

Product Evaluation Report: Executive Summary
Infection Disease Emergency Response (IDER) Toolkit
July 14, 2011

The Southern Nevada Health District (SNHD) was chosen by the National Association of County and City Health Officials (NACCHO) to test and evaluate the **Infectious Disease Emergency Response (IDER) Toolkit** of the San Francisco Bay Area Advanced Practice Center (SF APC) as part of a project to improve the products available to local health departments across the country through NACCHO's APC program. SNHD found the toolkit to be highly versatile and beneficial. As noted below, SNHD has found additional applications of the IDER plan it developed from the toolkit, and plans to use toolkit components for developing other types of emergency response plans.

Summary of Conclusions about Toolkit Attributes and Benefits as Evaluated by SNHD

- The IDER toolkit facilitates development of a written IDER plan by being easy to navigate, easy to modify, and comprehensive enough to develop an entire IDER plan mostly from the toolkit, with few additions needed.
- The process of using the toolkit to develop an IDER plan, and the process of applying the plan to infectious disease events, improves staff understanding of the Incident Command System (ICS) as applied to public health.
- Toolkit components can be used independently, enabling a health department to benefit from specific components without having to use the entire toolkit. This attribute makes the toolkit scalable, so it is likely to be useful to small health departments as well as larger ones such as SNHD.
- To use the toolkit, a health department needs staff with project management skills and a working knowledge of the ICS. A shared Internet or Intranet site for content management will also help.
- By using an IDER plan developed from the toolkit for smaller scale events as well as emergencies, as SNHD is doing, a health department can integrate infectious disease preparedness into its regular operations, so staff will be better prepared for an emergency.
- SNHD expects health departments can achieve further efficiencies by applying IDER plan toolkit formats and components to other response plans after it has developed an IDER plan. SNHD plans to use toolkit formats and components to develop Radiation Emergency and Chemical Exposure Emergency response plans.

Summary of Recommendations

Recommendations to the APC to improve the toolkit:

1. Revise the ICS forms component of the toolkit to include additional ICS components and to be more easily used for each sequential response period. Such changes would strengthen ICS-compliant monitoring components of the toolkit to match the strong ICS-compliant planning components. SNHD offers an ICS Forms Workbook for this purpose.
2. Implement an approach to make it easy for new user health departments to use additions to the toolkit made by earlier users.
3. Consider renaming this toolkit the "Infectious Disease Event Response Toolkit" to emphasize that it can be used for smaller scale events as well as for emergencies.
4. Add guidance on how this toolkit can be used for other kinds of preparedness plans.
5. Consider adding project and content management guidance to user health departments to help them implement the toolkit.

Additional Recommendations to NACCHO concerning product promotion:

6. Promote use of this toolkit for responses of different scales and for other kinds of public health responses besides infectious disease.
7. Consider promoting this toolkit as a guide for organizing staff with disease surveillance, control, and outbreak investigation responsibilities.

Product Evaluation Report

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I INTRODUCTION

The National Association of County and City Health Officials (NACCHO) selected the Southern Nevada Health District (SNHD), based in Las Vegas, to test and evaluate the product titled **Infection Disease Emergency Response (IDER) Toolkit**. The SNHD is one of eight “Connector Sites” engaged to test and evaluate products developed by NACCHO’s Advanced Practice Centers (APCs). The product evaluated by SNHD was developed by the San Francisco Bay Area APC, a partnership between the San Francisco Department of Public Health and the University of California Berkeley Center for Infectious Diseases and Emergency Readiness. This report presents findings and recommendations based on evaluation activities conducted between October 1, 2010 and April 19, 2011.

All the Connector Sites, including SNHD, were coached by the Results That Matter Team of Epstein & Fass Associates, in developing evaluation plans and conducting their evaluation. SNHD conducted the product evaluation, collected and analyzed all the data used in this evaluation, and provided content for most of this report. However, the Results That Matter Team participated in preparing the evaluation report to ensure that an external perspective with some measure of independence was brought to the evaluation. Thus the findings and recommendations presented in this report reflect those jointly agreed upon by the Results That Team and the Connector site.

Background

SNHD is a large local public health organization, serving a population of 1.9 million residents. As the public health authority for all of Clark County, Nevada, SNHD is responsible for ensuring consistent, organized, and thorough public health infectious disease emergency response. Although SNHD has met these obligations, the absence of a formal written Infectious Disease Emergency Response (IDER) Plan has resulted in partner agencies and some SNHD staff having a poor understanding of the complexity of SNHD roles and responsibilities when responding to infectious disease outbreaks.

There is ever increasing pressure from federal agencies that all public health responses be conducted using the Incident Command System (ICS). A gap analysis, conducted based on the *US Department of Homeland Security Target Capabilities*, identified that although the State of Nevada and SNHD had developed and tested detailed Pandemic Influenza Response Plans, there were no formal written NIMS-compliant infectious disease emergency response plans for diseases other than pandemic influenza. Despite the lack of a written NIMS-compliant plan, SNHD’s long term commitment to ensuring use of ICS has been demonstrated through making it a condition of employment that all SNHD staff members are trained in the ICS to a minimum level of ICS 200 and National Incident Management System (NIMS) 700. Additionally, staff at the supervisory level and above are required to be trained to the ICS 400 level. Even after extensive training, the ICS, which was originally designed for response to wildland fires, has proven to be somewhat awkward for SNHD to adapt for responding to public health emergencies, adding another layer of perceived complexity to effectively managing large scale public health responses.

The conditions above lead to a commitment in 2010 by the Office of Epidemiology at the SNHD to take a leadership role in planning and developing a formal written NIMS-compliant infectious disease emergency response plan. In preparation for this project, The San Francisco Advanced Practice Center (SF-APC) and University of California, Berkeley Center for Infectious Disease Emergency Readiness

(CIDER) were invited to provide onsite training at SNHD on the SF-APC's IDER Toolkit. The toolkit was designed to facilitate the application of the ICS framework to infectious disease emergency responses. The training was well received, and staff attending the training immediately recognized that the toolkit templates could easily be adapted for developing the SNHD IDER plan.

Shortly after the training, opportunity knocked in the form of a NACCHO-sponsored grant opportunity for testing and evaluating an APC product. SNHD applied and was awarded a grant to implement and evaluate the SF-APC toolkit. SNHD proposed to implement the IDER toolkit to develop a NIMS-compliant infectious disease emergency response plan, test the plan, and evaluate the IDER toolkit, working under the guidance of the NACCHO-assigned quality improvement and evaluation coach and the leadership of the SNHD IDER project team.

