving performance. Public health practitioners report that lessons learned (e.g., during an outbreak investigation or public information campaign) do not routinely stimulate systematic change. Similarly, lessons from preparedness drills and exercises are often not acted upon. QI methodology provides a systematic way to identify solutions to performance shortfalls, implement changes, and spread successful techniques among sites. These critical techniques, though based on proven business and management practices, have not been widely available to public health departments. More recently, there have been nascent efforts to promote QI in public health (Mays and Alverson, 2005) although there is little QI activity in the area of public health emergency preparedness (PHEP). We sought to advance the development of QI in public health by adapting the QI learning collaborative model to bring about more rapid improvement in PHEP.

Design of the PREPARE for Pandemic Influenza

Promoting Emergency Preparedness and Readiness for Pandemic Influenza (PREPARE for PI), sponsored by the Department of Health and Human Services Office of the Assistant Secretary for Preparedness and Response (ASPR) and organized by RAND, was a pilot learning collaborative designed to work with public health organizations to apply QI methods to public health, specifically in the context of preparing for an influenza pandemic. Initial funding supported the first two meetings of the collaborative; when it was clear that more time was needed to maximize the benefit of the collaborative, the Robert Wood Johnson Foundation provided additional support.
We formatted the collaborative around the Institute for Healthcare Improvement’s (IHI) Breakthrough Series Collaboratives, illustrated in Figure 1 below (Institute for Healthcare Improvement, 2003). This approach was created to help develop and spread innovations that close gaps primarily in clinical performance (e.g., diabetes management, improved patient access, etc.). In Breakthrough Series Collaboratives, content experts and collaborative faculty provide the curriculum for the learning collaborative. The curriculum provides participants with instruction on quality improvement methods, along with a series of best practices or ideas for change that are known to lead to improved performance and predetermined measurement targets. Because there is little experience in running learning collaboratives for quality improvement in the field of public health preparedness, and because there were no widely accepted preexisting measures or tested changes, the PREPARE for PI collaborative focused strongly on innovation from each participating team, while following the format of the collaborative model. As shown in the figure, the collaborative begins with an expert meeting, during which the collaborative’s mission statement is refined; also the experts review the framework and potential changes for improvement that will be promoted in the collaborative. The planning group (in this case RAND and the sub-contractor from Cincinnati Children’s Medical Center) recruits participants, and engages each team in beginning to plan for the collaborative with “pre-work” (becoming familiar with the PREPARE framework and identifying areas for improvement in their agencies). Each of three Learning Sessions (LS) (in-person meetings where both QI methods and topic content are discussed) is followed by an Action Period (AP, the period of time between the Learning Sessions), during which teams are expected to conduct Plan-Do-Study-Act (PDSA) cycles (see below). The work is built on the premise that sustainable improvement is best achieved by multiple, successive small tests of change rather than the wholesale implementation of a pre-designed program.
Because this was a pilot collaborative focused on innovation, we aimed to have only a small number of health departments participate. We approached seven sites that we had identified in past work as exemplary in terms of their preparedness performance and/or their enthusiasm in learning to use QI methods within their agencies. Six (two state and four local) health departments originally agreed to participate. However, the preparedness director of one of the local agencies resigned just prior to the initiation of the collaborative, and the site withdrew as a result. The other site declined to participate on philosophical grounds—they feared that a successful outcome would lead the use of QI to become ‘yet another unfunded mandate from the Feds’ and did not want to contribute to that environment. Ultimately, two state (Georgia and Virginia) and three local (Baltimore City, Genesee County, MI and Multnomah County, OR) health departments participated in the collaborative. Directors from each of the participating health departments gave written permission allowing their health department to be identified in documents and reports developed from the work done as part of the collaborative. Individual team members were promised confidentiality and so are not identified.

Each agency chose 3-4 individuals to make up the agency’s team. Teams were responsible for attending the in-person meetings (Learning Sessions) and for conducting improvement activities for the agency. We held three in-person meetings for all team members
and RAND faculty. At each of these sessions, the agenda covered quality improvement methods and preparedness topics addressing different components of the framework. Also, each meeting allowed time for interaction: this included team planning and sharing amongst the teams, facilitated by the faculty. The Learning Sessions were held in May and September 2006 (in Washington DC) and February 2007 (in Santa Monica, CA). Between Learning Sessions, the teams and faculty kept in contact via monthly calls. The majority of these were group calls; two were one-on-one calls between each team and the collaborative staff. During these calls, we discussed QI and preparedness topics, and teams shared their progress and challenges. In addition, each team was expected to submit and share a monthly progress report (Appendix H) detailing their activities during the preceding month and the results of any PDSA cycles and measurement they had performed.

Themes of the PREPARE Collaborative

There were 5 themes for the collaborative:

1. Integrating with day-to-day public health activities
2. Using the Model for Improvement (MFI) and Plan-Do-Study-Act (PDSA) cycles
3. Conducting repeated PDSA cycles using (and refining) performance measures
4. Identifying areas for improvement using process mapping
5. Employing the PREPARE framework for PI preparedness

We encouraged teams to integrate their emergency preparedness improvement work into their public health day-to-day activities for two reasons. First, preparedness depends on outstanding execution of day-to-day public health activities, such as surveillance and communication. Second, people are more likely to perform well during an emergency in well-practiced roles. This approach also addresses the so-called “preparedness burnout” that is common when staff are asked to spend time away from their current demands to work on plans for relatively infrequent emergencies.

As in the IHI’s Breakthrough Series, we focused the PREPARE collaborative around the Model for Improvement, a generic QI framework designed by the Associates in Process in Improvement (Langley and Nolan, 1996). Overall, the Model for Improvement gives the participating teams a method to develop and implement changes in their home organizations. The four components of the Model for Improvement include identifying 1) an aim for improvement efforts, which includes measurable goals; 2) performance measures that indicate improvement in the targeted process; and 3) strategies, or ideas for change that will lead to improvement; the fourth component is carrying out improvement efforts in small rapid cycle tests of changes, or Plan-Do-Study-Act (PDSA) cycles. The PDSA cycle, also known as the
Shewhart Cycle (Langley and Nolan, 1996), encourages staff to develop and implement changes in phased, deliberate, short cycles of planning for a possible change, testing a new idea or change in the smallest way possible, studying the impact of the change, and then using these results to inform the next cycle of improvement (either gradually building in scope on a successful change, or modifying or abandoning an unsuccessful change for something else).

With assistance from the collaborative faculty, teams chose operational performance measures that indicate enhanced performance in a given process or outcome. Because of the lack of well-accepted measures of PHEP in general, we suggested a series of measurable goals, which are listed in Appendix 1. Prior measurement in PHEP has mainly emphasized structural capacity or narrative assessment that makes comparison over time (and across agencies) difficult (Asch et al., 2005) (Nelson et al., 2007). Teams developed and adapted measures to assess their activities in support of the aims.

Teams used process mapping, a fundamental QI tool that has been used to help identify the steps in a process and identify targets for improving how things work. The process map is a graphic representation that identifies key inputs or triggering events, and ends with desired outcomes for a given process. In between, the map delineates the smaller steps (or sub-processes) that make up the overall process. The process maps help practitioners identify smaller, more intermediate targets for improvement efforts, as well as process and outcome measures for a given step, or process. Collaborative faculty created a series of generic, high-level process maps for all five domains of the framework, each containing a series of potential performance measures (see Figure 2 for example).
Teams personalized these maps to reflect the way things were done in their particular agency. They then were able to conduct multiple PDSA cycles around different pieces of their process maps (see details in team stories below).

Since no framework existed for QI in Public Health Emergency Preparedness (PHEP), RAND developed the **PREPARE Pandemic Influenza Framework** (Appendix A) to guide the work of the teams. Public health emergency preparedness relies on a number of core public health functions. This simple framework summarized these core functions and desired outcomes and served as a point of common understanding for the work of the pilot collaborative teams. We developed the framework through literature review and experience developing and testing a series of table-top exercises with public health agencies. This framework represents a high level logic model in that it specifies key inputs, processes and desired outcomes of public health preparedness efforts. However, it is not meant to be an exhaustive description of all public health agency activities during emergencies. Five public health leaders who served as expert advisors to this project evaluated our first draft of the framework at an expert meeting in March, 2006. Feedback from the expert panel informed our revision of the model and helped us to clarify phrasing. We have further modified the framework based on the experiences of using the model in the pilot collaborative and after eliciting feedback from the collaborative participants.

The PREPARE framework specifies five process domains, which if performed well, would allow a health department to achieve the desired outcomes, defined as minimized morbidity, mortality and social disruption in the event of an influenza pandemic. These are:

1. Comprehensive Routine Disease Surveillance
2. Timely and Efficient Case Diagnosis and Investigation

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*Figure 2: Example of a Risk Communication Process Map*
3. Clear Command, Control and Communication Abilities
4. Accurate and Effective Risk Communication
5. Timely and Appropriate Disease Control and Treatment

We also identified a series of strategies, or “change ideas,” within each domain of the framework. These are strategies that can be adapted to a particular agency’s situation and that have been shown in the past to be associated with improved performance. The teams used these strategies to identify measurable goals and ideas for change within each domain. Each team then focused their improvement efforts around these areas.

HEALTH DEPARTMENT EXPERIENCES WITH QI
During the nine months of the collaborative, the teams worked on measuring performance and testing a number of the ideas for change. Each team selected one or two domains of preparedness to focus on, and overall, they worked within three domains: accurate and effective risk communication; timely and appropriate disease control and treatment; and clear command, control, and communication. The table in Appendix D summarizes each of the team’s domains, aims and goals.

