March 27, 2006

Mr. Carl R. Kalish, CPPO
Director, Purchasing and Facilities
Metropolitan Washington Council of Governments
777 North Capitol Street, N.E.
Suite 300
Washington, DC 20002-4239

Reference: Request for Proposal Number 14-06

Dear Mr. Kalish:

The CNA Corporation (CNAC) is pleased to submit this proposal to provide support to the Metropolitan Washington Council of Governments on the Comprehensive Exercise and Corrective Action Program. As required by the Request for Proposal, our submission consists of six copies of our proposal and an electronic copy on CD.

CNAC has exceptional experience in emergency response exercise design, development, execution, and analysis, including directly relevant experience with the National Capital Region (NCR). As our attached Technical Proposal describes, we have a well-defined, proven methodology for developing, executing, and evaluating exercises, and preparing After Action Reports, based on our extensive experience at the Federal, state, and local level, and in the NCR. We are proud to include among our proposed staff Mr. Stephen Rickman, a former Director of the District of Columbia Emergency Management Agency, as our Project Manager, Dr. Ivan Walks, former Director of the DC Department of Health, as a Subject Matter Expert, and Mr. Richard Irwin, Mr. Joseph Zelinka, and Mr. Stephen Sharro as Subject Matter Experts as well. Our proposal also contains descriptions of the remainder of our highly qualified key personnel and a number of directly relevant past projects conducted for our diverse client base.

Please contact Ms. April Sliwinski (703- 824-2639; Fax: 703-824-2903; email: sliwinsa@cna.org) with any questions or requests for additional information. We look forward to supporting the Council of Governments on this critical project.

Sincerely,

Lee F. Gunn
President
Institute for Public Research
The CNA Corporation

Metropolitan Washington Council of Governments
Comprehensive Exercise & Corrective Action Program

RFP 14-06 **TECHNICAL PROPOSAL** March 27, 2006

The CNA Corporation

IVAN WALKS & ASSOCIATES

Alutiiq LLC

AMTI

Submitted to Carl R. Kalish, CPPO
Director, Purchasing and Facilities
Metropolitan Washington Council of Governments
777 North Capitol Street NE, Suite 300
Washington, DC 20002-4239

TECHNICAL PROPOSAL

Comprehensive Exercise and Corrective Action Program (CECAP)

Submitted to:
Metropolitan Washington Council of Governments

Request for Proposal #14-06

Proposal Submitted by

CNAC IPR Reference 11763

March 27, 2006

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1 Executive Summary

The Metropolitan Washington Council of Governments (COG) is a leader in coordinating the development of regional capabilities for responding to hostile attacks and natural or man-made emergencies. A key aspect of this capability is continued testing and assessment of processes and procedures spanning multiple jurisdictions. The National Capital Region (NCR) comprehensive exercise and corrective action program (CECAP) was established to meet that need. The NCR Exercise Team, assembled from the region's most qualified contractors, proposes a comprehensive approach that will meet the key challenges of CECAP including a plan to assure that all aspects of the work are completed within the time constraints. Our approach is straightforward – 1) assemble an industry-leading team of companies and proven professionals, 2) apply a mature technical approach proven in the NCR, other states and regions nationwide, and in the Federal government, 3) create a comprehensive work plan that assures work completion through active performance risk reduction that nearly eliminates the effects of unforeseen contingencies, and 4) engage a strong management team with exceptional commitment to the NCR.

The NCR Exercise Team is the high-confidence, low-risk solution for CECAP. Experience counts, and we are the most experienced exercise team in the NCR.

1.1 Qualifications of the Team – Industry-Leading Capabilities

The NCR Exercise Team is led by the CNA Corporation (CNAC) and includes leading companies with experience throughout the NCR and well-known to Federal, regional, and local officials. A summary of our team's roles and NCR experience are provided in Table 1.1-1.

Table 1.1-1: NCR Exercise Team Roles and Experience

Company	Role	Experience
CNAC	• Team integration • Exercise design & development • Exercise conduct • Exercise analysis & evaluation • AARs	• 60 years assisting Federal, state and local agencies plan, prepare and respond to emergencies and national security threats • Lead evaluator for TOPOFF exercises – the largest national exercises involving the coordination of senior officials conducted to-date • Exercise designer and evaluator for NCR exercises, and exercise design, conduct and evaluation for many state jurisdictions including NY, DE, NC, CA and FL • Lead evaluator for DHS Senior Officials Exercises • Design and evaluation of HHS, USDA, DoD and state/regional and local exercises • Deeply involved in the development and assessment of the relevant doctrine that will influence NCR exercise program • Design, conduct and evaluation for more than 50 large complex multi-jurisdictional exercises involving senior military officials and leadership of countries around the world
Ivan Walks & Associates	• Exercise design & development • Exercise facilitation • Exercise logistics	• Real-world disaster management as Chief Health Officer of DC post-911 including NCR incident commander for Oct 2001 anthrax attack • Supporting contractor to COG for public health technical assistance • Working with state of MD and HHS on pandemic influenza preparedness
Applied Marine	• Exercise design & development	• Integrating contractor for large multi-company exercise team – over 500 member team for TOPOFF

Company	Role	Experience
Technology Incorporated	• Exercise conduct • Exercise evaluation	• Lead designer for TOPOFF exercises • Lead designer for DHS Senior Officials Exercises • Design and evaluation of state/regional and local exercise
Alutiiq Corporation	• Exercise design & development	• Former Director of Incident Management at DHS – involved in NCR exercises • Evaluated Army National Guard WMD Civil Support Teams • Strategic plan for emergency response for Cecil County, MD

The NCR Exercise Team has special qualifications that will contribute to our success in CECAP.

1.2 Ability to Coordinate Multi-Jurisdictional Exercises

The NCR Exercise Team is especially qualified to design, execute and evaluate an integrated multi-jurisdictional exercise program. Some of the multi-jurisdictional exercises that our team members have led or participated in are shown in Table 1.2-1.

Table 1.2-1: Multi-Jurisdictional Experience

Multi-Jurisdictional Exercise	Agency/Level
National Exercise Program (NEP) TOPOFF 2 & 3 - command post and full-scale exercises, and the Senior Official Exercises.	Department of Homeland Security (DHS)
TOPOFF 4 command post exercise (currently in planning phase)	DHS
Operation Diamond Shield II – multi-county/city	State of Delaware
Illinois Emergency Management – state-wide	State of Illinois
Terrorism Prevention Exercise Program – state-wide	State of New York
Triple Play – state-wide full-scale	State of North Carolina
Equinox Command Post Exercise – New England states and Canada	USDA
Amistaad – Texas and Mexico	USDA
Operation Healthy Challenge – NCR and HHS	HHS
Details of these exercises are in Section 2.1.1	

Our Team designed, controlled, evaluated and wrote the After Action Reports (AARs) for TOPOFF 2 and TOPOFF 3, the nation's largest exercises designed to respond to terrorist and other major events. These exercises involved all levels of government as well as the private sector and included weapons of mass destruction (biological, chemical, and radiological) scenarios. The TOPOFF exercise program paradigm features a multi-jurisdictional approach involving all levels of government and it is being replicated across the nation. Our team pioneered this approach and is unmatched in its experience in designing and executing, and evaluating an exercise program of this complexity and magnitude. In support of NCR agencies, we have designed and conducted field, functional, and tabletop exercises addressing issues ranging from hospital surge requirements to Strategic National Stockpile distribution.

Ability to Engage Senior Leaders in Exercise

Members of our team have demonstrated our capability to engage NCR senior officials and leaders in CECAP-like exercises. Our close working relationships with COG stakeholders keeps us in touch with key players at all levels. Examples of our team's abilities to engage senior leaders are shown in Table 1.2-2.

Table 1.2-2: Experience in Engaging Senior Leaders

Exercise	Senior Leaders
NEP Senior Officials Exercises - Assistant Secretary to Deputy Secretary level tabletop exercises that focus on specific homeland security topics.	Senior officials from Federal departments and agencies, states, and local jurisdictions
HHS Bioterrorism Exercises - Focused on the deliberate release of smallpox	Senior leadership from HHS, the Policy Coordinating Committee (PCC) and Deputy Secretary Committee level in the White House
DC Dept of Health (DOH) Tabletop Exercises - Examined a range of topics including the response to an anthrax release as well as mass casualty/hospital; surge issues.	DC Department of Health senior officials
USDA *Equinox* Command Post Exercise	Engaged leadership within the USDA and CFIA as well as the State Veterinary Officers from Vermont, Maine, and New Hampshire.
TOPOFF Exercises	Senior official play at all levels of government (e.g., Mayors, Governors, Cabinet Secretaries)

Extensive Experience in Emergency Response Operations in the NCR

A final important aspect of the NCR Exercise Team experience is hands-on, real-world emergency response operations – not simply as planners or analysts – but first person hands-on experience. CNAC has assembled the most capable team members who have been and currently are immersed in NCR emergency operations. Examples of this experience are presented in Table 1.2-3.

Table 1.2-3: Team Experience in Emergency Operations in the NCR

Agency	Emergency Response Operations – Team Member
NCR/COG	• Regional response to contaminated water emergency – Mr. Rickman • Former public safety director for the COG and for many years helped to coordinate responses to regional emergencies in the NCR – Mr. Zelinka
DHS	• Post 9/11 period, and from the Federal perspective coordinated response operations impacting the NCR as Chief of DHS Operations Center – Mr. Irwin
HHS	• Response to Ricin in the Office of Senator Frist – Mr. Payne
DC Government	• Incident commander for the Anthrax attack – Dr.Walks
DC EMA	• DCEMA response to emergencies ranging from severe snowstorms and consequent power outages to the removal of World War I munitions (Lewiston and mustard gas) from District neighborhoods – Mr. Rickman
FEMA	• Coordinated FEMA response to NCR emergencies and natural disasters – Mr. Sharro

1.3 Key Personnel – Highly Qualified and Experienced in NCR Emergency Operations

The NCR Exercise Team is led by Mr. Steve Rickman, a former director of the DC EMA and former Director of Readiness for the White House's Office of Homeland Security. Additionally, while DC EMA Director he helped coordinate a regional response to a contaminated water emergency working closely with the COG. Our proposed facilitator, Dr. Ivan Walks is the District's former Public Health Director, and was the incident commander for the Anthrax attack. He also chaired COG's Public Health Committee. We have Subject Matter Experts such as: Mr. Joseph Zelinka a former public safety director for the COG who for many years helped to coordinate responses to regional emergencies in the NCR; Mr. Richard Irwin previously a director for operations at DHS during the post 9/11 period where he coordinated response operations impacting the NCR; Mr. Matthew Payne, former Deputy Director of the HHS Office of Emergency Operations and Security Planning where he coordinated HHS activities in support of NCR: and Mr. Stephen Sharro, former director of emergencies and exercises for FEMA, who served as the Federal Coordinating Officer for natural disasters and emergencies. Our team conducted after action reviews of the response to incidents in the NCR including the discovery of Ricin in the Office of Senator Frist, and the mercury spill at Ballou High School in the District among others. Mr. Stephen Sharro, as former director of emergencies and exercises for FEMA, and often served as the Federal Coordination Officer for natural disasters and emergencies.