Overview of the Product and Parts Evaluated

The **"Infectious Disease Emergency Response (IDER) Toolkit"** was developed to assist local health departments in developing and/or supplementing their infectious disease emergency response plans in order to strengthen their ability to prepare for and respond to infectious disease emergencies."¹

The IDER Toolkit integrates the key elements of communicable disease control and prevention with emergency management concepts. The materials presented in the IDER Toolkit are based on resources developed and currently used by the San Francisco Department of Public Health (SFDPH). Most of the documents in the IDER Toolkit are templates of the SFDPH that have been modified so local health departments may easily tailor them to their jurisdiction.

The strengths of the IDER Toolkit include:

- Incident Command System (ICS) framework that accounts for unique public health and infectious disease-related challenges.
- Allows for development of one core, over-arching plan for all infectious disease emergencies.
- Provides guidance on the development of an operational infectious disease emergency response plan.
- Modular and scalable format.
- Recognizes existing "promising practices" in public health emergency preparedness.

The IDER Toolkit contains 40 core templates covering ICS command and control, branches, units and 178 Job Action Sheet templates. Job action sheet templates are grouped by ICS unit to facilitate electronic searches, so all needed materials can be readily found by a user. All 40 core templates were examined for inclusion in the SNHD IDER Plan. Thirty-five of the templates were modified and used. Table 1 lists all of the toolkit core templates and whether they were used and evaluated. Of those templates used, the percentage of the template that was modified for applicability to SNHD is also shown in Table 1. The reason five templates were not used was simply that SNHD does not directly engage in those functions. The templates were not found deficient in any way. Other health departments may find the templates useful. The 178 job action sheets were not planned for discrete evaluation. However, the SNHD project team has been reviewing the job action sheets and has customized 105 of them so far.

¹ <http://www.sfbayapc.org/IDER.html> accessed on 2/14/11

Table 1. Toolkit Templates Evaluated for Inclusion in the SNHD IDER Plan

Toolkit Section	Examined?	Used and Evaluated?	% Modified
00. Intro for Core Plan	Yes	Yes	~30%
01. Command	Yes	Yes	~40%
02. Plans Section	Yes	Yes	~40%
03. Situation Analysis	Yes	Yes	<10%
04. Resource Status Unit	Yes	Yes	<10%
05. Documentation Unit	Yes	Yes	<10%
06. Demobilization Unit	Yes	Yes	~30%
07. Technical Specialist	Yes	Yes	<10%
08. Operations Section	Yes	Yes	~30%
09. Information and Guidance Branch	Yes	Yes	~20%
10. Information and Guidance Branch - Inquiries Group	Yes	Yes	~30%
11. Content Group	Yes	Yes	<10%
12. Dissemination Group	Yes	Yes	<10%
13. Disease Containment Branch	Yes	Yes	<10%
14. Community Mitigation Group	Yes	No	
15. Mass Prophylaxis Group	Yes	Yes	>50%
16. Restriction, Exclusion and Clearance Group	Yes	Yes	<10%
17. Isolation and Quarantine Group	Yes	Yes	>30%
18. Medical Branch Toolkit	Yes	No	
19. EMS Medical Transport Group	Yes	No	
20. Healthcare Facilities Group	Yes	No	
21. Mass Fatalities Group	Yes	No	
22. Epidemiology and Surveillance Branch	Yes	Yes	<10%
23. Investigation Group (Field Investigation Team)	Yes	Yes	<10%
24. Surveillance Group	Yes	Yes	~30%
25. Lab Group	Yes	Yes	~40%
26. Data Branch	Yes	Yes	<10%
27. Data Analysis	Yes	Yes	<10%
28. Data Software Support Group	Yes	Yes	<10%
29. Logistics Section	Yes	Yes	<10%
30. Personnel Unit	Yes	Yes	~30%
31. Supplies Unit	Yes	Yes	~20%
32. Pharmacy Medical Supplies Team	Yes	Yes	>50%
33. Facilities Unit	Yes	Yes	<10%
34. Communications Equipment Unit	Yes	Yes	~30%
35. Information Technology Unit	Yes	Yes	~20%
36. Finance Section	Yes	Yes	~20%
37. Procurement Unit	Yes	Yes	~20%
38. Cost Unit	Yes	Yes	<10%
39. Time Tracking Unit	Yes	Yes	<10%

II OBJECTIVES OF THE EVALUATION

Overall NACCHO will use the evaluations conducted by Connector sites to enhance products developed by APCs. General objectives of all Connector evaluations include:

- Determine which product benefits, if any, have been achieved by the Connector Site
- For benefits dependent on a longer or more thorough test than was conducted during the timeframe of evaluation, determine whether results achieved to date by the Connector are consistent with achieving longer-term benefits
- Suggest the extent to which results and benefits achieved, or not achieved, were due to the product, to the way product evaluation was implemented by the Connector Site, or to Connector Site conditions or characteristics
- Suggest any requirements for LHDs to meet in order to use the product effectively, or any limitations on characteristics or conditions of LHDs for whom the product is recommended
- Determine product improvements that can be made to increase the effectiveness of the product, which may include reducing limitations on its use (which could make it applicable to a wider range of LHDs)

This evaluation of the **Infectious Disease Emergency Response (IDER) Toolkit** considered the extent to which the product demonstrated the following benefits or product attributes:

- The IDER Toolkit facilitated development of a written IDER plan by being:
 - Easy to navigate and modify for SNHD use without taking too much staff time to make the modifications.
 - Comprehensive enough for SNHD to develop most of its plan by using toolkit templates.
- The process of utilizing the toolkit components for IDER plan development and subsequent use of the IDER plan improves understanding of the Incident Command System (ICS) as applied to public health.
- Toolkit components can be used independently, enabling a health department to benefit from specific components without having to use the entire toolkit. This scalability should make IDER toolkit components easily usable by any size public health department.
- There are minimal requirements for local health departments to meet to be able to use the components effectively

In addition, should an actual multi-agency IDER or IDER-focused multi-agency response or functional or full scale exercise occur during the testing period, SNHD would expect to see improved coordination among responding agencies.