Genesee County Health Department, located in Flint, serves a population of 439,000 in southeastern Michigan. Genesee focused on improving the ability to reach staff and the ability to rapidly disseminate information to the public in the event of an emergency. They modified the steps of the generic Command and Control process map to reflect local procedures in their agency (see Figure 3).
Genesee conducted PDSA cycles around frequent drills of call down procedures for ICS staff and email and fax alerts to all staff. For example, one month they sent out an email to all of the agency’s staff with instructions to respond that they had received the message as quickly as possible. The team member running the test then documented the time it took to hear back from the staff, allowing her to calculate how many staff they could reach within 90 minutes (one of their performance targets). During the drills they realized that many of the staff did not know how to respond to the emergency communications, and some expected someone else would “take care of it.” They were able to make a series of modifications to the notification approach and repeat this type of test over the course of the collaborative. Genesee’s team believes that their small PDSA cycles have improved their staff’s response to other requests, including an agency-wide mask fit-testing initiative. With these repeated mini-drills they had a more accurate sense of the reliability of these processes: “Instead of guessing it’s going to work, we know its going to work at (80%) level… we know the plan’s strengths and weaknesses…” (Genesee County HD team member). Through these drills, the team realized that they will need to prepare for the likelihood of having less than 100% of staff respond in a large scale emergency and they are, in fact, doing so.
Genesee’s team also examined their steps for disseminating emergency messages to the public. After examining the sub-process of approving emergency press releases, they eliminated certain steps to speed the overall process.

**Figure 4: Genesee Risk Communication Process Map**

They then worked to standardize this process by creating a checklist that would be easily available to staff in the event of an emergency (following the principle of safety checklists that pilots might use prior to take off to prevent errors). They tested these new procedures in response to actual events that occurred during the collaborative period, and found that they were indeed able to reduce the amount of time needed to prepare messages (from eight to two hours).

Standardizing these processes and explicitly providing instructions in their use will enable all staff to follow these procedures in the event of an emergency when some of the usual communications staff may not be available.

**The Virginia Department of Health**, a state agency headquartered in Richmond, VA, came to the collaborative hoping to develop their telephone hotline, or Public Inquiry Center (PIC), which to date had only existed on paper in their state-wide emergency planning documents.
The initial state emergency plan called for the PIC to be run by the Department of Motor Vehicles (DMV). However, the health department staff was apprehensive about this model. First, it would limit the use of the PIC to catastrophic emergencies where the DMV was closed—a potentially dangerous situation. And after one staff member had a particularly difficult experience calling the DMV for information about her license, the team had deeper concerns about the DMV’s ability to accurately provide health information to a worried public. With encouragement from collaborative faculty to look for day-to-day activities that are similar to preparedness activities, they identified and learned about the Health Department’s STD hotline. After discussions with the STD hotline director, they realized there was a lot to learn from this internal resource; furthermore, staff from the STD hotline were willing to staff the PIC in the event of an emergency.

They mapped out the key steps needed for activating a PIC (see Figure 5), and then tested and developed each of the processes required through a series of PDSA cycles. Virginia measured the time needed to physically set up a phone hotline multiple times during the collaborative, using real events as well as drills and exercises. During a large agency wide exercise, they demonstrated that they were able to develop templates and test a number of components of the PIC, including a PIC activation form, just-in-time training and data collection forms for volunteers, and a sample press release announcing the opening of the PIC. In addition, they assessed ways to improve the accuracy of the information given by call takers. Overall the team felt that using multiple PDSA cycles to develop the hotline “…really did move things along, instead of waiting for one big way to test (the hotline). It was a way of seeing you could make progress in shorter periods of time” (Virginia Department of Health team member).
Virginia was just one of the teams that learned that PDSA cycles that were “failures” (because the team did not get the results they expected) were actually very valuable. The team decided to do a real-time PDSA cycle to test how long it would take them to transfer calls from a local agency to the state during a rabies exposure incident involving over 1000 Girl Scouts. After they received no calls to the PIC, the team realized they were missing a crucial switch needed to connect the lines from the local agency to the state agency. They realized that they had learned valuable information from this “failure” that they would not have known if they had not actually tried testing their system in advance of a true emergency. Overall, they found the PDSA approach useful; as a team member reported, “there’s great value in being explicit about what it is you want to test. It helps increase efficiency and focus activities.”

The Georgia Division of Public Health wanted to develop a phone nursing triage and decision support line for people who are not sick enough to require in person evaluation by a healthcare professional during a pandemic. The team created a process map detailing the steps involved in activating a triage line, as well as the desired outcomes they would hope to see as a result of the endeavor (see Figure 6). They then looked at which steps they could quickly test, and planned their first PDSA cycle around the triage sub-process. For this cycle they created a call scenario
with a mother of an ill child, and tested it with a lay volunteer making mock calls to a public health nurse. They later repeated and modified these tests using nurses with different kinds of public health training, and different case scenarios. For example they found that district nurses were able to complete the mock calls faster than nurses from the epidemiology division. Data from these small tests provided more realistic estimates of staffing and resource needs to the Department’s emergency plans for a triage line (including how many call takers would be needed to take care of a given number of potential callers, and technology and training needs for the triage line). Furthermore, by conducting these tests, Georgia’s team was able to enlist the support and buy-in of their nursing staff in furthering the project, when in fact, they had experienced active resistance previously. Thinking ahead to a likely shortage of nurses in a real crisis, they also tested the scenario with lay volunteers as call takers and found that they performed very well. They are planning future efforts to develop just-in-time training for family members and lay volunteers to make up for staff shortages during a public health emergency.

Georgia also used the QI methods they learned in the collaborative in other areas of preparedness. For example, they wanted a way to improve their communication methods and resource allocation toward their HRSA hospital grantees. Team members from Georgia conducted a series of PDSA cycles with hospital staff around a capabilities and needs tool; in doing so, they created a user-friendly product that met both the agency’s and their partner’s
needs. Regarding the team’s participation in the collaborative, one team member stated, “It’s definitely shaped the way we do things in the department, and will continue to do so…We have become more deliberate in our (improvement) process which is a good thing.”

**Baltimore City Health Department** sought to improve its ability to deliver clear and effective risk communication both to internal staff (see Figure 7) and the general public during emergencies (see Figure 8). The team tested their ability to communicate with internal staff by conducting an announced drill attempting to contact all of their staff at once (a “call down” drill). They measured staff response time and were planning on using this experience to plan future unannounced drills. The major focus of their work for the collaborative was using an urgent but non-emergency event, their back-to-school vaccination campaign, as an opportunity to test their communication with the general public. They collected data from parents who attended vaccination clinics and also from those who called into the department requesting information about these clinics. They specifically asked parents how they had learned that their child needed additional vaccinations. This was the first time they had used community feedback to evaluate

**Figure 7: Baltimore Command and Control Process Map**

![Diagram showing the command and control process map](image)

public communications effectiveness. One of their early findings was that letters from the schools were a very useful (and inexpensive) way to reach parents; few parents reported learning about the school vaccination campaign from the various ads the city had placed. They proudly
reported that they met their 6-month vaccination targets in six weeks, due to the changes they had implemented.

They also tested their ability to communicate rapidly with the public by sending out radio advertisements for a lunchtime flu clinic at a shopping mall. They noted a significant increase in attendance with the ads, compared to a prior clinic when no ads were placed. Lessons learned include the value of using community partners to reach target populations such as schoolchildren, or when a more general rapid response was needed, using the media. Also they learned about the value of using community feedback to guide improvement efforts.

Figure 8: Baltimore Risk Communication Process Map

The Multnomah County Health Department based in Portland, Oregon, focused its efforts during the PREPARE collaborative on their interactions with their hospital partners. Specifically, they were seeking to improve their response to emergency requests from hospitals for medical supplies and extra staff. The team first surveyed the hospitals about their expectations of how the health department might help in an emergency, and learned that hospital personnel were often unable to assess their needs (or supplies) in a detailed way. This somewhat unexpected finding helped the team to further focus their improvement efforts. They used process mapping to diagram the chain of processes needed to assure supplies were available to their hospital partners (see Figure 9).
The team developed supply request forms and then tested a new approach to responding to supply requests through their Incident Command System (ICS) during a statewide exercise. In contrast to prior exercises, they measured both time to process and respond accurately to orders for emergency supplies. The team found it was able to measure average processing time for orders, whether or not the order was moved appropriately to the correct higher level, and whether disposition of the order was recorded. The team’s analysis of the results revealed a number of challenges to the ordering system. One team member summarized their results by saying, “If this had been a real event there would have been significant adverse consequences from system weaknesses.” For example, multiple forms and processes for different types of supplies confused staff, and performance was inconsistent. They used these objective measures to note areas in which order processing took much longer than anticipated, and they are taking corrective action using PDSA cycles to improve performance. Finally, the Multnomah team tested their ability to contact their Health Reserve Corps staff. This revealed that most Corps members would be committed to their usual jobs during an emergency, and so would not be available for surge staffing. To address this problem, the team is planning to conduct a series of PDSA cycles to improve volunteer recruitment.
Multnomah’s team found that its improvement efforts clarified to their hospital partners the roles and responsibilities of the public health agency. Ironically, they introduced the notion of PDSA cycles to some of their hospital-based logistics partners. According to one of the team members, testing in this way “increased our (agency’s) communication with our hospital partners…. now they are in the playing field and are … engaged.”