The NCR Exercise Team's senior management staff is: 1) known to COG and NCR officials and leaders, 2) experienced in exercise design and evaluation as well as real-world emergency operations, 3) proficient in dealing with the challenges of the NCR multi-jurisdictional environment, 4) knowledgeable in the use of supporting management tools, and 5) accustomed to performing to demanding timelines. The references we include in this proposal attest to these skills and experience.

The NCR Exercise Team provides management and subject matter expertise in depth. We have experience in every aspect of NCR emergency operations; as well as knowledge of WMD grants, policies, procedures and programs. A key aspect of our plan for assuring that we meet CECAP's aggressive schedules is the ability to draw quickly on added resources across the spectrum of skills and experience essential to meet your needs and requirements.

1.4 Mature Technical Approach

The NCR Exercise Team is not new to CECAP-like exercise design, development and evaluation. We have repeated successes at national, regional and local levels. Importantly, we are experienced in designing, developing and evaluating exercises for COG and for other NCR agencies and stakeholders. We will employ a mature technical approach based upon the Homeland Security Exercise and Evaluation Program (HSEEP) process depicted in Figure 1.4-1 that we helped develop and that we employ regularly.

Building on Lessons Learned

CECAP's ambitious schedule leaves no room for learning on the job, or the application of methodologies unproven in the NCR and with COG stakeholders. The NCR Exercise Team is expert

in its application of these methodologies. We will build upon our successes to ensure that our technical approach is precisely tailored to NCR and COG needs and the region's stakeholders. Key lessons we will apply are described in Section 3.1.

1.5 Comprehensive Work Plan

Assuring success of CECAP means having a detailed work plan that includes a work breakdown structure (WBS) that details all tasks and activities, expected outcomes, performance measures tailored to each task that permit accurate assessment of progress, and pre-planned responses to contingencies.

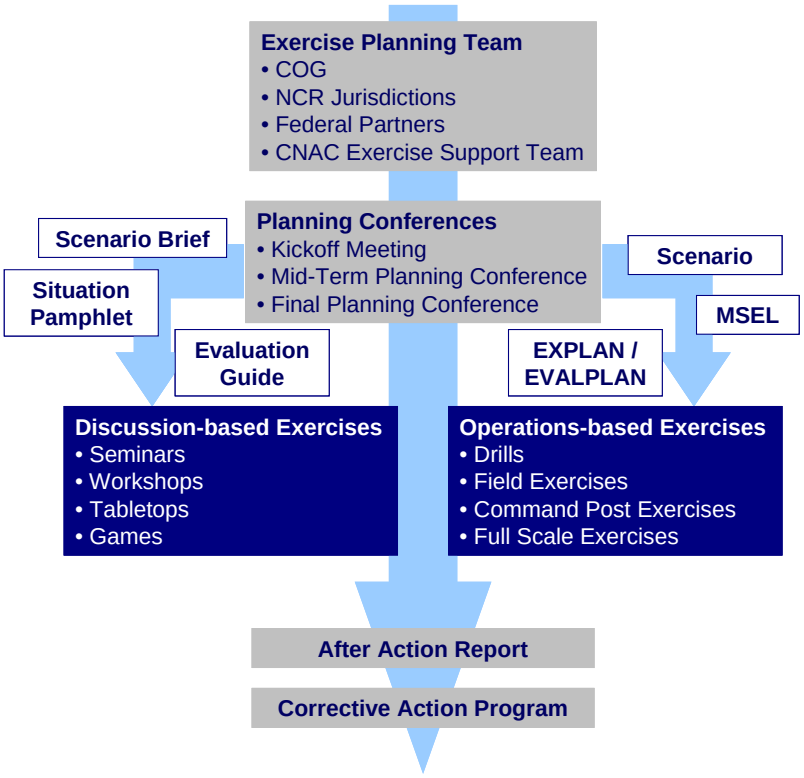


Figure 1.4-1: Overview of Our Exercise Design Process

1.6 Management Plan – Completing the Project on Time at Low Risk

The NCR Exercise Team has a record of achieving high levels of performance under tight constraints and schedules. For CECAP, we have assigned our best management team and provided them with the tools, resources and authority to get it done right and on time. Among our initiatives to ensure superior project performance and on-time completion are:

- A detailed project plan baseline that includes all task activities, schedule, resource allocations and costs documented in Microsoft Project – and project tracking against the planned baseline
- A performance risk assessment and mitigation plan for each major task to include pre-planned response to contingencies
- Program Evaluation and Review Technique (PERT) application to task activities to determine critical paths and make best use of slack times. (Note: we will use Gantt charts for reporting to COG)
- A contingency personnel-pool that will permit us to accelerate key tasks should that become necessary

We have applied our proven management plan on projects in the NRC, in other regions around the country, and on multi-jurisdictional exercises for the Federal government.

1.7 Disadvantaged Business Enterprise (DBE) Participation

NCR Exercise Team's DBE is a major participant as we show in Table 1.7-1.

Table 1.7-1: DBE Participation

DBE Member	Role	Percent of Work
Ivan Walks & Associates	subject matter expertise in the areas of emergency response and emergency public health, exercise evaluation, exercise facilitation and logistics services, and website development	35

1.8 Summary of Benefits

The NCR Exercise Team provides a complete formula for success of CECAP. We summarize this formula in Figure 1.8-1.

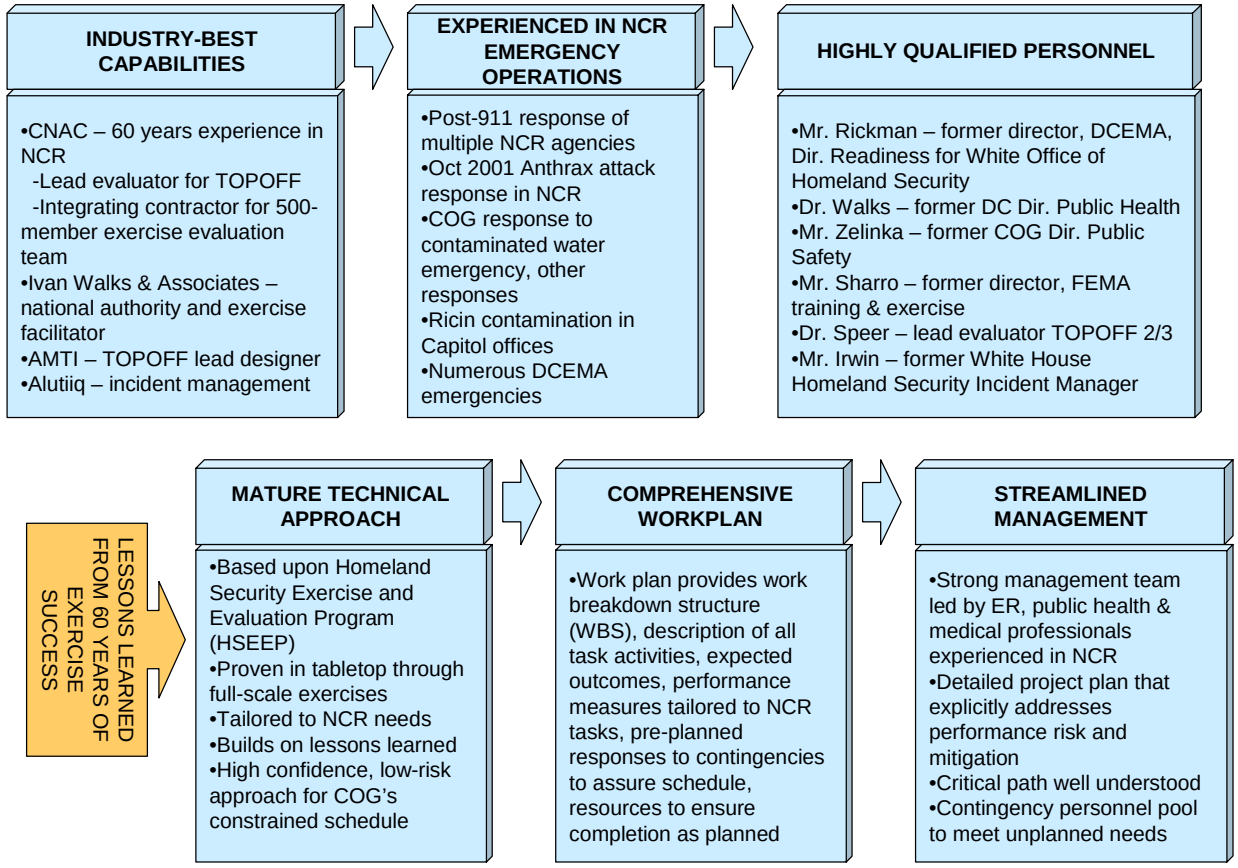


Figure 1.8-1: Summary Highlights of Our Team Approach

In the remainder of our proposal we provide the details of this approach and proof of the skills and experience required to achieve success in the required timeframe. The NCR Exercise Team is assembled and ready to begin work immediately.

2 Qualifications of the Firm and Key Personnel

In this section we discuss CNAC's professional credentials and expertise, the qualifications of our teammates, and the qualifications and expertise of our proposed key personnel.

2.1 Overview of Firms

The NCR Exercise Team is composed of the CNA Corporation as prime contractor, Applied Marine Technology Incorporated (AMTI), Ivan Walks & Associates (a DBE), and the Alutiiq Corporation (a small business). Figure 2.1-1 illustrates our team structure and the roles of each member.

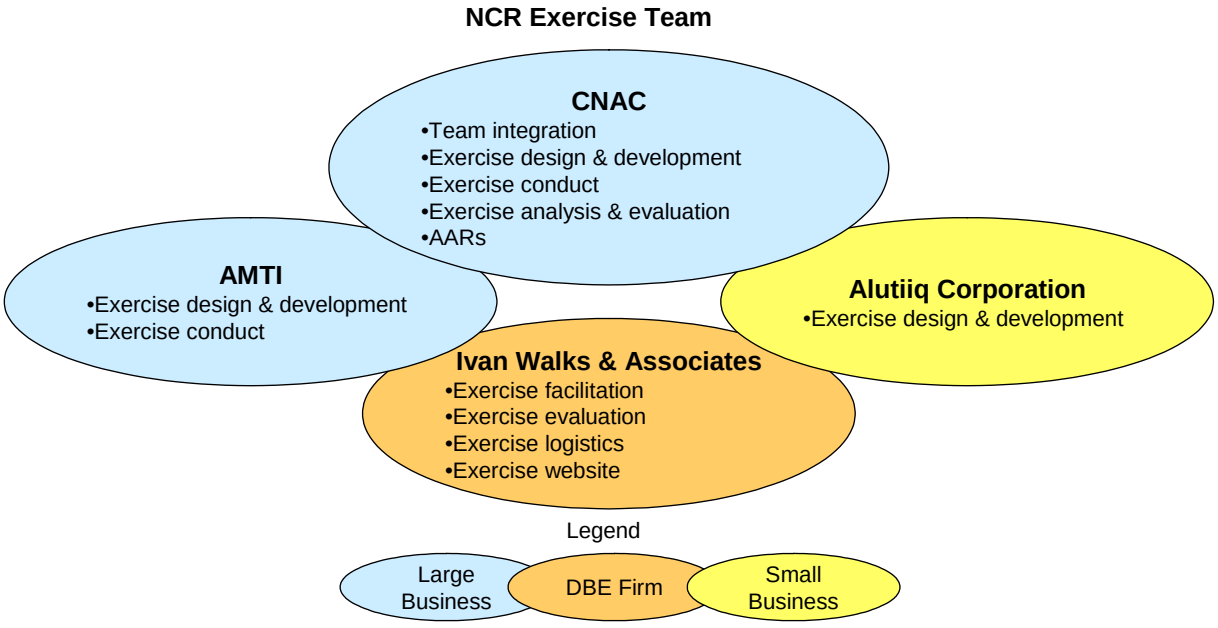


Figure 2.1-1: The NCR Exercise Team

Our team members have complementary capabilities and an established, successful history of working together, including in the NCR.