Unanticipated Additional Benefits

While attempting to evaluate the IDER Toolkit for the above benefits, SNHD also found that the toolkit provided the following unexpected benefits:

- The plan developed from the toolkit provided the impetus for the SNHD to re-organize its Office of Epidemiology (OOE) workflow to facilitate the use of the IDER Plan for small-scale events, prepare staff for larger-scale events, and highlight where human resources are insufficient to help justify resource requests.
- The toolkit organization and much of its content are useful for preparedness plans other than IDER plans, and SNHD will be using it to develop response plans for radiation emergencies and for chemical exposure emergencies.

III METHODOLOGY

Each Connector site developed a “Chain of Success” to define the major evaluation points and the results expected at each point along the way to reaching the intended benefits of the product evaluated. For each point in the chain, the Connector defined: the expected results or benefits, the timeframe for evaluation, evidence to document or measure success, indicators to measure success,

and the major learning focus. The “Chain of Success” methodology is based on using “leading indicators” to evaluate early results and benefits and determine whether longer term benefits are likely. This methodology is also part of the quality improvement (QI) strategy of this project, as it gives Connector Sites opportunities to learn from early evaluation points in the chain to improve their product testing and evaluation process and more opportunities for product improvement findings.² Table 2 summarizes the evaluation points in the “Chain of Success” for SNHD’s evaluation plan.

Table 2. SNHD Evaluation Plan “Chain of Success”

Evaluation Point	Evaluation Methodology Used	Major Learning Focus
A. IDER Toolkit Assignment Meeting and Evaluation Tools Review	<ul style="list-style-type: none"> • Observe ease or difficulty of selecting templates for SNHD use • Determine percentage of core toolkits to be used by SNHD 	<p>How easy is toolkit navigation to find what SNHD needs?</p> <p>Is the toolkit comprehensive: Will it provide most of our plan?</p>
B. Completion of initial set of IDER plan components using templates	<ul style="list-style-type: none"> • Track completion of components against timelines to determine % completed on-time • Survey staff who use templates to determine ease of use and level of modification needed. 	<p>How useful are the templates to create IDER plan components?</p> <p>How easy is it to use templates to complete components in a timely manner?</p> <p>How much modification is required for each template?</p>
C. Completion of remaining IDER plan components using templates	Same as above.	Same as above.
D. Completed IDER Plan	<ul style="list-style-type: none"> • Track completion of plan against expected timeline. • Submit to Chief Health Officer for approval. 	<p>Can we complete the plan on time?</p> <p>Will the plan be approved for testing?</p>
E. IDER Exercise to Test IDER Plan	Survey of participants in exercise and review hotwash document	What are the strengths and weaknesses of IDER Plan?
F. IDER AAR (After Action Report & Improvement Plan)	AAR is completed and analyzed.	What are the strengths and weaknesses of IDER Plan (in more detail)?

Teams Used to Develop the SNHD IDER Plan and Implement the Evaluation

The SNHD relied on a six member Quality Improvement Team (QI Team) to conduct the initial phases of evaluation and to plan evaluation methodology. They also helped evaluate the IDER plan survey tool. The full IDER plan development team was comprised of 24 experienced SNHD staff who would normally participate in an infectious disease emergency response. They brought with them a full array of subject matter expertise. Team members agreed that assignments for developing the core components of the SNHD IDER plan should be made based on the subject area expertise of the individual team members. QI Team members were oriented to the project plan, QI tools, as well as the survey developed for evaluating the use of the toolkits to develop IDER components.

More detailed information on evaluation methodology can be found in Appendix B.

² For more on applying “leading indicators” to public health, see Simone, Alina & Paul D. Epstein (2009), “Leading and Lagging Indicators of Public Health and Public Health Assessment and Accreditation” in Bialek, Ron, Grace L. Duffy, & John W. Moran, eds. *The Public Health Quality Improvement Handbook*. (Milwaukee: ASQ Quality Press).

Limitations of the Evaluation

There are two significant limitations to this evaluation, related to “favorable” and “unfavorable” conditions cited in Table 4:

- Because SNHD staff participating in this project all have had extensive training in ICS, it may have been easier for them to use the IDER toolkit than staff without as much ICS training. Under “VI. Findings” and “VII. Discussion,” SNHD notes that Health Departments that want to use this toolkit should involve staff with knowledge of ICS. It is impossible to say how much less knowledge of ICS than SNHD’s staff have would be adequate.
- SNHD had to participate in a regional tabletop exercise called by an external agency rather than design an exercise explicitly to test the IDER plan. Even though testing SNHD’s IDER plan was included in the regional exercise objectives, due to the subject matter chosen for the exercise and the “high level” (i.e., 30,000 foot view) of discussion of the response, the IDER plan was not tested in any meaningful way. SNHD mostly made up for this limitation by using the IDER plan for response to two “routine” infectious disease outbreaks, which were not large-scale emergencies, during the evaluation period. Due to the scale of these outbreaks, not all parts of the IDER plan were tested. But for the parts of the plan used, these responses to actual outbreaks may have provided a better test of the plan than a tabletop exercise.

IV RELEVANT CHARACTERISTICS OF THE APC AND CONNECTOR SITES

Connector sites were selected for their ability to provide a thorough evaluation of APC products in an environment similar to the intended product application. APC products are intended to be scalable to local health departments of varied sizes and settings; each product contains recommendations for minimum thresholds for use. Table 3 compares the San Francisco Department of Public Health and the Southern Nevada Health District Connector Site on key characteristics.

Table 3. Comparison of the APC and Connector Site

Characteristic	APC Site San Francisco, CA	Connector Site Clark County, Nevada
Full Time Equivalent Employees	7,000	530
Budget (in millions \$)	1,500	75
Population Served (as of 2010 Census)	800,000	1,950,000
Square miles of area served	49	7,100
Setting	Urban with a daytime population of 1.5 million	Mostly urban with a visitor population estimated at 400,000 per day
Satellite Sites (Office Locations)	20 (includes 2 hospitals, 9 clinics)	6 sites (no hospitals or clinics)
Governmental Structure	Department of the City and County of San Francisco	Independent Health District (not part of County or City Government)

No single site can be completely representative of the range of sites that may use the product in the future. To this end, Connector Sites identified conditions that might be especially favorable to their success using the product as well as conditions that could be more challenging than typical, described in Table 4 below.