**EVALUATION**

We conducted a series of process evaluations, eliciting feedback from teams throughout the duration of the collaborative. The Learning Sessions and monthly calls and progress reports offered the teams opportunities for communicating feedback on the collaborative process to the faculty. Also, after each Learning Session, we collected feedback from the participants via web-based evaluation forms (see Appendices I, J, and K). We used the responses from these surveys to inform our plans for the next action periods and Learning Session, as well as for collecting cumulative feedback on the collaborative design and activities. Finally, in addition to the surveys, a RAND researcher unaffiliated with the collaborative conducted interviews (see Appendix L for interview protocol) with each team via conference calls. The purpose of these interviews was to give the teams a final opportunity to reflect on the experience of the collaborative and to share additional comments or suggestions with us for the final evaluation. After completing the interviews, we conducted a final conference call with all of the PREPARE teams together to summarize the results of our evaluation and confirm our understanding of their feedback. During the call, the RAND team presented the survey results describing team participation, use of QI methods, agency preparedness, and feedback for the collaborative. In the final months of the collaborative, we used data from the sources noted above to evaluate the ability of the pilot teams to successfully adopt QI methodology and improve the preparedness of their departments for a potential pandemic.

**Improved Agency Preparedness**

Team members reported that taking part in the collaborative impacted their agency’s current and future pandemic preparedness. They were able to demonstrate improved preparedness in several ways.
First, teams moved from planning to implementation on a number of strategies crucial to their agencies’ preparedness efforts. For example, Virginia’s Public Inquiry Center had been written into their state’s emergency plan but had never been put into action. Likewise, the Georgia team had only rough estimates of their staffing needs for a telephone triage line and little support from staff for moving the idea forward. Overall, teams found that the PDSA process of conducting small tests gave them a structure for these activities at minimal costs.

Second, by using PDSA cycles for repeated testing and modifications, some of the teams were able to improve performance on key measures. The team from Virginia was able
to decrease the time it took to set up phone lines, while Georgia’s team was able to modify its protocols and use nurses with different kinds of training and experience to shorten the time for a triage call, dramatically altering their estimates for the numbers and types of staff that would be required. Genesee County’s team was able to decrease the time it takes to create and approve emergency press releases. Other teams spent their time clarifying processes and establishing baseline performance for future improvement.

The Baltimore team also demonstrated improved capacity to respond rapidly when needed. In a real life example, a scheduling mix-up meant that a flu vaccination team was notified of a planned flu clinic one hour before it was scheduled to open. They were able to bring the team together and respond in time. According to one team member, “Working together to do the (PREPARE project) helped… it served to pull the team together so we could respond in a 50 minute window (and serve the population)… we had an abundance of experience doing clinics, but now our internal communication is enhanced.”

Furthermore, teams showed improved emergency capacity in response to events that occurred following the collaborative. Genesee County Health Department received a case report of active tuberculosis in a large local school. They used the methods they developed and tested in the collaborative to respond to the event (ICS structure to respond to the situation, call down procedure for key staff, communication checklist for internal and external communication, and contacting community providers). The department’s response was rapid and clear, and people knew what they needed to do; they could see the gains they’d made as a result of participation in the PREPARE collaborative. One team member stated, “We’ve made progress … here are the fruits of our labor…our organizational capacity is much improved now versus before we started on the (PREPARE) project at least in emergency preparedness.”

Third, each of the teams built strong partnerships with internal and external partners which will strengthen their organizations’ capacity to respond in emergencies. For example, Virginia’s team discovered and formed a new partnership with individuals from another division in their own agency who are also running a public hotline. As a team member from Virginia said, “We’ve identified resources we didn’t know we had.” As a result of their participation, Georgia’s health department has built relationships with community hospitals that run nurse triage lines and is working on ways to share resources during an emergency. By conducting interviews and surveys with their hospital partners and proactively working with them to develop logistics capacity, the Multnomah team found it had more clearly defined roles and expectations with external partners during a public health crisis. The Genesee team realized
through their QI efforts that the local media is interested in an active partnership with public health, and they will be working to continue to build that relationship.

**Successful Adoption of QI Methods for PHEP**

Overall, the teams were enthusiastic about applying QI to their PHEP efforts. The surveys and interviews indicated that team members were changing the way they conducted their preparedness work, as well as some of their day-to-day agency work.

The Virginia team’s experience was typical of others’ in the collaborative. At the beginning of the collaborative, the Virginia team had “mixed feelings” about their participation. They were excited to take part in a promising new effort, but concerned about being involved in another project that would increase staff workload. However they found that “over time, as we became more involved with the collaborative and got to the point where we tested different aspects (of our phone hotline) we began to see the benefits (of the QI approach).” Working on multiple PDSA cycles to develop their hotline “… really did move things along, instead of waiting for one big way to test (the hotline). It was a way of seeing you could make progress in shorter periods of time.” Likewise, another collaborative team member said: “I can’t conceive of any reason we wouldn’t work to fine tune the method of QI in public health.”

Breaking broad preparedness concepts into actionable pieces provided a more manageable approach to PHEP efforts for team members. Participants found the process maps especially useful for identifying sub-processes and intermediate performance measures for preparedness goals. The process maps provided a way to clarify steps and procedures, and an approach to guide smaller drills to measure emergency performance in a less burdensome way than testing an overall process. A team member from Virginia noted, “A lot of the time in preparedness planning we have lofty goals, and it is helpful to break (the plans) down into smaller pieces and work and test those as we go along. Overall it can help our preparedness activities (VA).” Team members from Genesee felt that the experience in the collaborative had helped improve their approach to emergency planning: “To be able to break down portions of the operation plans and test it, you feel like you can get a handle on it… (the collaborative approach) provides a means to gain confidence you didn’t have otherwise.” The PREPARE experience caused the teams from Virginia and Multnomah to rethink the way they conducted statewide exercises, to ensure that all components of them are associated with performance measures that can be tracked over time. Ultimately, all teams viewed exercises as components of a PDSA cycle, albeit a large one.
The majority of the PREPARE for PI participants felt that the pilot learning collaborative met or exceeded their expectations (see Figure 12). They especially appreciated the opportunity to learn QI methods while working on a focus area they were already committed to improving. It was also helpful for the team members to hear that other agencies were struggling with some of the same issues. Health departments used each other as a resource for new ideas. Teams reported that the face-to-face time with both QI and preparedness experts (during calls and the learning sessions) was valuable. Participants also improved their understanding of their colleagues’ roles and learned how to make better use of internal resources in their agencies.

Figure 12: Expectations of the Collaborative

![Bar chart showing expectations of the PREPARE Learning Collaborative](chart.png)

The ability to use QI methods has been sustainable, as PREPARE participants have used QI methods to improve performance even after the formal collaborative period ended. For example, Georgia used a tornado response to test the feasibility of using temporary inflatable buildings to provide hospital surge capacity in a large-scale emergency like a pandemic. “From a QI perspective….this was an opportunity to look and see if these pop-up facilities function when an entire hospital is wiped out.” The team followed the PDSA format to test how the structures would perform: They identified some things they wanted to measure, and also asked staff to make notes of all the pros and cons of the portable hospitals. “We said (to the hospital staff), “We are revising our emergency plan and we need to evaluate how it’s going to work. While you are doing your procedures, take a moment to jot down anything to help us plan for preparedness...
in Georgia.” The hospital staff identified a lot of issues (for example, the zipper doors on the walls do not work for emergency care when staff did not have time to zip and unzip them). After studying what the staff said, the team is revisiting their plans, the health department has altered its original plan of using these structures exclusively and instead they will also purchase mobile units that are more functional for emergency care. They have also provided feedback to the manufacturer of the inflatable unit. Using this PDSA to test emergency plans during an actual event “can be attributed to us getting into the mind set of the collaborative.”

Overall, all of the teams have said that they plan to continue using QI (see Figure 13). At some sites, former collaborative members have become local experts in QI, and their supervisors and colleagues are seeking them out for collaboration on QI efforts outside of preparedness. As one team members said of this new role as QI liaison: “Those that participated in the collaborative have a responsibility to become good leaders and convince the primary movers and shakers to support initiatives of QI.”

**Figure 13: Likelihood of Using QI in the Future**

Team members noted a number of supports that would facilitate their ability to **continue using QI**. Many participants reported that having their senior leader involved as a champion for their improvement project was essential to the projects’ success. Team members who were at agencies with other ongoing QI related efforts (e.g. accreditation projects) felt more confident that they would be able to continue using QI. Also, one team member noted that in his state the governor was very “business oriented,” and that the QI approach, coming from industry, would be a point of common ground that might be leveraged to support QI efforts in public
health. Two of the teams came from agencies that are going through major strategic planning initiatives; team members are planning to use these initiatives as opportunities to build QI into the new structure of how their agencies work. Other team members felt their ongoing use of QI would be enhanced with additional training in QI methods, especially around measuring and understanding variation. Some felt that reluctant staff members in their agencies would be a barrier; they are planning on using their own personal experiences from PREPARE to help change these mindsets.

NEXT STEPS

What is needed to promote QI in PHEP and in public health in general?

The experience of the PREPARE for PI pilot collaborative adds significantly to the early experiences of others in public health demonstrating that practitioners at the state and local level can use QI methods to improve performance. However, the expectation for continuous improvement needs to be both a top-down and bottom-up endeavor. We anticipate that as more practitioners have positive experiences with QI methods, and their stories of improvement spread, QI will develop and spread ‘from the ground up.’ Thus, building on the momentum of successful efforts like PREPARE is crucial. However, additional factors are also necessary for QI to be successful; these are described below.

Clarify public health processes and develop reliable measures.

Quality improvement in other sectors has been aided by a large body of work to develop measures of the structural, process and outcomes components of quality. Public health needs a similar effort. Validated process and outcome measures that could be used for both accountability (to assess performance across jurisdictions) and for improvement are needed for PHEP. Using process maps to develop these measures would help to identify metrics and strategies that are feasible for public health practitioners to use. Ease of measurement would also allow for more frequent, repeated measurement, helping practitioners to assess whether changes they are making are leading to improvement in their desired outcomes. Developing such measures should be, at a minimum, the shared responsibility of the public health community, academia, and government. Such an effort will likely require significant financial support, as was the case in the personal health delivery system. Some of the existing measures in non-emergency public health practice (e.g. chronic disease surveillance, STD prevention) could also be adapted for QI efforts, but additional measure development across the board in public health
is probably necessary. PHEP has been particularly challenging to measure, in part due to the lack of clarity of what constitutes preparedness, and also because of the infrequency of large scale emergency events. Other work recently completed at RAND has addressed a number of these issues, including: using an expert panel process to define PHEP and identify its key elements (Nelson, Lurie, Wasserman and Zakowski, 2007), and developing measurement strategies and drills for SNS and 24/7 case investigation capabilities (Nelson, 2007), (Dausey, 2007).