In building our team, we looked for four primary capabilities: experience coordinating multi-jurisdictional exercises, experience engaging senior leaders in these exercises, experience in the NCR, and experience designing and developing exercises, conducting exercises, evaluating and analyzing exercises, and preparing AARs. We provide selected examples of our experience in these areas, on contracts of similar size and scope, in the following three subsections. Additionally, we provide three recently completed AARs, prepared in conformance with HSEEP, in Appendix B.

2.2 Coordinating Multi-Jurisdictional Exercises

The NCR Exercise Team has extensive experience coordinating multi-jurisdictional exercises at the international, national, regional, and state levels, including in the NCR. Besides our wealth of experience providing exercise support to the NCR, all of our member companies live and work here. Our first hand knowledge of the NCR enables us to "hit the ground running" and leverage best practices and lessons learned from other regions around the country, from the Federal government, and from our experience coordinating multi-jurisdictional exercises that spanned our government and foreign governments. Recent examples include:

- **TOPOFF full scale exercises:** We coordinated the planning, implementation, and evaluation of both TOPOFF 2 and TOPOFF 3, which involved venues in multiple states as well as at Federal departments and agencies in the NCR and elsewhere. The state locations included incident sites, state and local EOCs, state and local public health command centers, and hospitals. Federal government locations included department/agency command centers as well as new NRP response entities such as the Interagency Incident Management Group (IIMG), the Homeland Security Operations Center (HSOC), the Joint Field Office (JFO), and others. We coordinated the efforts of hundreds of controllers, data collectors, and evaluators located in multiple state and Federal jurisdictions.

> The TOPOFF 3 FSE was a MSEL driven prevention and response exercise conducted in multiple jurisdictions including venues in the NCR, Connecticut, New Jersey, Ottawa (Canada), and London (England). CNAC coordinated the efforts of hundreds of data collectors and evaluators across all of these venues. We then reconstructed the exercise, analyzed the key issues, and produced the AAR.
>
> AMTI was the prime contractor on TOPOFF 3. They coordinated the design, development, conduct, and evaluation of 12 exercise events including tabletop, command post exercise, and a full-scale exercise. The T3 exercise series engaged more than 20,000 participants from Federal, state, regional, and local organizations, the United Kingdom, and Canada. T3 focused on emergency management and response, bioterrorism, and counter-terrorism including WMD. T3 was the first time HSEEP was incorporated into a national-level exercise.

- **HHS/NCR *Operation Healthy Challenge* tabletop exercise**: We designed, implemented, and evaluated this exercise, sponsored by the Substance Abuse and Mental Health Administration (SAMHSA) within HHS. The exercise focused on disaster mental health issues, and included participants from NCR jurisdictions in the District, Maryland, and Virginia, as well as Federal personnel from HHS and its operating divisions.
- **Delaware *Operation Diamond Shield II* full scale exercise**: We coordinated the design, execution, and evaluation of this multi-jurisdictional exercise that involved play across all three counties in Delaware. Participants from city, county, and state agencies participated at numerous sites (including 6 hospitals, three field response teams, the state laboratory, and the state health operations center). The implementation involved the coordination of controllers and evaluators located in different state, county, and city jurisdictions.
- **Illinois Emergency Management/Illinois Department of Public Health State-wide exercise:** We designed, executed, and evaluated this series of multi-jurisdictional public health exercises. They included field and table top exercises focusing on Strategic National Stockpile Distribution.

- **Terrorism Prevention Exercise Program**: We supported the planning, design, conduct, evaluation, and improvement planning of this functional exercise conducted within New York State. This pilot prevention exercise spanned 23 days and provided a means for players from across the entire state to exercise critical prevention tasks and capabilities.
- **North Carolina *Triple Play* full-scale exercise series:** We coordinated the planning, implementation, and evaluation of this multi-jurisdiction exercise that involved play at the state and county level. Participants included emergency management, public health, and law enforcement personnel from multiple jurisdictions, tribes, and private organizations.
- **USDA *Equinox* Command Post Exercise**: We coordinated the design, implementation, and evaluation of this multi-jurisdictional exercise involving the response to a foreign animal disease outbreak. Exercise play took place at numerous locations in the states of Maine, New Hampshire, and Vermont as well as in Canada. The implementation involved the coordination of controllers and evaluators located in multiple U.S. and Canadian jurisdictions.

  The three-day Equinox exercise involved approximately 250 participants at 10 separate emergency operations centers in the New England states, Canada, and Federal headquarters for USDA and the Canadian Food Inspection Agency. CNAC was responsible for the design of the scenario and exercise events, control of the exercise, data collection and documentation, and subsequent analysis. We designed the evaluation methodology and wrote the AAR.
- **USDA *Amistaad* Exercise**: We designed, controlled, and evaluated this multi-jurisdictional exercise involving the response to a foreign animal disease outbreak. Exercise play took place at numerous locations in Texas and Mexico, and involved both state and Federal personnel. The implementation of this exercise involved the coordination of controllers and evaluators located in multiple U.S. and Mexican jurisdictions.

2.3 Engaging Senior Leaders

Our team has proven experience in engaging and working with senior leadership at all levels of government. The most notable example is the TOPOFF series exercises, which by their very nature require sustained play by senior leadership in Federal, state, and local government to achieve their objectives. We have engaged senior leadership within Federal departments and agencies, within state governments (including NCR jurisdictions), and at the local level. Recent examples of our work that engaged senior leadership include the following:

- **NEP Senior Officials Exercises (SOEs)**: Senior Official Exercises are DHS-sponsored Assistant Secretary to Deputy Secretary level tabletop exercises that focus on specific homeland security topics. They also involve senior officials from states and local jurisdictions. Over the past two years, we have planned, implemented, and evaluated six SOEs and written the After Action Reports.
- **HHS bioterrorism exercises**: We designed and evaluated a series of bioterrorism exercises focusing on the deliberate release of smallpox. The first two exercises involved senior leadership from HHS and the last two were played at the Policy Coordinating Committee (PCC) and Deputy Secretary Committee level in the White House.
- **DC Department of Health tabletop exercises**: We designed and evaluated a series of tabletop exercises for senior leadership in the DOH. These exercises examined a range of topics including the response to an anthrax release as well as mass casualty/hospital surge issues.

- **TOPOFF exercises**: Our team was responsible for coordinating the planning, execution, and evaluation of the TOPOFF 2 FSE and the TOPOFF 3 CPX and FSE exercises. We designed these exercises to support and engage senior official play at all levels of government (e.g., Mayors, Governors, and Cabinet Secretaries) and to ensure that the evaluation was focused on the issues of interest to these senior officials. Participating senior officials included assistant secretaries and above as well as the Interagency Incident Management Group.
- **USDA *Equinox* Command Post Exercise**: This exercise engaged leadership within the USDA and the Canadian Food Inspection Agency (CFIA), state agricultural agencies, and state emergency management agencies. Senior participants included Regional Emergency Directors of USDA and CFIA, National Emergency Director for CFIA, the State Veterinary Officers from Vermont, Maine, and New Hampshire, Provincial Veterinarians of Quebec and New Brunswick, and the Area Veterinarian in Charge.
- **Operation Diamond Shield II:** CNAC engaged senior leadership from multiple state, county, and city organizations in Delaware, such as the senior public health leadership and the State Health Officer.

2.4 Experience with the NCR and Exercise Design, Conduct, and Evaluation

We provide examples of relevant NCR Exercise Team experience by company in the following subsections. More detailed descriptions of individual projects are provided in Appendix D.

For 60 years, CNAC has been helping clients in the NCR and at the state, local, and Federal level respond to emergencies and national security and homeland security requirements. Since 2002, CNAC has been involved with the TOPOFF exercise series, a component of the National Exercise Program (NEP). CNAC was the lead evaluation organization for TOPOFF 2 and TOPOFF 3. We designed the evaluation approach, and coordinated the efforts of over 500 evaluators/data collectors across multiple locations in different states for each exercise. We also coordinated the data collection and evaluation effort across numerous Federal operations centers in the NCR and elsewhere. Finally, we wrote the AARs for both exercises.

In addition, we led the evaluation of the TOPOFF 3 National Command Post exercise that examined communication and coordination activities among a large number of Federal government operations centers. In support of team member AMTI, we are currently involved in the planning effort for the TOPOFF 4 National command post exercise. Over the past two years, we have also been responsible for evaluating SOEs. These tabletop exercises, a key component of the NEP, address key policy issues related to possible terrorist threats or natural disasters. Representatives from state and local governments, including the NCR, often participate in these exercises.

Selected CNAC NCR Exercise Experience

- For DC Department of Health (DOH), we designed and evaluated senior leadership tabletops on bioterrorism related issues (including one on hospital surge issues)
- We conducted functional Strategic National Stockpile (SNS) distribution and mass vaccination exercises with the District, Arlington, and Prince George's Counties
- CNAC conducted a disaster mental health exercise with DC, Maryland, Virginia, and HHS.

We have designed and evaluated exercises for other Federal agencies including HHS, USDA, and DoD as well as state and local governments, most recently tabletop and full-scale exercises for the state of Delaware which involved play in multiple locations across the entire state. As noted in the accompanying text box, we have direct exercise experience with NCR agencies. Additionally, we are working with NCR CIOs in support of regional public safety interoperability initiatives. Our current efforts support the establishment of a Data Exchange Hub that will permit sharing of critical ESF resource information throughout the NCR during the response to a major incident.

CNAC has been deeply involved in the development and/or assessment of the relevant doctrine that will influence the NCR exercise program. Our evaluation of the NRP and NIMS in TOPOFF 3 constituted the first formal assessment of the new national response doctrine. We supported DHS implementation of Homeland Security Presidential Directive (HSPD) 8 by working with the Office of Domestic Preparedness in the development of the initial Universal Task List (UTL) and Target Capability List (TCL). We have worked with NCR agencies to develop and update their response plans. We have also developed state homeland security strategies.