Table 4. Favorable and Unfavorable Conditions Affecting Evaluation

Favorable Conditions	Unfavorable Conditions
<ul style="list-style-type: none"> ▪ SNHD staff are very seasoned in participating in annual drills, tabletops and functional exercises. ▪ SNHD staff has experience in responding to actual events (disease outbreaks including, hepatitis C, norovirus, and pandemic flu). ▪ SNHD has undergone extensive training in preparedness and Incident Command System (ICS). ICS training to level 200 is a condition of employment for all staff, and management staff are required to be trained to ICS 400. ▪ SNHD did not have an Infectious Disease Emergency Response (IDER) Plan. ▪ SNHD IDER plan development team members were motivated to develop an efficiently organized response through a written plan. ▪ More than half of the SNHD team members had been exposed to the toolkit by attending training by the San Francisco APC a few months earlier. ▪ SNHD had SharePoint Software to utilize in developing the IDER Plan. ▪ Being an independent Health District allows for faster decision making and approval of new plans. 	<ul style="list-style-type: none"> ▪ Executive Team was not involved in plan development. Executive management observed the tabletop exercise, but did not participate ▪ SNHD had to follow the calendar of an external agency that was going to do the exercise that would test the SNHD IDER Plan. ▪ So many agencies participated in the exercise that it was very difficult to focus on the organization of the PH response. ▪ SNHD, like other PH agencies around the country, is suffering from the continuing budget problems of state and local governments.

This project was developed from the bottom up, helping SNHD achieving its goal of having a NIMS compliant plan. The majority of the activities within the plan are executed or guided by the very people assisting in the development, which helps assure plan implementation success. The economic downturn has not affected development of the plan, since no additional investments beyond staff participation were required. SNHD’s three PHEP grant-funded public health emergency response planners helped to assure completion of the plan.

V CHANGES AND ADAPTATIONS OF THE PRODUCT MADE BY THE CONNECTOR SITE

During the course of evaluation, each Connector Site participant documented adaptations or changes it found necessary to make in order to use the product. These changes and modifications are important to record since other users may encounter similar issues with product use. This section is intended to summarize noteworthy changes and adaptations made, if any, while the product was evaluated. Findings stemming from the changes made are presented at the appropriate evaluation point(s) in the Findings section of this report and are incorporated in the recommendations as well.

The IDER Toolkit was designed with the expectation that health departments would have to make some modifications to each template for local use. Those expected types of modifications are not reported here. The percent of such “expected” modifications by SNHD for each template are reported in Table 1 in “I. Introduction.” Summary findings on the time needed to customize templates are reported under “VI. Findings.”

In addition to making expected modifications, SNHD changed the toolkit by adding to it. SNHD performs certain functions relevant to IDER that the San Francisco Department of Public Health does not. So, SNHD created eight additional templates so staff serving those functions could have their roles and activities spelled out in the IDER Plan. These added templates may be useful to other health departments that also perform these functions who want to use the IDER Toolkit. In addition to adding templates, SNHD developed a Microsoft Excel infectious disease public health response ICS forms workbook. Formulae within the workbook transfer information from fields on the menu page to subsequent forms. Additionally, information added to the Organization Assignment List (ICS Form 203) automatically populates the Organization Chart (ICS form 207). ICS Form 202, the Incident Objectives, include a list of typical IDER objectives. However, these are easily modifiable to ensure adaptability to any response. SNHD’s additions to the toolkit are listed in Table 5.

Table 5. Toolkit Components Added by SNHD

Added Component	Type of Component	Org Chart Location
Passive Surveillance Team Template	Job Action Sheet	Surveillance Group
Active Surveillance Team Template	Job Action Sheet	Surveillance Group
Helpline Team Template	Core Template	Inquiries Group
Helpline Team Template	Job Action Sheet	Inquiries Group
Health Alert Network Team Template	Job Action Sheet	Dissemination Group
Website Team Template	Job Action Sheet	Dissemination Group
Press Release Team Template	Job Action Sheet	Dissemination Group
Lab Guidance Team Template	Job Action Sheet	Content Group
ICS Forms Workbook	Electronic ICS Forms	N/A

VI FINDINGS

Findings of the product evaluation are summarized for each major evaluation point identified in the Chain of Success.

Evaluation Point A

At the first meeting, the IDER plan development team used the SF-APC “cheat sheet” to review potential IDER components for inclusion in the SNHD plan. This proved to be a good tool, as it provided an “at a glance” summary of the available templates. Thus, the toolkit proved “easy to navigate” to find what SNHD wanted to use from the toolkit for its own IDER plan. Also, as 35 of 40 (88%) core templates were selected, and SNHD only added one core template of its own, the toolkit proved to be “comprehensive” for SNHD’s purposes.

Evaluation Points B & C: Monthly Product Testing Plan Updated and Progress Reports

The survey tool worked well to capture data for evaluating the use of the toolkit templates to develop the IDER components. SNHD stayed on target and on schedule. Overall, the templates were easy to follow and easy to adapt for SNHD’s use. For example, of the 35 templates used:

- 74% (26 templates) took 1.5 hours or less to customize, and 54% (19) took an hour or less
- 86% (30 templates) required no more than 30% modification and 63% (22) required no more than 20% modification
- 74% of the templates were rated “Easy” or “Very Easy” to modify
- 94% were rated “Easy” or “Very Easy” to follow

There were nine templates that required two hours or more to customize, five of which required 40% or more modification. These encompassed functions for which SNHD already had an emergency response plan or part of a plan or for which there had to be considerable reorganization because of existing standard practices at SNHD. It took more time and modification for planners to resolve differences between the SNHD plans and the APC IDER plan components than it took them to create plan components from scratch based on the APC templates. SNHD judged this to be well worth the effort, because the department will end up with a consistent NIMS compliant format for all components.

In Appendix B, Table B-1 presents complete distributions of survey results on the extent of modification needed, the time required, and how easy it was to adapt and follow the templates.

There were 178 Job Action Sheet (JAS) templates in the SF-APC toolkit. Because there were so many, it was not in the original project plan to evaluate each of these for SNHD use. However, several team members finished the core components of the plan well ahead of schedule and accepted responsibility for customizing the JAS templates. Thus far, 105 have been reviewed and undergone partial customization. SNHD intends to add a section of common responsibilities to all of the JASs over and above what San Francisco has in their templates. Below is a list of these:

- Upon arrival at the incident, check in at the designated Check-in location. Check-in stations may be found at:
 - Incident Command Post
 - District Operations Center
 - Staging Area
- Acquire and review Just-in-Time training materials.
- Conduct all tasks in a manner that ensures safety and welfare of yourself and co-workers.
- If assigned a radio, know the assigned frequencies for your area of responsibility and ensure that communication equipment is operating properly.
- Use clear text and ICS terminology (no codes) in all radio communications.