RAND’s approach to performance measure development (in PREPARE and in our other PHEP work) has relied on partnerships with practitioners in the field. Performance measures and measurement strategies should be developed in cooperation with public health practitioners, so that the products reflect their priorities and deep knowledge of how public health works on the ground.

Create the right incentives.

Increasing the breadth and depth of QI practices will require expectations from the highest levels that emphasize performance-based accountability and continuous improvement. Both financial and non-financial incentives can help make this expectation concrete. For example, financial incentives for quality improvement could be operationalized by tying the release of federal or state dollars to performance improvement or to the institutionalization of certain QI practices. Alternatively, appropriation of extra funds for QI might be tied to actions deemed to be indicative of a jurisdiction’s commitment to quality improvement (e.g., staffing decisions, release of performance-related information, and modest levels of prior investment in quality improvement). Open recognition of public health agency quality might create another incentive, bringing favorable publicity to high-performing public health departments. However, policymakers should carefully examine incentive schemes to ensure that they do not generate unintended consequences, e.g., by punishing underperforming departments and thereby leaving those most in need of improvement with fewer resources to commit to such efforts (APHA, ASTHO, NACCHO and NALBOH, 2007). In this vein, ensuring a climate that is not punitive at the outset of performance reporting is key. Rather, consequences (both positive and negative) should be tied to progress toward improvement.

Create a base of expertise in QI in public health

The discipline of QI and the skills and techniques needed to pursue QI must be broadly disseminated throughout the public health community. Essential skills include knowing how to
choose appropriate outcomes, write measurable goals, analyze and understand work processes, choose and implement small tests of process change, and evaluate the effectiveness of those small tests. A base of ‘learning organizations’ and cadre of individual QI trainers who can ‘speak the language’ of public health practitioners is also needed to spread QI in public health (Senge, 1994). In healthcare, the IHI and other related organizations have served this role, partnering with both public and private institutions for these efforts. At the moment there is no clear public health group who can serve this role; some potential approaches include training groups through public health leadership institutes (e.g. with ASTHO, NACCHO, Public Health Institutes, the Public Health Foundation, and others) and through academic institutions. HHS/ASPR and HHS/CDC could also play a role in making the initial investment to develop this base and promoting it to health departments nationally. Both during PREPARE and in activity we have noted since, the most successful efforts are associated with dedicated personnel within health departments who teach QI and assist others in this endeavor. This may be a resident team within a public health agency, as is the case with Genesee, or a dedicated individual who may support a number of health departments. In one successful model, a state health department developed a QI team which, in turn, supports QI activities in local health departments.

**Demonstrate the possibility.**

A broad array of well-documented demonstrations of QI in public health could clarify how QI applies to the field. As the PREPARE experience has shown, learning collaboratives are a very promising approach to promoting QI in public health. We recommend that future QI learning collaborative efforts should include three in-person meetings over at least nine months to give participants time to learn the methods and try them out in their home agency. PREPARE team members told us that they would not have been able to make the same level of change with only two in-person meetings, or with just one longer intensive training without follow-up. Also, while it helped to accelerate our learning to have this first public health QI effort broadly focused on multiple preparedness domains, we recommend that future collaboratives start with a narrower topic, e.g. just one domain, like risk communication, and require that all teams work in that domain. Also, we recommend that all participating teams agree to work with validated performance measures and improvement tools identified prior to the first meeting of the collaborative. These specifications would accelerate learning and facilitate sharing among the teams.
Stories of successful improvement (from QI collaboratives or other efforts) prove that change is possible and outline what it will take to get there. More importantly however, these examples demonstrate that QI is not an ‘add-on’ to regular work, but rather a process for improving regular work. In partnership with our participating teams we are planning to widely disseminate the results of the PREPARE collaborative. Creating more opportunities to support QI efforts in public health will create more stories to share.

In addition, modeling QI behaviors can serve as an important signal for state and local governments. CDC and ASPR might consider using QI to measure and improve some of their own internal processes and improving outcomes.
References


Goals and change ideas for each domain are as follows:

1. **Comprehensive Routine Disease Surveillance**

   **Goals:**
   - The agency can detect first cases within 24 hours of person seeking care, and monitors new cases and case fatality rate in community with no more than 24 hr. lag time
   - High-volume hospitals can transmit influenza-like-illness (ILI) surveillance data to the health department in near-real time
   - 100 percent of providers in the ILI sentinel network report to the health department weekly

   **Change Ideas:**
   - Create sentinel networks of health care providers who can respond to ILI. Providers report weekly (reporting “no cases” if none seen).
   - Monitor performance of sentinel networks and provide feedback on reporting performance
   - Test sentinel network with reporting (and investigation) of proxy condition (e.g., smoking, uncontrolled asthma)
   - Conduct syndromic surveillance of ED chief complaint data, along with analysis of data from other sources in close to real time (e.g., HMO data, school absentee records, etc.)
   - Maintain active surveillance based on a case definition
   - Actively monitor antimicrobial drug resistance patterns
2. **Timely and Efficient Case Diagnosis and Investigation**

**Goals:**
- The agency can develop an initial case definition within 6 hours and investigate first suspected cases within 6 hours of initial notification
- The agency can investigate the first 5 unrelated contacts within 24 hours
- The health department has the capacity to receive urgent case reports 24/7/365
- The department has a knowledgeable professional to take a case report within 15 minutes of receiving a call
- The health department lab can analyze suspected cases in less than 1 day

**Change Ideas:**
- Develop and distribute guidelines and protocols for those receiving case reports
- Conduct frequent tests of case report capacity with actor calls
- Conduct regular tests of lab surge capacity for rapid specimen turn-around time
- Establish clear surge capacity plans for case investigation (staffing and materials)
- Decrease lab turn-around time for reportable illnesses currently present in the community (e.g., STDs, TB)

3. **Clear Command, Control and Communication Abilities**

**Goals:**
- The agency can activate its EOC and ICS quickly and effectively under appropriate situations
- The health department is able to work effectively in their response roles with all relevant response partners
- Staff with ICS responsibility can be reached within 60 minutes of a decision to activate the EOC. All can report for duty within 4 hours.

**Change Ideas:**
- Pre-establish and exercise the trigger for activating ICS and EOC
- Pre-identify the roles for staff within ICS, along with back-up assignments
- Frequently practice using ICS (both for non-emergency events and drills), and frequently practice using call-down and assembly drills
- Use and practice job checklists/templates for ICS roles
- Regularly exercise the roles and relationships with response partners (e.g., EMS, public safety, state and federal agencies)
- Establish effective partnerships with businesses, community-based and faith-based organizations
- Regularly update and test emergency plans; integrate plans with regional, state and federal plans (including criteria for local vs. state unified command)
- Create and use concise “after action reports” after exercises and real events to identify strengths and weaknesses and to direct future improvement efforts
APPENDIX A (cont.)
The Public Health Preparedness System Framework

4. Accurate and Effective Risk Communication

Goals:
- The health department can issue critical health messages to the public within 3 hours of a confirmed case
- The health department’s messages reach and are understood by at least 90 percent of the public within 48 hours from the time the health department issued the messages

Change Ideas:
- Prepare and test a checklist of processes to issue an urgent public health message
- Pre-write and pre-test messages about pandemic influenza (with messages appropriately targeted to vulnerable populations)
- Create and issue public messages to support personal preparation and management skills
- Practice message creation and distribution protocols with messages about predictable upcoming events
- Adopt and maintain a proactive approach to the press by developing key relationships with members of the broadcast media
- Train health department staff in effective media strategies and principles of risk communication
- Test understanding of messages with community members

5. Timely and Appropriate Disease Control and Treatment

Goals:
- The health department can partner with hospitals to oversee activation of in-hospital isolation for up to the first 25 cases and at home isolation for their contacts within 24 hours of diagnosis
- The health department can implement rapid triage in the community within 48 hours of the first confirmed case
- Within the first 3 days of the epidemic, the health department can work with their hospital partners to increase the capacity of inpatient medical care system by 25 percent and provide initial triage and care for all of the population that seeks care. With one week, the health department can oversee surge to 150 percent of normal capacity if necessary.
- Within 24 hours of receipt of vaccine, the health department can administer 100 percent of the vaccine as it becomes available to appropriate priority populations
- The health department has recruited 75 percent of the volunteers it needs to support mass prophylaxis

Change Ideas:
Prevention
- Train staff to implement social distancing and isolation measures as needed
APPENDIX A (cont.)
The Public Health Preparedness System Framework

- Provide community members with information on disease control and treatment measures for self-protection and disease management (e.g., hand washing, care at home)
- Pre-identify high-risk and priority groups (for vaccination/prophylaxis) and establish methods to locate them
- Pre-register (using computerized registries), recruit, and train the volunteer staff needed to support mass distribution clinics (with frequent call-down, assembly and set-up drills)

Care of the ill
- Plan with local medical centers to ensure the availability of sufficient number of staffed hospital beds; establish a system to track available beds
- Develop alternate sites to care for the ill (e.g., SNF beds and home nursing support)
- Pre-register (using computerized registries), recruit and train the volunteer staff needed to support the increased demands for patient care (with frequent call-down, assembly, and set-up drills)
- Develop community partnerships to help plan for maximizing equipment and supplies (e.g., with commercial shippers, pharmacies, etc)
- Develop a plan to increase public health agency staffing to meet demand
- Develop a plan to provide mental health support to public and emergency response staff
- Develop a plan for surge capacity in mortuary services
- Conduct drills in triage and mass vaccination/prophylaxis
APPENDIX B
Mission Statement

PREPARE for Pandemic Influenza
A Pilot Learning Collaborative for Public Health Preparedness

Mission Statement (4/27/06)

Background

Recent reports of bird-to-human transmission of the H5N1 strain of influenza point to the growing possibility of a global influenza pandemic, but few U.S. public health departments are fully prepared to handle it if it occurs. With increased government funding and movement toward standardization and performance measurement in public health, many public health departments are seeking to improve their capabilities to the level needed for an event such as a pandemic influenza outbreak. In addition, many public health departments are struggling to incorporate more preparedness activities because these functions were recently added to their existing scope of work.