CNAC's key capabilities include analyzing real-world events and developing AARs that provide lessons learned and support Corrective Action Programs (CAPs). Recent examples of our work in this area include the following:

- A review of ESF #8 response activities to the four hurricanes that hit the state of Florida in 2004
- A review of the response of the USDA and several states to the 2002 – 2003 Exotic Newcastle Disease outbreak
- Currently an analysis of aspects of the HHS, DoD, and USDA response to hurricanes and Katrina.

In all of these efforts, CNAC typically reviews the laws and authorities guiding the response, and then assesses the adequacy of plans/policies/procedures, examines personnel and training issues, and analyzes coordination and communications processes. We emphasize practical recommendations that can be implemented by the government agency to help improve its performance.

AMTI has supported the DHS NEP since the program's inception. Their accomplishments include two highly successful TOPOFF exercises and over 200 State, regional, and local exercises through the HSEEP.

As prime contractor on TOPOFF 3 (T3), AMTI developed and adapted exercise events in accordance with HSEEP, HSPD-8, NRP, and NIMS. The T3-series engaged 27 Federal, 30 state, 44 regional/local departments and agencies, and 156 private organizations over a 12-month planning process. The T3 events included:

- Command Post Exercise involving 27 Federal participating agencies and several state and international observers

- Three National-level Seminars – 250 participants, international and national presenters, and renowned terrorism experts
- Four state-level seminars based on national seminars
- Advanced distance learning exercise – web and broadcast exercise available to entire first responder and emergency management community across the 50 states and territories
- Full-scale exercise simultaneously conducted in the States of New Jersey and Connecticut, and the Federal interagency within the NCR, the UK and Canada over five days, involving up to 10,000 participants
- Large-Scale Game involving 130 representatives of Federal, State and local and international government, non-profit and private sector agencies and organizations conducted over three days.
- 30 days of intelligence play preceding the simulated bioterrorist and chemical attacks in the FSE
- Several national and state-level planning conferences involving up to 250 representatives from player organizations at each event

AMTI Exercise Experience

- Conducted TOPOFF Exercise Series, including TOPOFF 2 (T2), and TOPOFF 3 (T3)
- Pioneered the Senior Officials Exercise design process
- Serves as the industry leader in HSEEP
- Led the Prevention and Deterrence Pilot Exercise Program
- Conducted cyber exercises during TOPOFF 2 & 3
- Led the national cyber exercise series, Livewire
- Was the first to integrate over 150 private sector companies into large-scale exercise play during T3
- Is at the forefront of analyzing terrorist behaviors, intentions, and actions to create a threat
- Skilled in the implementation of the Homeland Security Presidential Directive 8
- Revised the *HSEEP* Volume I and II and is drafting Volume V
- Implemented Lessons Learned Information Sharing
- Devised a national-level, comprehensive, automated process for capturing and sharing lessons learned that is the industry model

AMTI has demonstrated experience in collaborative management, using the National Exercise Scheduling System (NEXS). In addition, they have developed and refined Lessons Learned Information Sharing (LLIS) and Improvement Plans (IP).

IVAN WALKS & ASSOCIATES

Before forming Ivan Walks & Associates (IWA), Dr. Ivan C.A. Walks served as the NCR's incident commander during the October 2001 anthrax attack, one of the largest public health responses ever seen in the United States.

Founded by Dr. Walks in 2002, IWA is a DBE and 8(a) certified small business. Leveraging Dr. Walks' "real-world" emergency response experience, IWA provides practical, critical incident response planning advice based on an "all hazards" approach to, and understanding of, the intersection of public health and public safety in times of crisis.

Selected Ivan Walks & Associates NCR Experience

- In support of COG, members of the Maryland and Virginia legislatures, and the U.S. Senate and House of Representatives, IWA provides public health technical assistance across the NCR. This includes support for a comprehensive program of tabletop, functional and full field exercises, after action reporting, and improvement planning.
- IWA assisted with the development of a Bioterrorism Strategic Plan for Greater Southeast Community Hospital, Washington, DC, as a subcontractor to CNAC. This required assessments of the District's emergency operations plans and their impact on the NCR.
- In support of Montgomery County, MD, another NCR jurisdiction, IWA was an evaluator on disaster preparedness exercises.

On the Bioterrorism Strategic Plan for Greater Southeast Community Hospital, IWA was principally responsible for recommendations in such areas as visibility between hospital management and the District government regarding crisis surge capacity, access to the city's National Pharmaceutical Stockpile stores and patient triage and treatment, community awareness and communications, internal training and exercise drill design, and liaison with the neighboring Prince Georges County, MD government regarding additional aid and support in the event of a large scale bioterrorism event.

IWA provided assistance to the Office of Emergency Management (OEM) within the Montgomery County Fire and Rescue Service (MCF&RS) for the Bioterrorism – National Pharmaceutical Stockpile Distribution Exercise Deadly Rat. IWA helped plan the Emergency Operations Center (EOC) activation and "hotwash" activities, identified training opportunities, defined the exercise evaluation criteria, and developed a report of the exercise's effectiveness. IWA conducted the evaluation of this complex exercise series and facilitated the tabletop exercise. Previously, IWA was tasked by the Maryland Department of Mental Hygiene with revision of the Maryland Strategic National Stockpile (SNS) Plan to ensure its currency and conformance with Federal requirements. IWA has worked with many regions and states across the country, including California and Florida, on emergency exercise evaluations and after action reporting.

Alutiiq is an 8(a) small business that provides security, law enforcement, and security-related technology support for the government as well as specialized training, threat and vulnerability assessments, anti-terrorism and force protection, and support to homeland security and the intelligence Community. Alutiiq developed a strategic plan for emergency response to terrorism incidents that may involve biological, chemical, or nuclear agents that threaten public health and safety in Cecil County, MD. The plan identifies, coordinates, and interfaces all emergency and support actions to be carried out by local health officials, emergency responders and long term care facilitators before, during, and after an attack or significant event. Additionally, Alutiiq evaluated National Guard Weapons of Mass Destruction Civil Support Teams (WMD-CST) for the Army National Guard Bureau and provides multiple jurisdictional services and support at the U.S. Army Kwajalein Atoll/Ronald Reagan Ballistic Missile Defense Test Site (U.S. Army Space and Missile Defense Command).

Alutiiq's Richard Irwin gained exceptional experience in responding to actual emergencies and in exercises through his positions as the Director of Incident Management at the Office of Homeland Security (OHS), the Homeland Security Council (HSC) at the White House, and the Department of Homeland Security (DHS). He was involved in the following exercises and actual incidents, several of which involved or directly impacted the National Capitol Region:

Exercises

TOPOFF II (May 03)
Determined Promise (Aug 03)
Unified Defense (Feb 04)
Eligible Receiver (May 04)
TOPOFF III CPX/Forward Challenge (May 04)

Incident Management

North East U.S. Blackout (Aug 03)
Hurricane Isabel (Sept 03)
Holiday Threat Period (Dec 03 - Jan 04)
President Reagan Funeral (Jun 04)
G-8 Summit (Jun 04)
Elevated Threat NYC/Washington DC (Aug 04)
Presidential Elections (Nov 04)
Presidential Inauguration (Jan 05)
State of the Union (Feb 05)

Summary Capabilities

Table 2.4-1. Provides an overview of our team's relevant exercise experience.

Table 2.4-1. The NCR Exercise Team Has Exceptional Exercise Experience

Firm/Exercise	Exercise Type	No. of participants	Duration (days)	Multi-jurisdictional participation	Engaged Senior Leadership	Involved Federal partners
Discussion-Based Exercises						
Senior Official Exercises (DHS)	TTX	~70	1	Yes (for some)	Yes	Yes
Senior Leader TTX (DC DOH)	TTX	>40	1		Yes	
Surge Capacity TTX (DC DOH)	TTX	100s	1		Yes	
Bioterrorism TTX (DC DOH)	TTX	>40	1		Yes	
Strategic National Stockpile TTX (Delaware)	TTX	>75	1	Yes	Yes	
Silent Night (HHS)	TTX		2		Yes	Yes
TPOOFF 3 Large Scale Game (DHS)	TTX	100s	3	Yes	Yes	Yes
Operation Healthy Challenge (HHS,	TTX	>100	1	Yes		Yes

Firm/Exercise	Exercise Type	No. of participants	Duration (days)	Multi-jurisdictional participation	Engaged Senior Leadership	Involved Federal partners
NCR)						
Smallpox TTX series (HHS)	TTX	100s	2		Yes	Yes
Operations-Based Exercises						
Red Carriage (Prince George's County)	Functional	100s	1			
Smallpox Clinic Test (HHS, Arlington County)	Functional	100s	1			Yes
GenEx (DC DOH)	Functional	100s	1			Yes
TOPOFF 2 FSE	FSE	1,000s	5	Yes	Yes	Yes
TOPOFF 3CPX	CPX	100s	5	Yes	Yes	Yes
TOPOFF 3 FSE	FSE	1,000s	5	Yes	Yes	Yes
Triple Play (North Carolina)	FSE	1,000s	7	Yes	Yes	Yes
Operation Aphtosa (California)	CPX/Field	>125	3		Yes	Yes
Amistaad (USDA, Mexico, Texas)	CPX/Field	100s	3	Yes	Yes	Yes
Equinox (USDA, Candada, VT, ME, NH)	CPX	100s	3	Yes	Yes	Yes
Illinois EMA/Illinois DPH exercises	TTX/FSE/Functional	>500	1-2	Yes	Yes	
Terrorism Prevention Exercises	Functional	100s	23	Yes		Yes
Operation Diamond Shield II (Delaware)	FSE	>400	3	Yes	Yes	Yes
Orbit Comet (FBI/Army/AirForce	FSE	100s	1	Yes		Yes

2.5 Personnel Overview

We begin with a summary of our team personnel resources followed by an overview of the qualifications of our proposed Project Manager, Subject Matter Experts, Exercise Design team, Expert Facilitator, and other supporting key personnel. Our project team has the requisite expertise in all of the areas identified in the RFP and brings a comprehensive understanding of NCR and Federal emergency response plans including the laws and authorities that guide emergency response. With total staff resources among our team of over 1,000 personnel, we have more than 130 staff with the requisite experience and

Table 2.5-1: Summary of Key Personnel Experience

Area	Key Personnel & Experience
Exercise Expertise	• Paul Speer – Lead exercise evaluator for TOPOFF 2 and 3 • Steve Sharro – former FEMA Director, Training and Exercise • Samara Adrian – Exercise designer for IL and NC state exercises • Monica Giovachino – Exercise designer and controller for DE, DC and HHS exercises; evaluator PG County exercises
Emergency Response Operations Experience	• Steve Rickman – former director, DC EMA • Rich Irwin – former Chief, DHS Operation Center • Ivan Walks – former DC Public Health Director; Anthrax incident commander • Steve Sharro – FCO, Northridge earthquake; hurricane Andrew
NCR Knowledge	• Joe Zelinka – former COG public safety director • Ivan Walks – former COG public health committee • Steve Rickman – member of COG task force for RECP
Familiarity with Homeland Security Doctrine	• Steve Rickman – NIMS, NRP, HSEEP, TCL development teams • Steve Sharro – DHS training & exercised guidelines • Rich Irwin – NIMS, NRP development teams

qualifications to make valuable contributions to this project. From this pool, we have selected the best qualified for CECAP. The remaining staff in this pool serve as a ready resource of back-up staff, of "bench strength," should they be required at any point during contract execution to meet the COG's requirements.