Evaluation Point D: Completed IDER Plan

The SNHD IDER core plan was completed on time except for redoing the overall Organizational Chart. The draft plan was submitted to the Chief Health Officer but formal consideration was delayed until after the local budget process. However, there was overwhelming acceptance by operating level staff and mid-managers from across the department, so the project team was able to proceed with preparation for a tabletop exercise.

A project team member made a presentation to the executive team of the Southern Nevada Health District after the exercise on the status of the IDER Plan activities. Samples of the Organizational Chart, IDER Plan sections, job action sheets, and an electronic form were all demonstrated. The executive team showed its interest by requesting a mini-workshop to demonstrate the details of the IDER Plan as utilized in an Infectious disease scenario for the District.

The co-leaders of the IDER project presented the mini-workshop on July 11, 2011. In attendance were 18 members of the Executive and Senior Management Teams of the District. A new scenario on a *Neisseria meningitidis* outbreak was developed for the mini-workshop. The participants were broken into 4 working teams and given the assignment to scale up the ICS in anticipation of a major incident. After deliberation, the teams implemented a number of new sections in the ICS organizational chart in anticipation of a major infectious disease outbreak. The Chief Health Officer led the discussion on the usefulness of the mini-workshop and has already requested that the presenters follow-up with the Executive Team on next steps.

Evaluation Point E: Tabletop Exercise, Revised to Test Plan in Non-emergency Outbreaks

SNHD was originally planning to design and conduct its own tabletop exercise to test the IDER plan, but a regional tabletop exercise was called for about the same time. SNHD was required to participate in the regional tabletop, led by the Clark County Office of Emergency Management (CCOEM), and would not have the capacity to do two exercises so close together in time. The SNHD IDER plan project manager was named to the regional planning team and was able to include testing the IDER plan as an objective of the tabletop. So, SNHD attempted to use the regional exercise to test the IDER plan, assuming that this would be a sufficient test. However, this assumption proved incorrect and this exercise was inconclusive with respect to the IDER plan. One of the main reasons was that the subject of the exercise (Anthrax dispersal) was unsuitable for testing the IDER plan, as explained further in Appendix B.

SNHD committed to utilizing the IDER plan for planning responses to infectious disease outbreaks as they occurred. In April, 2011, there were two gastroenteritis (GE) outbreaks, and the IDER plan was successfully tested. Although the scope of the responses was insufficient to test all aspects of the plan, it was a very worthwhile learning experience and allowed staff to identify areas for improvement. These are discussed in Evaluation Point F.

Evaluation Point F: Exercise AAR, Revised to Non-emergency Outbreak AARs

Due to lack of time, the CCOEM did not conduct a formal AAR following the tabletop exercise. Participants were asked to complete an exercise evaluation questionnaire with a few open ended questions such as: "What did you learn" and "What could be improved." CCOEM does not anticipate having the results of the evaluation compiled for at least two months. For reasons noted under Evaluation Point E, this evaluation is likely to be inconclusive with respect to the IDER plan.

SNHD evaluated the responses using the IDER plan for the two GE outbreaks in April 2011. Using the plan effectively facilitated organizing staffing and activities. However, early in the response to the first outbreak, SNHD staff had difficulty using the ICS Forms as developed by San Francisco (SF) APC. The incident briefing form (ICS 201) that SF had developed did not include components that SNHD staff deemed essential for outbreak investigation briefings. These were:

- Case definition
- Line Listing
- Epi Curve
- Particular event descriptors that would be commonly collected for every situation

SNHD staff also had difficulty in using the SF APC ICS forms for the subsequent operational period briefings. Typically, the ICS 214 (Unit Log) is used for that purpose, but was absent from the SF toolkit. As a result of the identified need for different forms, the project manager adapted an existing Microsoft Excel ICS Forms workbook intended for Wildland Fires for use in infectious disease responses. Some of the elements from the SF APC forms were retained in these forms. However, the workbook forms are substantially different from the SF APC forms in most aspects. This could potentially provide ICS forms options for any health department that chooses to use the toolkit, if the SF APC makes the workbook available as part of their toolkit. Some of the time saving aspects of the electronic workbook include:

- Auto-filling the Incident name, date and time prepared, operational period start and end date and time entered on the menu page on all subsequent forms
- Auto-filling the organizational chart (ICS form 207) from the entries made on the ICS form 203 (Organizational Assignment List)
- The menu page has buttons associated with each ICS form. Clicking these takes you directly to the form. A return button on each form takes you back to the menu page.
- Notes on how to fill out specific sections (look for the small red triangle and hover cursor over it)

In general, having electronic versions of the forms saves both paper and time, and can be easily shared electronically on a screen if a projector is available or alternatively on a large network-connected monitor. The workbook is provided as Appendix C in a separate MS Excel file.

Findings on Site Conditions

Favorable Conditions: The favorable conditions listed in table 4 above were very helpful to the SNHD in using this product and toolkit. However, most are not requirements for a local health department to use this product. Although not considered a prerequisite for toolkit implementation, the orientation that SF-APC provided in their IDER toolkit training facilitated an early understanding of the toolkit contents and comprehensiveness and also helped build early consensus to use the product. Another health department might also find the training beneficial in the same ways.

To assure success of deploying the toolkit, it is SNHD staff's opinion that certain minimal conditions should be met by health departments planning to utilize the toolkit for IDER plan development. These include the following:

- A well-organized product management approach, preferably with some form of project management or team collaboration software, because there are so many templates to manage and keep on schedule. SNHD used Microsoft SharePoint. However, another form of shared Internet or Intranet site can work if participants commit to making document modifications only on the version posted on the shared site to ensure that there is adequate version control.
- Persons leading the project for IDER plan development should have training in ICS, and understand the concepts of infectious disease outbreak investigations and disease control measures.
- Persons leading the project should have the knowledge and working relationships to be able to identify and engage the stakeholders and subject matter experts in their jurisdiction who routinely are involved in an infectious disease event response for plan development and review.