Research on public health preparedness has found wide variability in performance among U.S. health departments. Some have attained exemplary performance, and others showed critical shortfalls. Among those that have identified their performance deficits from exercises or real events, many identified gaps have not been resolved. Similarly, a survey by the Turning Point Collaborative found that public health agencies may lack the skills needed to improve processes, even after identifying the need for improvement. Common obstacles to improvement include the following:

1. Changing guidelines or difficulty applying them to the local environment.
2. Lack of valid or easily applicable performance measures.
3. Limited integration of preparedness as part of the day-to-day work of public health.

The variations in health department performance point to the need for structured QI methods to speed agencies’ progress, whether or not a pandemic occurs. QI methodology provides a systematic way to identify solutions to performance shortfalls, implement changes, and spread successful techniques among sites. These critical techniques, which are based on proven business and management practices, have not been widely available to public health departments. Through this pilot learning collaborative, participants will identify ways to test and adapt QI methods to the needs of public health agencies. By doing so, they may help shape the future of public health.

Given the growing concerns about a pandemic influenza outbreak, improvement activities are even more important. PREPARE for Pandemic Influenza (PREPARE for PI), sponsored by the Department of Health and Human Services and organized by RAND, will work with public health organizations to apply QI methods to public health, specifically in the context of preparing for pandemic influenza.
APPENDIX B (cont.)
Mission Statement

PREPARE for PI’s Mission

The PREPARE for PI pilot collaborative aims to develop and test changes to support rapid improvements in public health preparedness for a pandemic influenza outbreak using quality improvement methodologies. Ultimately, our mission is to minimize the risk of morbidity, mortality and social disruption in the event of a pandemic influenza outbreak by becoming a prepared and activated health agency with a well-informed, prepared community.

PREPARE for PI’s Goals

Collaborative members will chose areas for improvement activities from one or more of the following key domains of preparedness for pandemic influenza:

1. Comprehensive routine disease surveillance
2. Timely and efficient case diagnosis and investigation
3. Clear command, control and communication abilities
4. Accurate and effective risk communication
5. Timely and appropriate disease control and treatment

The Collaborative Process

Together, participants and the PREPARE team will work through these steps:

1. Identify an area of preparedness to target for improvement
2. Devise measures of performance that can be assessed on a regular basis
3. Implement a new strategy for preparedness using improvement methods in each participating agency
4. Track progress through the period of the collaborative
5. Identify and share improvements
6. Compile promising practices for dissemination to other public health agencies

The Collaborative Commitment

PREPARE for PI is truly a collaborative effort, and each participant’s involvement will contribute to its success. This section describes each party’s commitment to the PREPARE for PI Collaborative.

The PREPARE planning team from RAND and CHQ will guide and support the participants through the following activities:

- Draft a public health preparedness system framework, along with improvement measures and change methods to help teams reach their goals (Teams will contribute to this process throughout the collaborative).
APPENDIX B (cont.)

Mission Statement

- Design the overall framework for two in-person Learning Sessions for all participants
- Provide knowledge in implementing QI practices
- Offer group and individual support for improvement efforts between Learning Sessions
- Facilitate support for data management while teams are collecting data
- Provide communication channels to enable information sharing among participants
- Support teams in creating a sustainability plan to spread QI efforts after the collaborative has ended

The participating agencies will contribute to the collaborative by engaging in activities that help them improve their own agencies and sharing their results with the other members of the Collaborative. Participants will be asked to commit to the following activities:

- Develop a QI goal that is consistent with the agency’s priorities and resources, along with a plan to meet that goal
- Identify a core team of three individuals, including
  - A public health preparedness leader with administrative responsibilities, who can facilitate system changes in your agency to accomplish the selected goal
  - A public health preparedness staff member with day-to-day preparedness responsibilities, who knows in detail how the current system works
  - An individual with content expertise related to the agency’s selected QI goal
- Send your core team members to attend the two Learning Sessions
- Participate in preparation activities before the Learning Sessions
- Take part in conference calls between Learning Sessions as scheduled
- Develop and test changes to current processes to improve preparedness for PI.
- Share information, including details of changes and results, with collaborative participants
- Submit brief monthly reports describing activities and learning to the PREPARE team
- Provide feedback to the PREPARE team on your experience participating in the collaborative
APPENDIX C

PREPARE for Pandemic Influenza Participating Sites

The Baltimore City Health Department, located in Baltimore, Maryland, is the nation's first city health department, founded in 1793. It serves the city of Baltimore with a population of 650,000. There are approximately 900 persons on the staff.
210 Guilford Ave
Baltimore MD 21202
Tel: 443-984-2622       Fax: 410-396-1617
(http://www.ci.baltimore.md.us/government/health/)

The Genesee County Health Department, located in Flint, Michigan, serves a population of 439,000. Over 50 programs are offered by 170 staff in areas ranging through clinical, community, and environmental health services.
630 S. Saginaw
Flint, MI 48502
Tel: 810-257-3612       Fax: 810-257-3147
(http://www.gchd.us/)

The Georgia Division of Public Health, located in Atlanta, Georgia, serves a state population of 8.9 million. There are approximately 7,600 statewide public health employees.
Two Peachtree Street, NW
Atlanta, Georgia 30303-3186
Tel: 404-657-2700
(http://health.state.ga.us/index.asp)

The Multnomah County Health Department, located in Portland, Oregon serves a population of 686,000. There are approximately 775 full-time employees.
426 SW Stark, 8th Floor
Portland, OR 97204
Tel: 503-988-3674       Fax: 503-988-3676
(http://www.co.multnomah.or.us/health/)

The Virginia Department of Health, located in Richmond, Virginia serves a state population of 7.45 million. There are approximately 3,600 employees statewide.
P.O. Box 2448
Richmond, Virginia 23218-2448
(http://www.vdh.state.va.us/index.asp)
## APPENDIX D
Overview of PREPARE Team Activities

<table>
<thead>
<tr>
<th>Team</th>
<th>Type of Health Department</th>
<th>Domains</th>
<th>Aims</th>
<th>Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Baltimore City Health Department</strong></td>
<td>City</td>
<td>Risk Communication</td>
<td>To improve the ability to deliver clear and effective risk communication to internal staff and the general public.</td>
<td>Critical messages can be issued to the public within 3 hours of a decision to issue. Messages reach and are understood by 90% of the public within 48 hours.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Command and control</td>
<td>To improve incident management via clear command and control.</td>
<td>Agency is able to activate ICS efficiently over the 3 month period prior to flu season.</td>
</tr>
<tr>
<td><strong>Genesee County Health Department</strong></td>
<td>Local</td>
<td>Command and control</td>
<td>To improve the accuracy, effectiveness and timeliness of its command and control and risk communication. By October 2006, we will develop the tools and implement the technology to provide quick and clear communication to our staff and to the public. We will also cultivate a readiness among both the staff and the public to receive essential information and directives from the health department in the event of a pandemic flu or similar public health emergency.</td>
<td>Reach all staff to relay information within 90 minutes of identified event.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Risk Communication</td>
<td></td>
<td>Assure that 100% of staff has access to and the ability to use pre-prepared messages to communicate with the general public. Reduce the time it takes to prepare risk communication messages by half. Distribute important audience specific messages to targeted audiences with 3 hours of preparation of the information to be released. Communicate critical messages to each Genesee County household within 18 hours.</td>
</tr>
<tr>
<td><strong>Georgia Division of Public Health</strong></td>
<td>State</td>
<td>Disease control and treatment</td>
<td>To decrease inappropriate utilization of the healthcare delivery system during a pandemic (by providing a telephone triage system so that patients can be channeled to resources appropriate for the severity of illness and by providing a decision support system that will allow those less seriously ill to remain at home with self-care or care by a family member).</td>
<td>Provide telephone triage to support social distancing. Ensure that those not requiring hospitalization feel comfortable with the triage/ recommendation process. Provide ongoing decision support for the 40-50% of pan flu patients who do not require hospitalization or in-person management by a healthcare provider.</td>
</tr>
</tbody>
</table>
### APPENDIX D (cont.)
#### Overview of PREPARE Team Activities

<table>
<thead>
<tr>
<th>Team</th>
<th>Type of Health Department</th>
<th>Domains</th>
<th>Aims</th>
<th>Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multnomah County Health Department</td>
<td>Local</td>
<td>Command and control</td>
<td>To implement a resource ordering and management system that provides rational and equitable distribution of personnel and material to support effective use in a pandemic influenza response environment. This will be a critical part of the logistics function of the incident command system.</td>
<td>Successfully recruit 70% of credentialed volunteers needed to support local hospital pandemic surge plans and public health’s Medical Care Points in Multnomah County.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Disease control and treatment</td>
<td>To improve ability of HD to respond to requests for credentialed staff and supplies and equipment from hospitals.</td>
<td>Establish capacity to provide 70% of required face masks needed to support. Local hospital pandemic surge plans and public health’s Medical Care Points in Multnomah County.</td>
</tr>
<tr>
<td>Virginia Department of Health</td>
<td>State</td>
<td>Risk Communication</td>
<td>To establish a public inquiry center (PIC) telephone hotline to provide accurate information to the general public</td>
<td>Establish a PIC within 24 of event or decision to activate center. Ensure that 90% of the callers receive accurate information. Ensure that 90% of calls are answered within 5 minutes.</td>
</tr>
</tbody>
</table>
APPENDIX E
Learning Sessions & Action Periods

Learning Session 1
Learning Session 1 took place as a day-and-a-half-long session on May 22-23, 2006 in RAND’s Arlington, VA offices with all participating teams in attendance. The learning session’s objectives were the following:

- Help each team develop a strategy for change in their agency using the PREPARE framework
- Apply the Model for Improvement to plan changes in each team’s selected domain of preparedness
- Develop a measurement strategy to monitor changes

To meet these objectives, the learning session provided presentations and teamwork sessions on the following topics:

- The Vision for PREPARE for PI
- The PREPARE System Framework
- Command, Control, and Communications (plenary by Chief James Schwartz)
- The Model for Improvement
- Measuring and Improving Public Health Preparedness: Lessons from SNS (Christopher Nelson and Edward Chan)

Action Period 1
Action Period 1 spanned the period from May 24 through September 24, 2006. It included activities designed to help teams refine their aims and goals. During this time, teams were also encouraged to begin and continue performing Plan-Do-Study-Act (PDSA) cycles, a critical activity in quality improvement.