This project team will work with a core group of subject matter experts who will assist the team in all aspects of the exercise planning, design, and evaluation process. This core group will be supplemented with additional experienced personnel. Our project team includes personnel with an understanding of Federal WMD programs, policies and procedures; expertise in exercise design and evaluation for multi-jurisdictional exercises as well as direct exercise experience with NCR governments and agencies; expertise in NCR, and with other regional and Federal emergency response plans; and experience in managing large-scale emergencies within the NCR and elsewhere. Our proposed personnel also include experienced facilitators, who have led tabletop exercises for senior officials at the highest levels of government, as well as experienced controllers who have implemented command post exercises and full field exercises.

Table 2.5-2 identifies our proposed key personnel and provides a brief overview of their education and experience.

Table 2.5-2. CNAC Team Key Personnel

Key Person	Education	Yrs Prof. Exp.	Yrs Emergency Response Exp.	Yrs Exercise Exp.	Role
Stephen Rickman	M.S., B.S.	33	14	10	Project Manager
Matthew Payne	M.P.A., B.A.	14	14	8	Subject Matter Expert
Paul Speer	Ph.D., B.A.	22	7	20	Subject Matter Expert
Robert Hall	M.S., B.S.	26	9	7	Exercise Design and Development Lead
Monica Giovachino	M.S., B.S.	11	6	6	Exercise Control/Evaluation Lead
Paula Rae Sherman	M.S.W., B.A.	29	22	10	Exercise Logistics Lead
Rosemary Speers	Ph.D., M.S.E.	11	6	6	Exercise Control/ Evaluation
Ivan Walks	MD	30	30	10	Expert Facilitator/ Subject Matter Expert
Joseph Zelinka	M.A., B.A.	33	14	10	Subject Matter Expert
Stephen Sharro	M.S., B.S.	37	16	16	Subject Matter Expert
Rich Irwin	B.S.	29	29	29	Subject Matter Expert
Thornton Boyd	B.A. (Pending) Experience Equivalent	42	24	15	Exercise Design and Development/Exercise Control
Samara Adrian	B.A.	19	9	17	Exercise Design and Development/exercise control

2.6 Key Personnel

2.6.1 Project Manager: Stephen Rickman MS

- Former Director of the District of Columbia Emergency Management Agency (DC EMA)
- Immediately prior to joining CNAC, he was Director for Readiness in the White House Office of Homeland Security.
- CNAC project manager for an Emergency Planning and Training Support contract for the DC DOH

Our proposed Project Manager, Mr. Stephen Rickman, is a former Director of the District of Columbia Emergency Management Agency (DC EMA). Immediately prior to joining CNAC, he was Director for Readiness in the White House Office of Homeland Security. As Project Manager, Mr. Rickman will serve as the primary point of contact with COG. He will assign and supervise all NCR Exercise Team staff and review and approve all project work products and deliverables.

Mr. Rickman is experienced at managing contracts of this size and scope. For example, he was the CNAC project manager for an Emergency Planning and Training Support contract for the DC DOH. As part of this contract, he helped to guide a functional exercise on SNS distribution at D.C. General Hospital, as well as a series of senior leadership table top exercises He recently directed a large project for the Department of Homeland Security that produced the initial versions of the Universal Task List (UTL) and Target Capability List (TCL), which are intended by DHS to form an important component of state exercise programs.

Mr. Rickman has extensive knowledge and experience with Federal, state, and local guidelines and plans for managing large scale emergencies. As Director for the DC EMA, Mr. Rickman was responsible District responses to all major disasters and emergencies, working often with police, fire, public works, human services and regulatory agencies within the District, and with counterparts from neighboring jurisdictions within the NCR. Specifically, he coordinated responses to major power outages, a regional contaminated water emergency, World War I munitions (Lewiston and mustard gas) removal from a District neighborhood, and civil disturbances in the Mount Pleasant area. As White House homeland security readiness director, Mr. Rickman coordinated activities of Federal agencies responsible for assuring the readiness of America's communities to respond to and recover from acts of terrorism including those involving WMD (chemical, biological, radiological, nuclear, and explosives). He assisted in the development and implementation of the national homeland security strategy, especially those areas encompassing emergency response planning and training for first responders, and in the post 9/11 environment was on call in the DHS Homeland Security Operations Center.

In his position at the White House Office of Homeland Security, Mr. Rickman had significant input into the development of the national exercise program, the NRP, and the NIMS. Because of his experience at the DC EMA and his work at the Office of Homeland Security, Mr. Rickman has exceptional knowledge of the unique requirements of the NCR and has established professional and personal relationships with many of the key emergency response players in the NCR.

His work for DHS on the development of the UTL and TCL required a deep understanding of emergency response requirements and partnerships at the Federal, regional, state, and local level.

Recently, Mr. Rickman was part of the CNAC team that completed an update of the DRP and the District Homeland Security Strategy. As a result, Mr. Rickman is intimately familiar with the DRP and all of the supporting annexes. This effort involved aligning the DRP with the NRP. This assignment also required him to re-familiarize himself with regional emergency response plans in the NCR. Additionally, Mr. Rickman served on a committee for the Department of Homeland Security/Office of Domestic Preparedness that provided input into and also reviewed the Homeland Security Exercise and Evaluation Program (HSEEP) Guides. He contributed to the HSEEP development process, and in particular, to the volume on Exercise Evaluation and Improvement

In addition to his direct experience working with District and Federal agencies on developing AARs both for exercises and for real-world events, Mr. Rickman brings a comprehensive understanding of this requirement from his work at Homeland Security where he helped develop the requirements for national exercise and training programs.

Mr. Rickman's qualifications as Project Manger include his blending of local experience and knowledge with national perspectives including intimate understanding of WMD (i.e. CBRNE) and natural disaster exercise requirements, Federal homeland security guidance and national direction, and over ten years of experience in the emergency management and public safety arena.

Mr. Rickman has successfully managed multiple projects both as a contractor and as a government official of similar size and scope. He has outstanding communications, interpersonal, and administrative skills, and he is familiar with all major office computer software packages. He has repeatedly demonstrated his ability to manage and execute in a team environment, including in challenging emergency response situations. He has earned a reputation for congeniality and effectiveness among the senior leadership of the NCR and in the Federal government.

2.6.2 Subject Matter Expert and Expert Facilitator: Ivan C.A. Walks, MD

- Former Chief Health Officer of the District of Columbia and Director of the city's Department of Health
- Incident commander during the October 2001 anthrax attacks across the NCR
- Designed and implemented the international award winning DC Healthcare Alliance
- Member of the team of experts that developed the World Trade Center Registry

Dr. Walks will serve as a Subject Matter Expert and Lead Facilitator on this project. Based on his past executive leadership positions in the District government, Dr. Walks brings unique knowledge and perspective to the NCR exercise program. He has first hand experience facilitating exercises in the NCR, and his exceptional knowledge and experience in emergency response in the NCR make him particularly well qualified for this role.

While Chief Health Officer (CHO) of the District of Columbia and Director of the city's Department of Health (DOH), Dr. Walks was the incident commander during the October 2001 anthrax attacks across the NCR. He was responsible for the coordination of local, regional, and Federal resources. Dr. Walks' performance during this national crisis earned him a "Public Health Hero" designation from the American Public Health Association**.** Dr. Walks also received the Mayor's Distinguished Public Service Award for the successful management of the $1.5 billion Washington, DC Department of Health Budget, designed and implemented the international award winning DC Healthcare Alliance, and was a member of the team of public health and public safety experts that developed the World Trade Center Registry. He chaired COG's Public Health Committee.

Since leaving the District Government, Dr. Walks has participated in projects supported by HHS, Institutes of Medicine, and General Accounting Office (GAO) among others. He is frequently invited to participate in state and local emergency preparedness policy, planning, and training efforts across the country in addition to select international health policy development efforts. In addition, Dr. Walks currently serves as a member of the Board of Governors of the American Red Cross' Liberty Oversight Commission, the National Advisory Committee of the Harvard University Kennedy School of Government Leadership for State Health Officials Program, and the Association of State and Territorial Health Officials (ASTHO) Preparedness Committee. He is also an Adjunct Associate Professor of Health Services Management and Leadership at The George Washington University School of Public Health and Health Services.

In May 2002, Dr. Walks founded Ivan Walks and Associates (IWA). His primary responsibilities at IWA focus on healthcare and homeland security system design and implementation. Most recently, he has been the IWA principal engaged in the development of technical assistance offerings for state and local government planning for continuity of operations (COOP) and continuity of government (COG). Dr. Walks has worked with the state of Alaska not only to expedite its execution of COOP planning but also to develop repeatable policies, practices, and procedures useful for any other state governments that might subsequently request them. Additionally, Dr. Walks has recently:

- Supported the U.S. Substance Abuse and Mental Health Services Administration (SAMHSA) in the development of the national disaster planning framework for substance abuse treatment centers. Moreover, through a "Cadre of Consultants" contract with the SAMHSA Disaster Technical Assistance Center (DTAC), Dr. Walks was deployed by the Federal government to support its recent (2005/2006) hurricane disasters response efforts in the Gulf Coast Region
- Provided subject matter expertise (SME), guidance, and assistance to a team of IWA consultants responsible for revision and update of both the Maryland Strategic National Stockpile (SNS) Plan and Maryland Pandemic Flu Preparedness Plan
- Provided concept of operations (COOP)/business continuity guidance and technical assistance to states through the Office of Domestic Preparedness (ODP), DHS
- Provided input on the development of a Bioterrorism Strategic Plan for Greater Southeast Community Hospital

- Provided input on the design, development, and execution of an intensive facilitated workshop course on Disaster Preparedness Training for Mental Health Professionals for the District of Columbia government

2.6.3 Subject Matter Expert: Joseph Zelinka MA

- 15 years experience in NCR public safety matters including comprehensive planning with Federal, military, state, and local law enforcement agencies, fire services, EMS organizations, health departments
- For COG, maintained 15 regional emergency plans, and was the COG official responsible for overseeing the implementation of regional communications systems

Mr. Zelinka will serve as NCR subject matter expert in the design, observation, and evaluation of tabletop exercises, CPX and full field exercises and in recommendations for improvements in operational plans. Mr. Zelinka has more than 15 years experience in regional public safety matters. He brings unique expertise in regional planning, exercise, and communications from his years at the COG. His breadth of experience includes comprehensive planning with Federal, military, state, and local law enforcement agencies, fire services, EMS organizations, health departments, and particularly emergency management agencies throughout the metropolitan Washington area and National Capitol Region. His comprehensive knowledge of regional public safety and health issues was gained from direct involvement with numerous committees, subcommittees, and working groups established at COG to address threats at all levels of regional public safety and health, from snow emergencies to bio-terrorism. He is well informed on the issues, the players, the systems, and the planning involved in arriving at regional solutions.