Unfavorable Conditions: The unfavorable conditions in table 4 did not keep SNHD from using this toolkit, so they should not keep other health departments from doing so. However, the condition that deals with exercise planning and implementation in table 4 did keep SNHD from testing the IDER plan on schedule. If another health department wants to test the plan with an exercise, they should be in a position to control or facilitate the planning of the exercise so it is well suited to test the IDER plan. The toolkit provides materials a health department can edit to prepare a tabletop exercise suitable to their local setting. SNHD did not have the opportunity to test these toolkit exercise materials.

Additional Findings

The IDER plan developed from the toolkit is helping SNHD reorganize its Office of Epidemiology (OOE): The SNHD OOE is in the planning stages of reorganizing the way the office operates to match the IDER plan. Current staff will be pre-assigned and trained to fulfill various roles in the Epidemiology and Surveillance Branch of the plan. This will facilitate the use of the IDER plan for small scale events and will prepare staff for larger scale events. It will also allow for repositioning resource requests for sections of the plan where there is insufficient or absent human resources.

Use of the IDER Toolkit and participation in use of the IDER Plan improved staff understanding of the Incident Command System (ICS) as applied to public health. Staff who participated expressed, in anecdotal comments, that they had an improved understanding of ICS. To better gauge whether most staff increased their understanding, the SNHD project manager surveyed 19 staff who had participated

and obtained 17 usable responses. Of these 17, 16 responded that the process had a positive influence on their understanding of ICS, while one respondent stated that there was no influence on their understanding of ICS. Also, all 17 responded that the process improved their understanding of ICS *and its application to public health events*. The level of perceived improvement varied, with 15 of 17 indicating at least moderate improvement (3 or better on a 5-point scale), and 7 of those 15 indicating greater improvement (4 or 5 on a 5-point scale).

The IDER Toolkit appears useful for developing other emergency response plans: The three SNHD Public Health Preparedness Planners who participated in the IDER plan development and have developed all the previous SNHD response plans, were very impressed with the organization and content of the SF-APC toolkit and the process by which the SNHD IDER plan was developed. They plan to develop Radiation Emergency and Chemical Exposure Emergency response plans using the same format and process. The planners will be able to focus on developing only the modules needed under the Operations Section for these plans because the Command Staff, Planning Section, Logistics Section, and Finance Section will be the same for all responses. Even within the Operations Section, some modules (Guidance Group, Inquiries Group, Dissemination Group, and Content Group) may not be changed from the IDER plan.

In April 2011, the SNHD project manager participated in a SF-APC toolkit training in Carson City Nevada. Her focus was to describe the experience in using the toolkit to develop the SNHD plan. Although Carson City is a very small health department, they expressed interest in many of the components of the toolkit, especially the Job Action Sheets. This interest suggests that the toolkit can be valuable to small health departments, even if it is not used in its entirety.

VII DISCUSSION

Expected benefits presented under “III. Objectives of the Evaluation” are discussed here in context of the findings. Additional benefits realized or expected by SNHD are discussed at the end of this section.

The IDER Toolkit facilitated development of a written IDER plan by being easy to navigate and modify without taking too much staff time to make the modifications.

Although the toolkit has over 200 templates, it is well-organized and easy-to-navigate, including electronic search, so SNHD was able to find what it needed without difficulty. The toolkit’s “cheat sheet” can be used by staff of any health department to identify and reach consensus on the templates that are most applicable to them.

As noted in “VI. Findings,” The toolkit’s core templates were easy to modify. SNHD did not have comparative data on the time it would have taken to produce a NIMS compliant IDER plan without the toolkit. However, without having such tools, SNHD would not have even attempted to develop an IDER plan in such a short time frame. We expect that the time used by SNHD staff to customize templates documented in “VI. Findings” and in Table B-1 in Appendix B will be encouraging to other health departments that this toolkit makes developing a NIMS-compliant IDER Plan a realistic goal to pursue.

The IDER Toolkit facilitated development of a written IDER plan by being comprehensive enough for SNHD to develop most of its plan by using toolkit templates.

As noted under section “VI. Findings,” SNHD selected 35 of 40 (88%) core templates from the toolkit for use, and only added one core template of its own. So, the toolkit proved to be comprehensive enough for SNHD’s purposes. We expect most other local health departments will find this to be the case. Also, by adding SNHD’s contribution of one new core template and seven new job action sheets and the ICS

forms workbook, the toolkit can be made even more comprehensive. In the future if NACCHO or the San Francisco APC can find a way to capture more additions to the toolkit by future users, the comprehensiveness of the toolkit can increase over time, providing more template choices for health departments to pick and choose the ones that best fit their needs.

The process of utilizing the toolkit components for IDER plan development and subsequent use of the IDER plan improves understanding of the Incident Command System (ICS) as applied to public health. SNHD staff understanding the application of the Incident Command System (ICS) to public health was improved by a combination of first using the toolkit to develop the IDER plan and then activating the plan. The plan was tested during responses to two real outbreaks. Both staff anecdotal responses and later survey responses indicated improved understanding of ICS in general and in how ICS is applied to public health events. Also, In-depth discussions ensued subsequent to IDER plan activation on improving the process of plan implementation. Additionally, Public Health Preparedness Planners have committed to developing Radiation Emergency and Chemical Exposure Emergency response plans using the toolkit. Once role-specific training is developed, infectious disease responders' understanding of ICS as applied to public health infectious disease event responses will likely improve further.

Toolkit components can be used independently, enabling a health department to benefit from specific components without having to use the entire toolkit. This attribute makes the toolkit scalable, so it is likely to be useful to small health departments as well as larger ones such as SNHD. The toolkit has proven to be very versatile. SNHD did not use all toolkit components and is benefiting from what it did use. Of course, SNHD did use *most* toolkit components. SNHD also used the model of existing templates to develop several additional templates to meet SNHD's needs. However, it is easy to envision how smaller health departments can use many fewer toolkit components and still benefit from the parts it uses. For example, a health department may choose to only implement the Epidemiology and Surveillance branch templates, or specific job actions sheets. While SNHD does not have explicit evidence of how a smaller health department uses the toolkit, the Carson City Health Department's reaction—focusing especially on specific Job Action Sheets—suggests that it will be practical to use considerably less of the toolkit than used by SNHD.

A small health department would not likely fill all of the roles in the plan. However, they could still use the templates to develop or supplement their own plans, and simultaneously identify aspects that require more resources for an effective response. They could then pre-position resources through agreements with neighboring health departments, their state health department, or both. The Incident Command System is scalable by design, and the SF-APC toolkit facilitates adaptation of ICS for response to infectious disease emergencies. SNHD has demonstrated that portions of the IDER plan can also be used routinely to organize responses to smaller scale events, and consequently is not reserving their plan for emergencies only. A toolkit-derived plan's applicability to smaller scale events may be especially useful to health departments focused on a smaller region or population.