Through this action period, the RAND-CCHMC team offered a series of monthly coaching calls, each with a specific focus, as follows:

- Aims: What are we trying to accomplish?
- Mapping process flows
- Change ideas: What changes can we make that will result in an improvement?
- Overview of Learning Session 2; Team-to-team consultation

In addition, each team also submitted monthly reports describing the ways in which they had applied the quality improvement practices in that month, the results of their small-scale tests, and the learning from the process.
APPENDIX E (cont.)
Learning Sessions & Action Periods

Learning Session 2

Learning Session 2 took place as a day-and-a-half-long session on September 25-26, 2006 in RAND’s Arlington, VA offices with all participating teams in attendance. The learning session’s objectives were the following:

- To develop a deeper understanding of the PREPARE system framework and change strategies
- To develop a deeper understanding of quality improvement methods and how they might apply to improving preparedness for pandemic influenza
- To collaboratively develop strategies to support progress in measuring preparedness and in testing and implementing key changes
- To share learning and ideas for improving preparedness with other pilot teams
- To plan next steps for Action Period 2

To meet these objectives, the learning session provided presentations and teamwork sessions on the following topics:

- The Shared Vision for PREPARE: Progress to Date
- Quality Improvement 101 (the origins of quality improvement practices)
- Understanding Your System: Process Mapping
- Risk Communication (plenary by Vincent Covello)
- Measurement for Improvement, Part 2
- After-Action Reports: How to Apply the Model for Improvement

Action Period 2

Action Period 2 began on September 27, 2006 and extended through January 31, 2007. This action period is designed to help teams continue to test changes and collect data to drive their quality improvement work. Through this action period, the RAND-CCHMC team has again provided a series of conference calls for coaching and team-to-team information sharing. In October 2006, we conducted individual coaching calls with each participating team. In November the coaching call focused on reviewing teams’ experiences testing changes and collecting data about their aim during department wide exercises, and identifying ways to use After Action Reports from these exercises to promote continued improvement and learning. The final coaching call for this action period was held on January 11th, 2007 and focused on using message mapping to communicate public health information. A message map is an organized means for displaying layers of information; it is a lens through which principles for effective risk
and crisis message development can be focused into effective and powerful communication (Covello, 2006).

**Learning Session 3**

Learning Session 3 took place as a day-and-a-half-long session on February 1-2, 2007 at RAND’s Santa Monica, CA offices with all participating teams in attendance. A panel of guests from CDC, Robert Wood Johnson Foundation, and Public Health Informatics, and the Multi-State Learning Collaborative on Learning and Assessment. The objectives for this learning session were the following:

1. To recognize and celebrate accomplishments during the collaborative.
2. To develop strategies to hold the gains made during the project.
3. To assist teams to effectively communicate their success and participate in spreading their learning to others as part of their senior leaders’ strategy.

To meet these objectives, the learning session included presentations and teamwork sessions on the following topics, among others:

- Where We Began and What We’ve Learned
- Spreading QI: An Example from Cincinnati Children’s Hospital, presented by guest speaker Uma Kotagal
- Measurement for Improvement Revisited
- Holding the Gains
- Plenary: Storytelling as Best Practice, presented by consultant Andy Goodman, to teach teams how to use their stories to spread QI
- Continuous QI: Future Aims
- Principles of Spread
- Exercise on evaluating the measures used during the collaborative

By the end of Learning Session 3, each team had practiced telling their stories of improvement, developed plans to hold the gains, and drafted preliminary plans for further improvement efforts. The entire group, including the teams, faculty, and guests had discussed and identified some of the most important factors that will influence the spread of QI in public health preparedness. Immediately following Learning Session 3, we sent a survey to the participants to elicit their feedback on the meeting and the collaborative overall.
APPENDIX F
Project Team Calls

Milestone Calls

The collaborative faculty and planning team also holds a series of milestone calls with senior improvement advisors throughout the collaborative to review progress and plan specific modifications to address gaps in progress, or to test new approaches in a systematic manner. It also serves as a time to troubleshoot problems or issues that arise. At the end of the project, the collaborative faculty and participating teams compile the lessons they learned, and they identify ways to disseminate their innovations and stories of improvement.

Milestone Call 1

On April 18, 2006, the RAND-CCHMC team conducted a milestone call with senior improvement advisor Lloyd Provost to consult on how to tailor the learning collaborative to the needs of public health and to review the materials for the first learning session.

Milestone Call 2

On July 17, 2006, the RAND-CCHMC team conducted a second milestone call with senior improvement advisor Lloyd Provost to review the outcomes of Learning Session 1, discuss planning for Learning Session 2, and consult on how to continue to tailor the Model for Improvement to the needs of public health.

Final Milestone Call

On February 27, 2007 the RAND-CCHMC team conducted the final milestone call with senior improvement advisor Lloyd Provost. During this call, the participants reviewed the PREPARE for PI change package and discussed Learning Session 3, evaluation plans for the entire collaborative, and the dissemination plans.

Senior Leader Conference Call

The Senior Leader Conference Call took place on October 31, 2006 and brought together leaders from three of the five participating health agencies:

The objectives of the call were the following:

- Provide progress update on collaborative framework and measurement
- Obtain feedback about collaborative participation
- Discuss application of quality improvement methods and the PREPARE framework in Action Period 2
- Generate ideas for sustainability and dissemination of this work after project ends
APPENDIX F (cont.)

Project Team Calls

The conference call collected important feedback from the senior leaders on each of these four topics. They expressed enthusiasm for the work, and they identified challenges and offered suggestions for expanding on the training provided through the pilot collaborative. Among the key challenges they identified were the following:

- Time. They noted that improvement work comes on top of many other demands.
- The need to see what fully implemented quality improvement looks like in an organization.
- Different perspectives among team members from the same department, determined by each individual’s focus on preparedness or public health processes.
- The need to frame quality improvement activities in language that their partners can understand and relate to.
- The need to make sure that they continue to address local priorities while also working on the collaborative’s goals.

However, they also identified important benefits from the work so far, including the following:

- The teams are learning the quality improvement methodology and are excited about it.
- The collaborative allows individuals to look at their work from a fresh perspective and apply critical thinking to it.
- The collaborative has brought together individuals from different areas of an agency to work together.
- For one health department, working with their partner agencies on quality improvement has stimulated the partner agencies to think about and clarify their expectations of the health department.
- They believe their departments’ quality improvement efforts will continue beyond the learning collaborative.
APPENDIX G
PDSA Worksheet

<table>
<thead>
<tr>
<th>Model for Improvement</th>
<th>Team Name: ________________________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cycle: _______</td>
<td>Date: ____________________</td>
</tr>
</tbody>
</table>

**PLAN:** Describe Test & Objective for this cycle

Questions

Predictions

Plan for change or test: Who, what, when, where

Plan for collection of data: who, what, when, where

**DO:** Carry out the change or test. Collect data & begin analysis. Describe observations, problems encountered, and special circumstances.

**STUDY:** Complete analysis of data; summarize what was learned.

**ACT:** Modifications or refinements to the test? What’s the next cycle?
APPENDIX H
Monthly Progress Report Template

PREPARE for PI
Monthly Progress Report

Health Department:
Submitted By:
Team Aim Statement:

REPORT INSTRUCTIONS
1. Please reflect briefly on the attached PREPARE Framework & the process diagrams as you are thinking about your work. If you have made changes or would like to propose changes to the diagram please comment here. The diagrams may not apply to the work you are doing at this time.

2. In the table below, indicate the PREPARE domain(s) that you are testing changes in and tools that you have tested (Section B)

3. Below the table please answer the questions in Section C

4. E-mail your monthly progress report to: Amanda.cornett@cchmc.org by the 10th of the month. If you need more time, please let us know. We request that you do not use pdf files if possible so that we can make comments in the report if needed.

5. Please look on the extranet at www.centerforhealthquality.org for other team PDSAs and learn what others are doing

AIM
Review your aim in the above paragraph and update as needed to reflect your current thinking. Please use “track changes” in above paragraph or comment here:

PREPARE Framework
Use the table below to describe your improvement work in the last month. For the domain, describe PDSAs you have conducted and your results. If you have a specific PDSA worksheet to submit, please indicate on the table and send with this document. Most teams are working in one domain primarily so you may not have something to report for every domain every month. We provided abbreviations for each domain. If you need more room, please expand the table as needed.