In addition to maintaining 15 regional emergency plans, Mr. Zelinka was the COG official responsible for overseeing the implementation of the following regional communications systems: the Local Emergency Broadcast System, the Washington Area Warning System (WAWAS); the regional "blast up" teleconferencing system; the Police and Fire Mutual Aid Radio Systems - (PMARS and FMARS); a Pawned Property computer network among police jurisdictions; an AMBER ALERT MOU and protocols for finding missing children; and he assisted in the RFP for CapWin - a Capital area wireless network and in identifying tower sites for PSWIN.

His last major effort before retirement from COG involved guiding the preparation of the "Planning Guidance for the Health System Response to Bioevent in National Capital Region"- an 18-month effort to provide planning guidance to local governments to better help them prepare for a bio-terrorism attack.

2.6.4 Subject Matter Expert: Richard Irwin BS

- Former Director of Incident Management at the Office of Homeland Security (OHS), the Homeland Security Council (HSC) at the White House, and the Department of Homeland Security (DHS)
- 29 years of extensive operational and senior management experience managing situations involving stress and potential crises

Mr. Irwin will serve as a subject matter expert and as a supporting facilitator for the two tabletop exercises. Mr. Irwin has 29 years of extensive operational and senior management experience managing situations involving stress and potential crises. His areas of expertise and specialization include: crisis management and emergency and disaster preparedness; National Special Security Event planning; counterterrorism programs; threat assessments; protective operations; anti-terrorism and force protection; personnel security; physical and technical security; information security; operational security; airport security; security education training and awareness; emergency destruction; surveillance, counter-surveillance; counterintelligence, and interagency coordination.

Mr. Irwin, as the Director of Incident Management at the Office of Homeland Security (OHS), the Homeland Security Council (HSC) at the White House, and the Department of Homeland Security (DHS), was involved in numerous exercises and real time incidents, several of which involved or directly impacted the National Capitol Region (NCR). The exercises included TOP OFF 2 (May 2003), Determined Promise (August 2003), Unified Defense (February 2004), Eligible Receiver (May 2004), TOPOFF 3 CPX / Forward Challenge (May 2004). Incident management events included the North East U.S. Blackout (August 2003), Hurricane Isabel (September 2003), Holiday Threat Period (December 2003 - January 2004), President Reagan Funeral (June 2004), G-8 Summit (June 2004), Elevated Threat NYC/Washington DC (August 2004), Presidential Elections (November 2004), Presidential Inauguration (January 2005) and State of the Union (February 2005).

As Director of Incident Management, Department of Homeland Security, Mr. Irwin was responsible for providing strategic situational awareness, synthesizing key intelligence and operational information, framing operational courses of action/policy recommendations, anticipating evolving requirements, and providing decision support to the Secretary DHS, the Homeland Security Advisor, and other national authorities as requested. He co-chaired the National Special Security Events working group which coordinated interagency planning and security measures for events of national significance.

As Director of Incident Management, the Homeland Security Council, and the Office of Homeland Security at the White House, Mr. Irwin served as an advisor to the Assistant to the President for Homeland Security, on homeland security issues, intelligence and warning, domestic counterterrorism, and incident management. He coordinated incident management efforts for all domestic departments and agencies prior to, during, and immediately after a terrorist threat or attack in the United States.

As Emergency Preparedness Program Manager, CIA, Mr. Irwin developed and implemented contingency plans focusing on prevention and preparedness to decrease threats to CIA personnel, assets, activities, programs, and systems immediately after 9/11; and plans to support mitigation to improve emergency response and on-scene measures with emphasis on preservation of life and safety of personnel.

2.6.5 Subject Matter Expert: Stephen Sharro MS

Training and exercise director for FEMA. Served as Principal Federal Official and Federal Coordinating Officer for emergency response to natural disasters
Superintendent of the Emergency Management Institute - led efforts to train state, local, and Federal government officials in disaster preparedness and to professionalize the business of emergency management.

Mr. Sharro will serve as a subject matter expert on the National Response Plan and the intergovernmental interface; he will also serve as a facilitator and controller. Mr. Sharro has more than 30 years experience as a Federal manager and executive. For the last 15 years, Mr. Sharro served in various leadership positions with FEMA and the DHS. He most recently served as the director for training and exercises for FEMA, and was in charge of FEMA's Emmitsburg, MD training facility. Mr. Sharro served in various leadership positions including Principal Federal Official and Federal Coordinating Officer for a host of Presidential declared disasters. He also represented FEMA on the Inter-agency Incident Management Group that supports the Homeland Security Secretary.

As Superintendent of the Emergency Management Institute, Mr. Sharro led efforts to train state, local, and Federal government officials in disaster preparedness and to professionalize the business of emergency management.

With an academic background in education, years of professional experience in training senior leaders for DOD, FEMA, and DHS, and a wealth of hands-on operational experience in Federal response operations, Mr. Sharro brings a unique perspective to this project.

2.6.6 Subject Matter Expert: Paul Speer, PhD

- Led the exercise evaluation process and preparation of AARs for TOPOFF 2 and 3
- Twenty years of exercise experience with Federal clients that include the Department of Defense, Department of Health and Human Services, and Department of Homeland Security/Office for Domestic Preparedness as well as state/local clients including Delaware, North Carolina, Washington DC, and New York City

As Director of CNAC's safety and security business practice, Dr. Speer will assist Mr. Rickman with obtaining any needed corporate staff or resources. Dr. Speer will also review project work products from a technical perspective to ensure quality and accuracy. Additionally, he will provide subject matter expertise in exercise design, control, and evaluation as needed.

Dr. Speer is directly responsible for the execution of all CNAC projects in the areas of homeland security, public safety, and emergency public health preparedness. He supports local/state and Federal clients including the Washington DC EMA, the DC DOH, state public health agencies in Delaware and North Carolina, the California Department of Food and Agriculture, the Office of the Assistant Secretary for Public Health Emergency Preparedness (ASPHEP) in HHS, the CDC, APHIS/USDA, and various directorates in DHS including the Office for Domestic Preparedness.

Dr. Speer has twenty years of exercise experience with Federal clients including the Department of Defense, Department of Health and Human Services, and Department of Homeland Security/Office for Domestic Preparedness as well as state/local clients including Delaware, North Carolina, Washington DC, and New York City.

He directed the efforts of the team that designed and carried out the successful evaluation methodology and produced the Quick Look and After Action Reports for TOPOFF 2. Dr. Speer recently oversaw the evaluation of the TOPOFF 3 CPX and full-scale exercises. He is currently responsible for exercise evaluation for the Senior Official Exercise (SOE) series of the DHS National Exercise Program.

Dr. Speer has directed the efforts of project teams responsible for developing emergency response plans, policies and concepts of operations at all levels of government. His team worked with the DC DOH to develop the District's Bioterrorism Response Plan and with the DC EMA to update the District Response Plan and supporting ESFs. He is also experienced in developing preparedness or readiness metrics—for example, leading a study that conducted a readiness assessment of the National Disaster Medical System (NDMS). In addition, his team supported DHS in the initial development of the Universal Task List and the Target Capability List.

Project teams under his direction have supported a number of actual emergency response operations most recently in the case of the HHS response to Hurricanes Katrina and Rita. He has overseen the development of AARs for numerous real world events and incidents including the 2004 Republican and Democratic National Conventions, ESF # 8 response activities during the 2004 Florida hurricanes, the discovery of Ricin in the Office of Senator Frist, the USDA and

state response to the outbreak of Exotic Newcastle Disease, the Ballou High School mercury spill, and others.

2.6.7 Exercise Control/Evaluation Lead: Monica Giovachino, MS

- Extensive experience with the NCR and the District of Columbia, Prince George's County, and Arlington County to design and evaluate tabletop and functional exercises
- For the DC DOH, designed and implemented two tabletop exercises and one functional exercise as site test of a Strategic National Stockpile (SNS) Dispensing Center

Ms. Giovachino will serve as the exercise control/evaluation leader. She has designed, implemented, and evaluated emergency preparedness exercises at the local, state, and Federal levels, and has supported and analyzed real-world emergencies. She has extensive experience with the National Capital Region (NCR), and has worked with the District of Columbia, Prince George's County, and Arlington County to design and evaluate tabletop and functional exercises. For the DC Department of Health (DOH), Ms. Giovachino designed and implemented two tabletop exercises and one functional exercise. The results of the latter, a site test of a Strategic National Stockpile (SNS) Dispensing Center, were published in the Journal of Public Health Management and Practice. She recently evaluated a similar SNS functional exercise for Prince George's County. She also led a project to design, execute, and analyze a full-scale exercise for the Delaware Division of Public Health. This three-day, multi-jurisdictional exercise included 400 participants located in more than 10 command post and field venues spread across the state.

At the Federal level, Ms. Giovachino was part of the evaluation teams for TOPOFF 2 and TOPOFF 3.She also helped the HHS develop a Strategic Exercise Plan and design, implement, and evaluate tabletop and functional exercises.

Ms. Giovachino has analyzed operations during actual emergencies and special events such as the 2004 hurricanes and the Republican and Democratic National Conventions. She recently supported HHS emergency response operations during Hurricanes Katrina and Rita by leading a 24/7 analytical support team in the Secretary's Operations Center (SOC). She also wrote an after action report on the hurricanes for HHS and developed a pandemic influenza playbook designed to aid the Secretary of HHS in a cabinet-level avian influenza tabletop exercise. Ms. Giovachino assisted the District of Columbia Department of Health in preparing a plan to receive and dispense the National Pharmaceutical Stockpile (now called the Strategic National Stockpile) shortly after September 11, 2001. She supported a planning meeting that included personnel from the District and the NCR. The plan she helped develop was subsequently used in response to the anthrax attacks when DOH dispensed prophylactic medications to postal workers and others potentially exposed to anthrax.

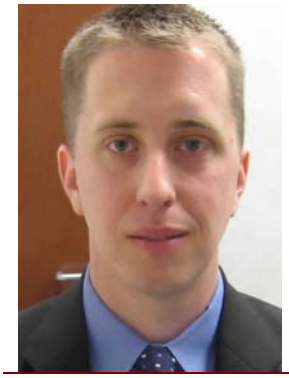
Ms. Giovachino assisted in the development of the UTL and TCL under a DHS contract, and the DRP and District State Homeland Security Strategy under a DC EMA contract. She is familiar with relevant Federal and NCR doctrine such as the NRP, NIMS, National Preparedness Goal

(NPG), TCL, UTL, DRP, Region Emergency Coordination Plan (RECP), and regional Public Health Plans through their use in the design and evaluation of numerous exercises

Ms. Giovachino has served as the lead designer for many exercises, ranging from tabletop exercises and single-site functional exercises to the Delaware full scale, multi-jurisdictional exercise. She has designed evaluation plans and written AARs for both exercises and real world events, including serving as the lead author of the Triple Play, Operation Diamond Shield II, Red Carriage, GenEx, and HHS TOPOFF II AARs; and lead author of reports on Federal agency response to Hurricanes Francis, Ivan, and Charley, and on public health/medical activities at the Democratic National Convention

Ms. Giovachino has also worked in a variety of other areas related to emergency preparedness, including helping agencies draft emergency plans, and performing capability and readiness assessments.