There are minimal requirements for local health departments to meet to be able to use the components effectively

As mentioned in detail above, at a minimum, local health departments choosing to use the toolkit for developing their own IDER plan should have project management skills and knowledge of the ICS. Also, SNHD would encourage other local health departments that use the toolkit to use a shared Internet or Intranet site for managing document modifications and maintaining document version control.

No multi-agency IDER or IDER-focused multi-agency functional or full scale exercise occurred during the evaluation period, so SNHD could not test for improved coordination among responding agencies.

Additional Benefits

By using the IDER plan for smaller scale events as well as emergencies, as SNHD is doing, a health department can integrate infectious disease preparedness into its regular operations, so staff will be better prepared for an emergency response.

When staff use the IDER plan to respond to smaller infectious disease events, as SNHD has done, the practice they gain will make responding to an emergency, including the use of ICS, less unusual and more routine. They should be more confident, knowledgeable, and competent when responding to infectious disease emergencies. The plan has also allowed SNHD to more effectively organize and utilize existing staffing in infectious disease responses.

SNHD expects that a health department can achieve further planning efficiencies by applying IDER plan toolkit formats and components to other response plans.

As noted above under "VI. Findings," SNHD Public Health Preparedness Planners plan to develop Radiation Emergency and Chemical Exposure Emergency response plans using the same format and process used to develop the IDER plan. Planning efficiencies will be realized because significant sections of the IDER plan that can be used for these plans.

VIII RECOMMENDATIONS

Recommendations to SF APC for Improving the toolkit

- 1. Revise the ICS forms component of the toolkit to include additional ICS components and to be more easily used for each sequential response period.** The components that SNHD believes should be added are listed under "VI. Findings: Evaluation Point F." SNHD offers its MS Excel Workbook of ICS forms for consideration for replacing or supplementing existing ICS forms in the toolkit.
- 2. Implement an approach to make it easy for new user health departments to use additions to the toolkit made by earlier users.** In addition to developing the ICS Forms Workbook, SNHD added seven Job Action Sheet templates and one Core Template to its IDER plan, and intends to add a section of common responsibilities to all of the Job Action Sheets. Other health departments may eventually make other additions. Such an emerging resource of toolkit additions should be made available for future users to have more templates or tools to choose from. If it will be impractical to build these additions directly into the product, SF-APC should consider starting a user group on their website that would allow for dynamic interaction and document sharing among users. From time to time, SF-APC might survey user group members to determine which user additions are considered most valuable, and build those additions into future versions of the toolkit.
- 3. Consider renaming this toolkit the "Infectious Disease Event Response Toolkit."** This name change, which allows SF-APC to keep the same product acronym, would imply that the toolkit is useful for developing plans for responding to small scale events as well as to emergencies, and supports integrating preparedness into regular operations.
- 4. Add guidance on how this toolkit can be used for other kinds of preparedness plans.** This would be along the lines of demonstrating how Command Staff, and Planning, Logistics, and Finance Sections and some parts of the Operations Section would remain the same for all responses. Suggestions can be included as to which branches would have to be developed for other types of responses, such as the Chemical and Radiation emergency response plans that SNHD intends to develop.

- 5. Consider adding project and content management guidance to implement the toolkit.** This could involve describing a suggested approach to organizing and scheduling the project, managing shared content, and monitoring completion of all parts of the plan.

Recommendations to NACCHO on promotion of this toolkit

This toolkit was extremely beneficial to SNHD in developing an IDER plan. Assuming, based on this evaluation and improvements to be made by the SF-APC, that NACCHO wants to promote this product further, we provide two recommendations on additional applications of this product that NACCHO can promote:

- 6. Promote use of this toolkit for responses of different scales and for other kinds of public health responses besides infectious disease.** SNHD has demonstrated that the plan can be used for routine public health responses, not just emergencies. Using it in this way integrates preparedness into regular operations, maintains staff ICS skills, and prepares staff on an ongoing basis for larger scale responses. SNHD also expects that it will achieve planning efficiencies by applying the toolkit to a Radiation Emergencies Response Plans and a Chemical Exposure Response Plan. Thus, the applicability of SF-APC's toolkit may be much broader than for infectious disease emergency responses. Promotion of the toolkit should include promotion of its broad applicability.
- 7. Consider promoting this toolkit as a guide for organizing staff with disease surveillance, control, and outbreak investigation responsibilities.** SNHD is planning a reorganization of its Office of Epidemiology, based on its IDER plan, to facilitate response to small scale events as well as responses to emergencies.

Appendices:

- A. Organizations and Individuals Involved in Product Evaluation
- B. Methodology Technical Details for Evaluation Points
- C. ICS Forms Workbook (a separate Excel file)

Appendix A. Organizations and Individuals Involved in Product Evaluation

The following individuals from SNHD participated in product evaluation:

<i>Participant Name</i>	<i>Credentials/Title</i>
Patricia Rowley	BS, CPH, Epidemiologist Manager, IDER plan development Lead, QI team member
Jim Osti	BSN, MPH, Administrative Analyst, QI Team Lead
Jeffrey Quinn	MPH, Preparedness Planner
Kay Godby	BSN, MHCA, Preparedness Planner
Misty Robinson	MPH, Preparedness Planner
Patricia Armour	MT (ASCP), Laboratory Manager, QI team member
Patricia O'Rourke-Langston	BSN, MHSA, Nursing Manager, QI team member
Linda Verchick	MS, Epidemiology Supervisor
Brian Labus	MPH, Senior Epidemiologist, QI team member
Linh Nguyen	PhD, MPH, Epidemiologist
Mu Mu Tha	MBBS, MPH, Senior Disease Investigation and Intervention Specialist(DIIS)
Tony Fredrick	MD, DIIS
Jennifer Harmon	BA, DIIS
Devin Barrett	BS, DIIS
Tami Bruno	BA, DIIS
Zuwen Qiu-Shultz	MPH, CPH, DIIS
Melissa Constantin	BA, Administrative Secretary
Lynda McCarthy	RN, Community Health Nurse
Stephanie Bethel	BA, Public Information Officer
Chris Strickland	MEd, IT Supervisor
Larry Rogers	BS, REHS
Bob Gunnoe	BS, MBA, SPHR, Human Resources Manager