- Comprehensive Routine Disease Surveillance (CRDS)
- Timely & Efficient Case Diagnosis and Investigation (CDI)
- Clear Command Control and Communication (CCC)
- Accurate & Effective Risk Communication (RC)
- Timely & Appropriate Disease Control & Treatment (DCT)

<table>
<thead>
<tr>
<th>Domain and date of test</th>
<th>What did you test</th>
<th>Key learning</th>
<th>What will you do next?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example: RC* (06/15/06)</td>
<td>Creating message for closing lake due to bacteria…this was practice run not real event</td>
<td>Even though we had done this previously it took longer than predicted to issue message</td>
<td>Map out steps involved and determine where there was a logjam and why. We will test again with rabies case message (practice)</td>
</tr>
</tbody>
</table>

*PDSA worksheet attached or previously submitted.
APPENDIX H (cont.)
Monthly Progress Report Template

Measurement
  o Have you created any new measures? Describe any data collection activities and your experiences.

Other Information
  (The questions below are important aspects of transforming your system of preparedness.)

  o From your experiences this month working on your aim, what stood out as an important learning point?

  o What, if anything, surprised you this month?

  o When you encountered barriers, how did you overcome them?

  o Have you had contact with your senior leader this month? Please send him/her a copy of this monthly report.

  o Are there any issues you’d like to discuss on a conference call or through the listserv?

Please don’t hesitate to contact Divvie.Powell@cchmc.org with any questions or comments or pose a question to your colleagues and the project team through the prepareteam@rand.org listserv.
APPENDIX I
LS 1 Evaluation Form

PREPARE for PI Learning Session 1
Evaluation Questions
May 22-23, 2006

1. Please indicate the category that best describes your role:
   a) Epidemiologist
   b) Public Information Officer
   c) Medical Director
   d) Preparedness Coordinator
   e) Other, Please Specify

2. Did you achieve the learning session objectives listed below?

<table>
<thead>
<tr>
<th>Objective</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Develop a strategy for change in your agency using the PREPARE for PI framework</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Apply the Model for Improvement to plan changes in a selected domain of preparedness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) Develop a measurement strategy to monitor the changes you will make</td>
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<td></td>
</tr>
</tbody>
</table>

3. Additional Comments:

4. Overall, to what extent did the learning session meet your expectations with regard to the following?

<table>
<thead>
<tr>
<th>Category</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failed</td>
<td>Met</td>
<td>Exceeded</td>
<td></td>
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</tr>
<tr>
<td>a) Content of the sessions</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>b) Quality of the presentation binder and handouts</td>
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<tr>
<td>c) The Learning Session as a whole</td>
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</tr>
</tbody>
</table>

5. Please evaluate the amount of time devoted to each of the following aspects of the learning session.

<table>
<thead>
<tr>
<th>Aspect</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td></td>
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<td></td>
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<tr>
<td>About Right</td>
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<tr>
<td>Too Much</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Team meetings</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>b) Prepared presentations/lectures</td>
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</tr>
<tr>
<td>c) Storyboard sessions</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>d) Group discussions</td>
<td></td>
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</tr>
</tbody>
</table>

6. Please rate the following aspects of your individual team meetings during the learning session.

<table>
<thead>
<tr>
<th>Aspect</th>
<th>1</th>
<th>2</th>
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<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
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<tr>
<td>About Right</td>
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<tr>
<td>Too Much</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>a) Amount of interaction with faculty</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>b) Time available for creating/improving aims</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>c) Time available for creating/improving measures</td>
<td></td>
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</tr>
</tbody>
</table>
# APPENDIX I (cont.)
## LS 1 Evaluation Form

7. **How useful was each of the following educational presentations?**

<table>
<thead>
<tr>
<th></th>
<th>1</th>
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<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td>The Vision for PREPARE for Pandemic Flu (Dr. Nicole Lurie)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b)</td>
<td>The PREPARE System Framework (Dr. Debra Lotstein)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>c)</td>
<td>The PREPARE System Framework – Part 2 (Dr. Debra Lotstein)</td>
<td></td>
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<tr>
<td>d)</td>
<td>Plenary – Command Control and Communications (Chief James Schwartz)</td>
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<tr>
<td>e)</td>
<td>Model for Improvement – Part 1: Aims and Measures (Dr. Debra Lotstein)</td>
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<tr>
<td>f)</td>
<td>Plenary - Measuring and Improving Public Health Preparedness Lessons from SNS (Drs. Chris Nelson and Ed Chan)</td>
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<tr>
<td>g)</td>
<td>Model for Improvement – Part 2: Testing Changes (Dr. Peter Margolis)</td>
<td></td>
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</tr>
</tbody>
</table>

8. **What part(s) of this learning session did you find most valuable?**

9. **What could we improve in the future?**

10. **What questions or learning needs do you still have?**

11. **Which of the strategies or techniques you learned at this meeting are you most likely to use over the next six months?**

12. **Please suggest any topics you think we should cover during the next five months (e.g., through e-mail, during Action Period conference calls, or Learning Session 2)?**

13. **Please tell us your preference for the location of the next learning session.**
   - [ ] RAND’s Arlington, VA office
   - [ ] RAND’s Santa Monica, CA office
   - [ ] At another PREPARE participant’s location
   - [ ] At my location

14. **What is your preference for the length of the next learning session?**
   - [ ] One and a half days
   - [ ] Two full days
   - [ ] Two and a half days
   - [ ] Three full days

15. **Would you be interested in extending this pilot learning collaborative to three learning sessions, if possible?**

16. **Would you be interested in visiting the health departments of other PREPARE participants, if funds are available?**

17. **Please share any additional comments on the learning session.**
APPENDIX J  
LS 2 Evaluation Form

PREPARE for PI Learning Session 2  
Evaluation Questions  
September 25-26, 2006

Part I: Learning Session 2

1. Did you achieve the learning session objectives listed below? 

<table>
<thead>
<tr>
<th>Objective</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>f) Develop a deeper understanding of the PREPARE system framework and change strategies.</td>
<td></td>
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</tr>
<tr>
<td>g) Develop a deeper understanding of quality improvement methods and how they might apply to improving preparedness for pandemic influenza</td>
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<td></td>
</tr>
<tr>
<td>h) Collaboratively develop strategies to support progress in measuring preparedness and in testing and implementing key changes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i) Share learning and ideas improving preparedness with other pilot teams</td>
<td></td>
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</tr>
<tr>
<td>j) Plan next steps for the second action period</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Additional Comments:

3. Please evaluate the amount of time devoted to each of the following aspects of the learning session. 

<table>
<thead>
<tr>
<th>Aspect</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not Enough</td>
<td>About Right</td>
<td>Too Much</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) Team meetings</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e) Prepared presentations/lectures</td>
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<tr>
<td>f) Storyboard sessions</td>
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<tr>
<td>g) Group discussions</td>
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</table>

4. Please rate the following aspects of your individual team meetings during the learning session.

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<thead>
<tr>
<th>Aspect</th>
<th>1</th>
<th>2</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Not Enough</td>
<td>About Right</td>
<td>Too Much</td>
<td></td>
<td></td>
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<tr>
<td>e) Amount of interaction with faculty</td>
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<tr>
<td>f) Time to do exercises</td>
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</tbody>
</table>

5. How useful was each of the following educational presentations?

<table>
<thead>
<tr>
<th>Presentation</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>h) The Shared Vision for PREPARE: Progress to Date (Nicole Lurie)</td>
<td></td>
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<tr>
<td>i) Quality Improvement 101: Real Time Application of the Scientific Method (Peter Margolis)</td>
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<tr>
<td>j) Understanding Your System: Process Mapping (Debra Lotstein)</td>
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<tr>
<td>k) Plenary: Risk Communication (Vincent Covello)</td>
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<tr>
<td>l) Measurement for Improvement: Part 2 (Peter Margolis)</td>
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<tr>
<td>m) Using After Action Reports (Nicole Lurie)</td>
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</tbody>
</table>

6. What part of this learning session did you find most valuable?
APPENDIX J (cont.)
LS 2 Evaluation Form

7. What could we improve in the future?
8. Which of the strategies or techniques you learned at this meeting are you most likely to use over the next six months?
9. What questions or learning needs do you still have?
10. Please suggest any topics you think we should cover in the next learning session.

11. Please tell us your preference for the dates of the next learning session, which will be held in Santa Monica, CA with your travel expenses covered by the Robert Wood Johnson Foundation.
   - Thursday, Feb. 1 and Friday, Feb. 2, 2006
   - Monday, Feb. 5 and Tuesday, Feb. 6, 2006

12. Comments
13. Please share any additional comments on the learning session.

14. As we mentioned, we are planning a future learning collaborative on improving distribution of the Strategic National Stockpile at the state and local public health level. We would appreciate any recommendations you could make of state and/or local health departments who might be interested in participating.

Part II: Overall PREPARE for PI Pilot Learning Collaborative

15. To what extent has participating in this collaborative changed how you plan to carry out future work related to improving public health preparedness?

<table>
<thead>
<tr>
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<th>4</th>
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</thead>
<tbody>
<tr>
<td>Very Much</td>
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<tr>
<td>Somewhat</td>
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<tr>
<td>Not at all</td>
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</table>

16. During your participation in this collaborative, to what extent have you changed the way you carry out your daily work?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
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<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Much</td>
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<tr>
<td>Somewhat</td>
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<tr>
<td>Not at all</td>
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</tbody>
</table>

17. Please rate the helpfulness of the monthly coaching calls as conducted over the past six months.

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<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Helpful</td>
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<td></td>
</tr>
<tr>
<td>Somewhat Helpful</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Not at all Helpful</td>
<td></td>
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</tbody>
</table>

18. How important are coaching calls to your continued progress between learning sessions?

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<th></th>
<th>1</th>
<th>2</th>
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<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Important</td>
<td></td>
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<tr>
<td>Somewhat Important</td>
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<tr>
<td>Not at all Important</td>
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</table>
APPENDIX J (cont.)
LS 2 Evaluation Form

19. Please rate the helpfulness of the individual coaching you have received from faculty members.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
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<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Helpful</td>
<td>Somewhat Helpful</td>
<td>Not at all Helpful</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

20. In the month before this learning session, how much time did you spend on activities specifically requested by this collaborative? (I.e., monthly reports, PDSA cycle write-ups, coaching calls.) Please estimate in hours.