2.6.8 Subject Matter Expert: Matthew Payne MPA



- Former Deputy Director of the Office of Emergency Operations and Security Planning in HHS
- Responsible for the management of the Secretary's Operations Center (SOC) and Secretary's Emergency Response Team (SERT) during national emergencies (e.g., hurricanes Katrina and Rita) and full-scale field exercises (e.g., TOPOFF 3 and Pinnacle).

Mr. Payne will serve as a subject matter expert, providing insights into the Federal interagency process and the public health and medical aspects of the exercises. His extensive experience with national level exercises involving emergency response will be particularly valuable during exercise planning, execution, and analysis. Before joining CNAC, Mr. Payne was Deputy Director of the Office of Emergency Operations and Security Planning in HHS. In that position, he was responsible for coordinating that Department's response to real-world events and major exercises. He was responsible for the management of the Secretary's Operations Center (SOC) and Secretary's Emergency Response Team (SERT) during national emergencies (e.g., hurricanes Katrina and Rita) and full-scale field exercises (e.g., TOPOFF 3 and Pinnacle). His extensive emergency response and exercise expertise also includes direct experience as an EMT and with the National Disaster Medical System through the Office of Emergency Preparedness (now located in DHS/FEMA).

While at HHS, Mr. Payne interacted with officials from the NCR in many ways. In 1997, Mr. Payne was integrally involved with the development of the Metropolitan Medical Response System (MMRS) concept. This involvement included working closely with the Washington MMRS, the DC Hospital Association, and the Metropolitan Washington Council of Governments. As part of this process, Mr. Payne also participated in several NCR exercises including exercise "Rock 'n Roll" and "Foggy Office." Both included regional response from partners in the NCR.

Mr. Payne's actual emergency response experience includes his participation in the region's response to the 2001 anthrax attack, and supporting the screening and distribution operations for Postal Service employees. Mr. Payne also served as a liaison to area coordination centers for several national security special events including the State Funeral of President Reagan, the Presidential Inauguration, Independence Day celebrations, and each State of the Union Addresses since 1998.

In his Federal role, Mr. Payne has worked extensively on Federal emergency preparedness programs and response mechanisms. He was responsible for managing the Department's input to the National Response Plan (NRP), National Incident Management System (NIMS), and several Homeland Security Presidential Directives (e.g., HSPD 5, 8, and 10). Additionally, as the HHS Team Leader for the Preparedness and Planning Team, he worked extensively with the Department of Homeland Security's (DHS) current Office of Grants and Training. Mr. Payne has deployed on numerous occasions and has served in most of the Federal interagency coordination centers, including the National Response Coordination Center (NRCC), Strategic Information and Operations Center (SIOC), and the Interagency Incident Management Group (IIMG).

While in HHS, Mr. Payne managed the strategic plans, programmatic activities, and performance budgets for major national exercises, such as TOPOFF 3 and Senior Official Exercises. He was responsible for identifying and recommending solutions to address key national and HHS policy, planning, and operational issues. He managed emergency operations (such as in response to Hurricane Katrina) during public health and medical threats and emergencies.

2.6.9 Exercise Design and Development Lead: Robert Hall MS

- Experience in emergency preparedness in both military and civilian settings including exercise design, execution, and evaluation; emergency plans development and evaluation; command and control (C2) research; and command and control management
- Task Lead for the update and rewrite of the District of Columbia Disaster Response Plan and Homeland Security Strategic Plan in 2005

Mr. Hall will serve as the Exercise Design and Development Lead. He will also play a major role in the development of the event AARs.

Mr. Hall has a wide range of experience in emergency preparedness and response in both military and civilian settings including exercise design, execution, and evaluation; emergency plans development and evaluation; and command and control (C2) management. In 2004, Mr. Hall developed the Delaware Homeland Security Strategic Plan, the Multi-Year Exercise Plan, and the Initial State Implementation Plan for the Emergency Management Agency. On this project, he developed a quantitative threat analysis for specific Delaware cities and events. He developed methodologies to train, exercise, and evaluate emergency response capability and detailed them in an evaluation plan. Recently, he helped the District update and rewrite its Disaster Response Plan and its Homeland Security Strategic Plan.

In the military, Mr. Hall held a key Exercise Coordination Position. He was the lead in-country BRIGHT STAR Exercise Planner, a large military exercise conducted by the U.S. with a $120

million budget and involving forces from the U.S., Egypt, and twelve coalition countries. Mr. Hall has specific experience in the management of emergency response operations. As technical Assistance Coordinator, State Homeland Security, Delaware Emergency Management Agency, he held numerous emergency management controller positions in the Delaware Emergency Management Agency EOC command, operations, and technical assistance center cells. Real world response scenarios were typically weather related incidents including floods, hurricanes, and snowstorms. Exercise scenarios included water contamination, hurricanes, and floods. As Operations Officer, J-3 Operations, Joint Task Force Andrew, Miami, Florida, Mr. Hall tracked military mission assignments and progress made towards mission objectives during recovery missions after Hurricane Andrew devastated south Florida, and briefed senior military and FEMA officials on mission status at daily briefings. As Chief, Wing Plans and Programs, 436th Airlift Wing, Dover AFB, Delaware, he managed physical layout, software and hardware installations, and procedural processes for the Dover Air Force Base Crisis Action Team. He activated the team during three military and numerous local contingencies.

2.6.10 Exercise Specialist: Rosemary Speers PhD

- On-scene support of emergency command centers during actual response operations for events such as the anthrax incidents of October 2001 and the 2003 outbreak of Severe Acute Respiratory Syndrome (SARS)
- Led two large event analysis efforts for USDA examining response operations during the exotic Newcastle disease outbreak of 2002-2003 and the BSE (mad cow disease) case investigation of 2005

Dr. Speers will support the Exercise Controller/Evaluator on the project. Dr. Speers' experience includes on-scene support of emergency command centers during actual response operations for events such as the anthrax incidents of October 2001 and the 2003 outbreak of Severe Acute Respiratory Syndrome (SARS). She supported and assessed response operations at the Emergency Operations Center in Arlington, Virginia, the Secretary's Operations Center in the Department of Health and Human Services, as well as operations centers at the Centers for Disease Control and Prevention, and the U.S. Department of Agriculture Division of Veterinary Services (in Riverdale, Maryland). During the anthrax incidents of October 2001, Dr. Speers worked with the District of Columbia Department of Health to develop their plan to receive and distribute the Strategic National Stockpile.

Dr. Speers was the project director for a readiness assessment of disaster medical assistance teams (DMATs) within the National Disaster Medical System. She led two large event analysis efforts for the U.S. Department of Agriculture – examining response operations during the exotic Newcastle disease outbreak of 2002-03 and the BSE ("mad cow disease") case investigation of 2005. Also in 2005, she worked with U.S. Joint Forces Command to examine the coordination of response efforts among militaries, United Nations agencies, and other international organizations following the tsunami in Southeast Asia.

Dr. Speers serves as lead analyst and exercise designer for the USDA Tripartite exercise series involving Federal agriculture agencies in the U.S., Canada, and Mexico. She most recently led

CNAC's team to design, facilitate, evaluate, and document the Equinox 2005 exercise examining multi-jurisdictional response communications and organization among States and Provinces in the U.S. and Canada, along with National Emergency Response Teams. The execution of this exercise was built upon her previous experience with emergency response operations during animal disease outbreaks and other response exercises.

Dr. Speers has supported the response of field operators as well as government decision makers to simulated terrorist-initiated events, natural disease outbreaks, and natural disasters. She has facilitated games and exercises involving local, state, Federal, military, and foreign government officials. Her team's work has provided the analytical basis for changes in procedures for the North American Foot and Mouth Disease Vaccine Bank and for changes in animal health response structures across jurisdictions and levels of government.

2.6.11 Exercise Logistics Lead: Paula Rae Sherman MSW

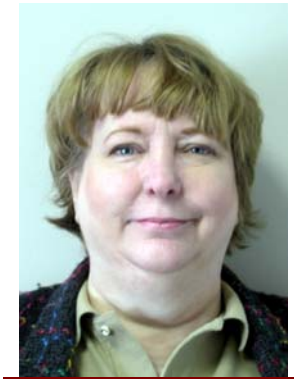
- Former member of the Executive Management Teams of the DC Office of Emergency Preparedness, the DC Fire Department, and the Arlington County Fire Department
- Led various project teams in planning and conducting training and exercises and conducting research involving the National Incident Management System (NIMS), the National Response Plan (NRP), HSEEP, and WMD

Ms. Sherman will have responsibility for overall exercise logistical coordination. She has more than 28 years of public safety and emergency management experience in policy, planning; training; exercise planning, development, facilitation and evaluation; administration; and project management at the state, local, and national level encompassing national, state, local, regional and private sector partnerships. She served as a member of the Executive Management Teams of the DC EMA, the District of Columbia Fire Department, and the Arlington County Fire Department and was responsible for interacting with various officials throughout the NCR jurisdictions. She served as Administrative Chief for the Arlington County Fire Department during the 9/11 Pentagon Event. Ms. Sherman developed, monitored, and reported on Comprehensive Cooperative Agreements with FEMA, provided resource and support analysis for first responders in the areas of administration, human resources, equipment and supplies, budgets, various organizational and operational assessments, and public education programs (community-wide and schools). She participated on and led various project teams in planning and conducting training and exercises and conducting research involving the National Incident Management System (NIMS), the National Response Plan (NRP), HSEEP, Weapons of Mass Destruction (WMDs) and various other homeland security and emergency preparedness Federal, state and local guidance and regulations.

As Exercise Training Officer and Training Officer for the D.C. Office of Emergency Preparedness, Ms. Sherman's major functions included public and community education, and emergency exercise (tabletop, functional, and full-field) design, implementation, evaluation, and after-action report development. She designed, coordinated, facilitated, and evaluated the District's response to various FEMA initiatives and tailored training to meet the unique nuances of the District for mandated emergency planning, training, and exercise needs. Additionally, Ms. Sherman staffed

various community events coordinated by the D.C. Special Events Task Force. Ms. Sherman is a former Assistant Professor and Field Instruction Director for Southern University, Baton Rouge, LA and Adjunct Faculty for the FEMA National Fire Academy.