Appendix B. Methodology Technical Details for Evaluation Points

Evaluation Points B & C: Staff Survey on Template Modification and Ease of Use

Each template was evaluated utilizing a SharePoint Survey. The survey contained “skip logic”, so depending on your answer to some questions, other questions may automatically be skipped. Additionally, not all questions required answers, (i.e., could be left blank). The bank of survey questions included:

- a. Occupation at SNHD
- b. The name of the template being evaluated
- c. Is this template going to be used to support development of an SNHD IDER plan component?
- d. Reasons this template will not be utilized by SNHD:
 - i. Activities covered in this template are currently done by another agency/partner
 - ii. Activities covered in this template have been transferred to another part of the SNHD plan
 - iii. Current infrastructure does not support inclusion of activities covered in this template
 - iv. Other reasons not listed above
- e. Further explanation of why the template will not be used at this time.
- f. On a scale of 1-5, where 1 is very difficult and 5 is very easy, please rate:
 - i. How easy it was to follow the template
 - ii. How easy it was to adapt the template to use at SNHD
- g. Please estimate how much modification of the template was required as you used it to build a component of the SNHD IDER plan (1=10%; 2=20%; 3=30%; 4=40% 5=≥50%)
- h. What types of modifications did you make?
 - i. None
 - ii. Additions (i.e., items that weren't present)
 - iii. Deletions (i.e., removal of items that were not applicable)
 - iv. Substitutions (e.g., replacing names or acronyms)
- i. How many hours did it take you to complete this component of the SNHD IDER Plan utilizing the SF-APC template?
- j. Did you need to use other reference material to complete this component of the SNHD IDER plan?
- k. What reference materials did you use?
- l. Comments or suggestions on how to improve the template

Table B-1 presents a complete distribution of survey results on the extent of modification needed, the time required, and how easy it was to adapt and follow the templates.

Table B-1. Summary Survey Results on Extent and Ease of Template Modification

Time Required to Customize Templates:	Percent	Count
Core Templates Used Requiring <.5 hr to customize	37%	13
Core Templates Used Requiring >.5 and <1hr to customize	17%	6
Core Templates Used Requiring >1 and <1.5hrs to customize	20%	7
Core Templates Used Requiring >1.5 and <2hrs to customize	0%	0
Core Templates Used Requiring >2hrs to customize	26%	9
Extent of Modification Required		
Core Templates Requiring 10% modification	49%	17
Core Templates Requiring 20% modification	14%	5
Core Templates Requiring 30% modification	23%	8
Core Templates Requiring 40% modification	9%	3
Core Templates Requiring ≥50% modification	6%	2
Ease of Adapting Templates: On a scale of 1-5, (1 is very difficult, 5 is very easy) to adapt the template:		
Core Templates Rated 1	3%	1
Core Templates Rated 2	6%	2
Core Templates Rated 3	17%	6
Core Templates Rated 4	20%	7
Core Templates Rated 5	54%	19
Ease of Following Templates: On a scale of 1-5, (1 is very difficult, 5 is very easy) to follow the template:		
Core Templates Rated 1	0%	0
Core Templates Rated 2	0%	0
Core Templates Rated 3	6%	2
Core Templates Rated 4	17%	6
Core Templates Rated 5	77%	27

Evaluation Point E: Further Discussion of the Table Top Exercise

SNHD was required to participate in a county-wide table top exercise based on Anthrax dispersal. The exercise planning and implementation was led by the Clark County Office of Emergency Management (CCOEM). Since the timing happened to coincide with the IDER project, it was thought that this would be a great opportunity to test the IDER plan. Twenty-seven agencies participated in the exercise. SNHD executive management observed the exercise, but did not participate. The exercise was held on March 16, 2011 over a four hour period.

There were three main SNHD objectives for the table top exercise:

1. Assess public health’s ability to direct epidemiological surveillance and investigation operations utilizing the Southern Nevada Health District’s Infectious Disease Emergency Response Plan through a rapidly expanding response.

2. Confirm the process for requesting and obtaining the Federal health and medical assets (Strategic National Stockpile) in support of and in coordination with state and local officials
3. Identify unified public information strategies, applicable plans and messages to be utilized to communicate accurate and timely emergency information to the public.

Unfortunately, the exercise proved to have less utility than anticipated for testing the IDER plan. The decision to use Anthrax as the biological agent created a situation where, due to the terrorist element of the exercises, federal agencies took the lead in the response rather than public health. Also, public health surveillance quickly took a back seat to getting the masses prophylaxed. Although the IDER plan was referenced several times during the exercise by SNHD participants, the other exercise participants were more interested in what public health was going to do rather than how the response would be organized. It was assumed by other participants that we would use our plan. Additionally, because of the large number of participants (> 40), it was only possible to talk about the response in general terms (i.e., the 30,000 ft. view) as no one participant could hold the floor for more than a minute. Therefore, the IDER plan was not actually “tested” in any meaningful way. However, the utility of the plan for organizing a public health response was evident to SNHD participants.

Additional Finding: Use of the IDER Toolkit and participation in use of the IDER Plan improved staff understanding of the Incident Command System (ICS) as applied to public health.

On June 9, 2011, a survey was sent to 19 SNHD employees who had participated in IDER plan development and/or had applied the IDER plan during a public health incident or exercise. All 19 responded, but 2 responses were incomplete and not useable. All 17 respondents had previously had ICS and NIMS training to various levels, with 14 having more advanced training (ICS 400 and NIMS 700). Survey results most applicable to this finding were:

Respondents were asked about the influence of the process of IDER plan development and application on their understanding of ICS. A summary of their 17 responses is as follows:

Response	Number
No influence on their understanding of ICS	1
A positive influence on their understanding of ICS	16
A negative influence on their understanding of ICS	0

Respondents were asked to rate on a scale of 1-5 (where 1 is minimal improvement and 5 is maximal improvement), the level of influence that their involvement with developing or applying the SNHD IDER plan had to improving their understanding of ICS and applying it to public health events. The table below is a synopsis of their 17 responses:

Rating Scale	Number of Respondents Choosing this Rating
1	0
2	2
3	8
4	5
5	2

All of the respondents indicated at least some improvement. Fifteen of the 17 respondents had at least a moderate improvement in their understanding of ICS and applying it to public health events, and 7 of these indicated a better than moderate improvement.