21. The amount of time required to participate in this collaborative has been:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>More than I expected</td>
<td>About what I expected</td>
<td>Less than I expected</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

22. The degree to which the requirements of the collaborative add to my current workload is

<table>
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<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>More than I expected</td>
<td>About what I expected</td>
<td>Less than I expected</td>
<td></td>
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</tr>
</tbody>
</table>

23. To what extent has the overall learning collaborative met your expectations up to this point?

<table>
<thead>
<tr>
<th>1</th>
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<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failed</td>
<td>Met</td>
<td>Exceeded</td>
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</tbody>
</table>

24. Please share any additional comments on the overall learning collaborative
APPENDIX K
LS3 Evaluation Form

PREPARE for PI Learning Session 3
Evaluation Questions
February 1-2, 2007

Part I: Learning Session 3

Thank you for participating in the PREPARE for PI Pilot Learning Collaborative. We take improvement seriously and value your feedback. In this section we ask you to please evaluate Learning Session 3.

1) Did you achieve the learning session objectives listed below?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) To recognize and celebrate accomplishments during the collaborative.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) To develop strategies to hold the gains made during the project.</td>
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<tr>
<td>c) To assist teams to effectively communicate their success and participate in spreading their learning to others as part of their senior leader’s strategy.</td>
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</tbody>
</table>

Please comment:

2) Please evaluate the amount of time devoted to each of the following aspects of the learning session.

<table>
<thead>
<tr>
<th>1</th>
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<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not Enough</td>
<td>About Right</td>
<td>Too Much</td>
<td></td>
</tr>
<tr>
<td>h) Team meetings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i) Prepared presentations/lectures</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>j) Storyboard sessions</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>k) Group discussions</td>
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</tbody>
</table>

3) Please rate the following aspects of your individual team meetings during the learning session.

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<tr>
<th>1</th>
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<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not Enough</td>
<td>About Right</td>
<td>Too Much</td>
<td></td>
</tr>
<tr>
<td>g) Amount of interaction with faculty</td>
<td></td>
<td></td>
<td></td>
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<td>h) Time to do exercises</td>
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4) How useful was each of the following educational presentations?

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<tr>
<td>j) Principles of Spread (Peter Margolis)</td>
<td>Not Useful</td>
<td>Useful</td>
<td>Very Useful</td>
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<tr>
<td>k) Principles of Spread (Panel discussion)</td>
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<tr>
<td>a) Where We Began (Nicole Lurie)</td>
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<tr>
<td>b) PREPARE FRAMEWORK: What Have We Learned? (Debra Lotstein)</td>
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<td>c) Team Presentations (Health Dept. Teams)</td>
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<td>d) Spreading QI: An Example from Cincinnati Children’s (Uma Kotagal)</td>
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<tr>
<td>e) Measurement for Improvement Revisited (Peter Margolis)</td>
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<td>f) Holding the Gains: Principles of Sustainability (Debra Lotstein)</td>
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<td>g) Storytelling Plenary (Andrew Goodman)</td>
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<td>h) Storytelling Part 2 (Group discussion)</td>
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<td>i) Continuous QI: Future Aims (Nicole Lurie)</td>
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</table>
APPENDIX K (cont.)
LS3 Evaluation Form

5) What part(s) of this learning session did you find most valuable?

6) What part(s) of this learning session would you recommend changing?

7) Which of the strategies or techniques you learned at this meeting are you most likely to use over the next six months?

8) What questions or learning needs do you still have?

9) Please share any additional comments on this learning session.

Part II: Overall PREPARE for PI Pilot Learning Collaborative

In this section we ask you to evaluate the overall PREPARE for PI pilot learning collaborative.

10) Please rate the usefulness of each of the following concepts and methodologies taught in the PREPARE learning collaborative.

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<td></td>
<td>Very Much</td>
<td>Somewhat</td>
<td>Not at all</td>
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<td>a)</td>
<td>PREPARE System Framework</td>
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<td>Developing an AIM Statement</td>
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<td>Identifying Appropriate Measures</td>
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<td>Selecting Goals to Fulfill Your Aim</td>
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<td>f)</td>
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<td>h)</td>
<td>Holding the Gains</td>
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<td>i)</td>
<td>Principles of Spread</td>
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11) To what extent do you feel you have mastered each of the following concepts and methodologies taught in this collaborative?

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<td>i)</td>
<td>Principles of Spread</td>
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12) What key takeaways from this collaborative do you expect to apply to your work on a regular basis and how?
APPENDIX K (cont.)
LS3 Evaluation Form

13) During your participation in this collaborative to what extent have you been able to apply QI to your preparedness work outside of your aim?

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<tr>
<td>Very Much</td>
<td>Somewhat</td>
<td>Not at all</td>
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Please comment:

14) During your participation in this collaborative to what extent have you incorporated QI into your daily work not related to preparedness?

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<td>Very Much</td>
<td>Somewhat</td>
<td>Not at all</td>
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15) To what extent did this collaborative make an impact on the current preparedness of your health department for a potential pandemic?

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<td>Very Much</td>
<td>Somewhat</td>
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16) To what extent will this collaborative make an impact on the future preparedness of your health department for a potential pandemic?

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<td>Somewhat</td>
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17) During your participation in this collaborative how helpful were group coaching calls to your continued progress?

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<td>Very Much</td>
<td>Somewhat</td>
<td>Not at all</td>
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Please comment:

18) During your participation in this collaborative how helpful was the individual coaching you received from faculty members?

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<td>Very Helpful</td>
<td>Somewhat Helpful</td>
<td>Not at all Helpful</td>
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Please comment:
APPENDIX K (cont.)
LS3 Evaluation Form

19) Approximately how many times on average per month did you conduct internal team meetings of all or most of the team?

20) During your participation in this collaborative, how much time on average per month did you spend on activities specifically requested by this collaborative (i.e., monthly reports, PDSA cycle write-ups, coaching calls)?

21) The amount of time required to participate in this collaborative has been:

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<td>More than I expected</td>
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<td>About what I expected</td>
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<td>Less than I expected</td>
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22) The degree to which the requirements of the collaborative added to my current workload was

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<td>Less than I expected</td>
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23) The degree to which incorporating QI adds to my current workload is

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24) To what extent do you expect to continue to use the QI methods you learned in this collaborative in your work?

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Please comment:

25) To what extent has the overall learning collaborative met your expectations?

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<tr>
<td>Failed</td>
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26) Please share any additional comments on the overall learning collaborative.
APPENDIX L
PREPARE for PI Post-Collaborative Interview Protocol

I just want to take a minute and review the background for this interview. I anticipate our conversation will take approximately 45 minutes to 1 hour to complete.

As you already know, the goal of our pilot learning collaborative is to develop a conceptual framework and set of QI methods and tools for improving public health preparedness, using pandemic influenza as an example, and to garner the potential for improving public health practice generally. As a participating team, we are also interested in your ability to use QI methodology, including measuring performance and testing changes to your current preparedness processes.

Today we would like to ask you some questions about the impact of the PREPARE for PI collaborative on your public health practices as a follow-up to your participation in the pilot learning collaborative and the final survey you completed in February. We are particularly interested in hearing examples.

This interview is voluntary of course. Let me know if there are any questions you prefer not to answer, or if you want to stop at any time.

Before we begin, let me assure you that your responses to these questions are confidential, except as required by law. Your participation in this discussion is completely voluntary. We would like to have your responses to all of the questions; however, if you are uncomfortable with any question we can skip it. Summary information from these interviews, together with material taken from your team’s work throughout the collaborative, will be presented at the health department level; however, no specific individual will be identified by name in any reports or publications. If we would like to attribute a quote to a particular individual, we will explicitly request your consent prior to releasing the information.

Notes. If it’s OK with you, I would like to take some notes during our conversation.

Do you have any questions before we begin?

1. We’re interested in learning more about your assessment of the QI collaborative process itself. Since we’ve all learned the value of storytelling, tell me the story of your team’s participation in the PREPARE for PI QI collaborative. Start with your thoughts and attitudes toward the beginning of the collaborative and how they evolved over the course of our work together. We’re interested in your team’s experience but please highlight how the experience has differed among team members.
2. Did you think you had the right people on your team (in terms of job training, job title)? E.g. the right composition of roles for what you were trying to achieve?
   a. Why or why not?
   b. Did you involve the right departments?
   c. Were there areas that weren’t represented that created barriers to meeting your goals?
   d. How might it have helped your team to have community members at large participate?

3. We’re interested in the impact this collaborative has had on the future preparedness of your health department. Think of the full range of PREPARE activities including the theory and methods you learned about and the work that you did towards your aim.
   a. In what ways did your participation increase your agency’s preparedness? Can you give examples?
   b. Specifically, how has this influenced the way you conduct exercises at your agency?

4. We’re interested in how your participation in PREPARE influenced your ability and interest in QI methodology.
   a. Have you used QI methods you learned in PREPARE for other work in your agency, outside of your work for PREPARE?
   b. How do you intend to keep using QI within your own work?
   c. What will help or hinder your own continued use of QI methods?
   d. Have you been involved in or are you planning to be involved in spreading knowledge of QI outside of your PREPARE team?
   e. What will help or hinder the spread of QI to others within your health department?