2.6.12 Senior Exercise Specialist: Samara Adrian BA



- Expert in the field of training and exercises and Domestic Emergency Response planning, managing, assessing, executing, and reporting
- Decade of current, relevant State-level experience planning, controlling, evaluating, conducting, and assessing disaster preparedness exercises
- Participated in TOPOFF

Ms. Adrian will support this project as an Exercise Design, Development, and Control Specialist. She has specific expertise in the design of scenarios. She is an expert in the field of training and exercises and Domestic Emergency Response planning, managing, assessing, executing, and reporting. She brings almost a decade of current, relevant State-level experience planning, controlling, evaluating, conducting, and assessing disaster preparedness exercises. She wrote the original prototype plan that was subsequently adopted by the 100 counties of the State of North Carolina. Ms. Adrian also participated in the TOPOFF exercise series.

2.6.13 Exercise Planning and Management Specialist: Thornton Boyd

- Participated in numerous COOP/COG related activities since the early 1990s
- Provided exercise design and development support including MSEL development for TOPOFF 2 and TOPOFF 3 series
- Experienced WMD Explosive Ordnance Disposal (EOD) operator and educator
- Expertise spans improvised device design, advanced Render Safe Procedures (RSPs)

Mr. Boyd will support the Exercise Design, Development and Exercise Control on this project. Mr. Boyd has many years of direct management level participation in national/homeland security and counter-terrorism response readiness exercises and programs. He was a key member of the TOPOFF 2 and TOPOFF 3 exercise design and development team, and is continuing in that role for the TOPOFF 4 Command Post Exercise. He has participated in numerous COOP/COG related activities since the early 1990s and understands the related strategic, tactical, and technical operational imperatives. Mr. Boyd is also an experienced Weapons of Mass Destruction (WMD) Explosive Ordnance Disposal (EOD) operator and educator. Engaged in the national WMD response effort from its beginnings, his focus has been on readiness training and exercises for national-level responders for the past ten years. His technical expertise spans WMD and improvised device design, advanced Render Safe Procedures (RSPs), and innovative training and readiness program design and implementation.

2.7 Key Personnel by Task

Table 2.7-1. shows proposed hours by key person by task.

Table 2.7-1: Hours By Key Person By Task

Key Personnel	General tasks	Senior Leader Tabletop	1st Tabletop Exercise	2nd Tabletop Exercise	3rd Tabletop Exercise	CPX/EOC Functional	Full Field	Event #1	Event #2	Event #3	Event #4	Total Hours
Steve Rickman	35	10	17	7	17	23	29	6	6	8	12	170
Ivan Walks	0	20	20	20	20	4	4	4	4	4	4	104
Paul Speer	6	25	2	2	2	2	2	4	4	4	8	61
Matt Payne	0	20	4	4	20	6	6	0	0	0	0	60
Monica Giovachino	8	80	22	8	8	30	30	12	12	16	20	246
Steve Sharro	0	8	8	8	8	8	8	0	0	0	0	48
Paula Sherman	80	21	35	35	4	4	4	0	0	0	0	183
Rich Irwin	0	20	0	0	20	20	16	0	0	0	0	76
Joe Zelinka	0	22	16	16	22	18	26	4	4	4	4	136
Rosemary Speers	0	20	4	4	4	4	0	0	0	0	0	36
Rob Hall	0	28	16	16	28	78	143	12	92	60	20	493
Thorton (Doug) Boyd	0	0	68	68	0	76	68	0	0	0	0	280
Samara Adrian	0	0	80	80	0	320	240	0	0	0	0	720
Total	129	274	292	268	153	593	576	42	122	96	68	2,613

3 Technical Approach

In this section of our proposal we describe how we will perform the activities described in the RFP.

3.1 Technical Overview

The NCR is a national leader in coordinating the development of regional approaches to emergency preparedness and response. Acting on the terrorist events of September 11, 2001, the NCR became the first area in the country to prepare a regional response plan, the Regional Emergency Coordination Plan (RECP). The National Preparedness Goal has now identified "expanding regional collaboration to enhance coordinated development of capabilities" as a national priority. This collaboration extends across all facets of the capability development process to include planning, training, and exercising. Many exercises have taken place within the NCR, but the proposed NCR CECAP represents a new exercise program paradigm, with a different focus than the traditional city, county or state level approach to exercises. It requires a focus on coordination and communications partnerships, and a clear understanding of jurisdictional roles and responsibilities. The exercise approach taken by the NCR Exercise Team will build on and reinforce the existing NCR emergency response strategy as outlined in the RECP.

The NCR is a more complex entity than the term "region" would imply, consisting as it does of seven contiguous jurisdictions within the State of Maryland, the Commonwealth of Virginia, and the District of Columbia together with the presence of the three branches of the Federal government. With its government institutions and iconic tourist attractions, it is both a unique symbol of America and uniquely vulnerable. The NCR Exercise Team will address this level of complexity by effectively engaging leaders at all levels of government in the NCR. We will take advantage of existing COG structures and committees. Through the COG, the NCR has ongoing regional public safety efforts including law enforcement, fire protection, and disaster and emergency preparedness. The COG has established committees to deal with all aspects of emergency preparedness. In addition, the COG has an Exercise Training and Oversight Panel (ETOP) that coordinates the regional exercise program.

The following table outlines the requirements and challenges for the technical approach as well as the solutions we are proposing based on lessons we have learned from our previous exercise and NCR experiences.

Table 3.1-1: Addressing CECAP Challenges with Team Experience

Challenges	Solutions
Demanding schedule of six exercises: "time is of the essence"	• Employ logical "building block" approach to order exercises and then efficiently plan them • Employ electronic data capture during CPX based on TOPOFF 3 experience to meet quick AAR turnaround time • Use team's familiarity with most of the relevant doctrine and documents (e.g. NRP, NIMS, TCL, RECP, EOC policies and procedures, existing AARs etc.) to minimize required number of interviews • Leverage experience of key personnel with previous senior leadership experience in the NCR and Federal government (Mr. Rickman, Mr. Zelinka, Mr. Irwin, Dr. Walks,

Challenges	Solutions
	Mr. Payne, Mr. Sharro) to help facilitate required meetings
Comprehensive and integrated multi-jurisdictional exercise program	• Use team's exercise "building block" approach to ensure that each exercise in sequence supports the next just as we did with the DHS Senior Officials Exercises and TOPOFF 3
Include Federal partners	• Leverage experience of team's key personnel with critical Federal partners including DHS (Mr. Irwin), FEMA (Mr. Sharro), HHS (Mr. Payne), White House (Mr. Rickman) • Adapt multi-jurisdiction/inter-agency planning process employed by team for all DHS National Exercise Program exercises
Engage Senior Leadership	• Leverage experience of key personnel with previous senior leadership experience in the NCR and Federal government (Mr. Rickman, Mr. Zelinka, Dr. Walks, Mr. Irwin, Mr. Payne, Mr. Sharro) • Adapt exercise development process from DHS Senior Officials Exercise and TOPOFF exercises to ensure exercises address senior level policy issues
Evaluate Coordination and Communications	• Use evaluation approach based on TOPOFF 3 lessons learned (modified from HSEEP) and new DHS Target Capabilities List to assess multi-jurisdiction coordination and communications during exercises • Use our customized event AAR process to evaluate cross jurisdictional coordination and communications
Test new processes and procedures	• Employ team's unique exercise reconstruction methodology to assess new processes and procedures
Review existing responsibilities and roles	• Use our customized event AAR process to review existing roles and responsibilities • Use our proposed TTX structure involving cross jurisdictional working groups to permit continued review of existing responsibilities and roles
Build partnerships	• Use our proposed exercise planning process to build off existing NCR relationships including the R-ESF Structure • Use our proposed TTX structure involving cross jurisdictional working groups to continue partnership building activities

Scheduling and Use of a Building Block Approach

Time is of the essence in the completion of this project and we set forth a work plan, management plan, and schedule in Section 3.3 that employs a building block approach where we execute the exercises in order of increasing complexity beginning with the smallest TTXs and ending with the CPX/EOC Functional Exercise, which is the most complex exercise specified in the RFP. We have scheduled the full field exercise for early October to put it late in the exercise cycle, so that participants will have the benefit of building knowledge through the TTXs, but we selected a time of year when the weather will be appropriate for holding the exercise outside at field locations.

This building-block approach, where each exercise builds upon the former and increases in complexity, will also ensure that the desired outcomes are met in this demanding schedule. This is the approach that we successfully employed in the TOPOFF exercise series (which moves from tabletop exercises to command post and then full-scale exercises), and we propose to adapt it to the NCR exercise program. In Figure 3.1-1 we show how subsequent exercises can build on the previous by drilling down further into each objective with each exercise.

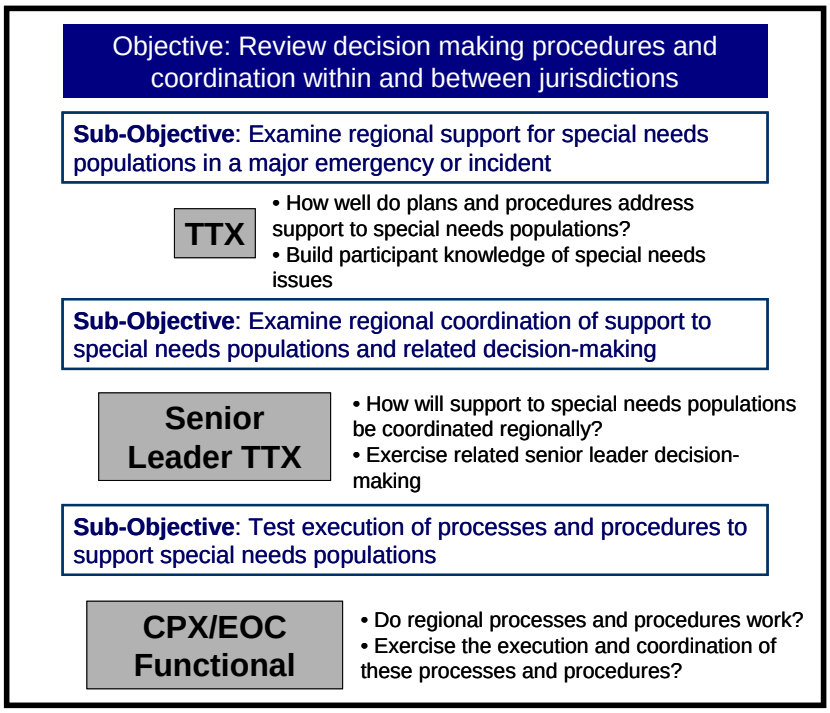


Figure 3.1-1: Building Block Approach

Summary of Our Approach

We have developed a proven approach to the design, execution, and evaluation of multi-jurisdiction exercises located in multiple sites based on our experience in the NCR, other states/cities/regions and through our role designing and executing the TOPOFF exercise series. Our approach is HSEEP compliant but reflects our experience and offers more than simply the HSEEP program. The overall process is shown in Figure 3.1-2 and includes the following activities:

- Establishment of an exercise planning team that includes members from all participating jurisdictions and agencies
- Design and conduct of exercise planning conferences
- Development of exercise planning documents and key exercise materials
- Conduct of exercise, including facilitation, control and data collection for the evaluation
- Exercise reconstruction and analysis, and
- Development of AAR to support NCR corrective action program

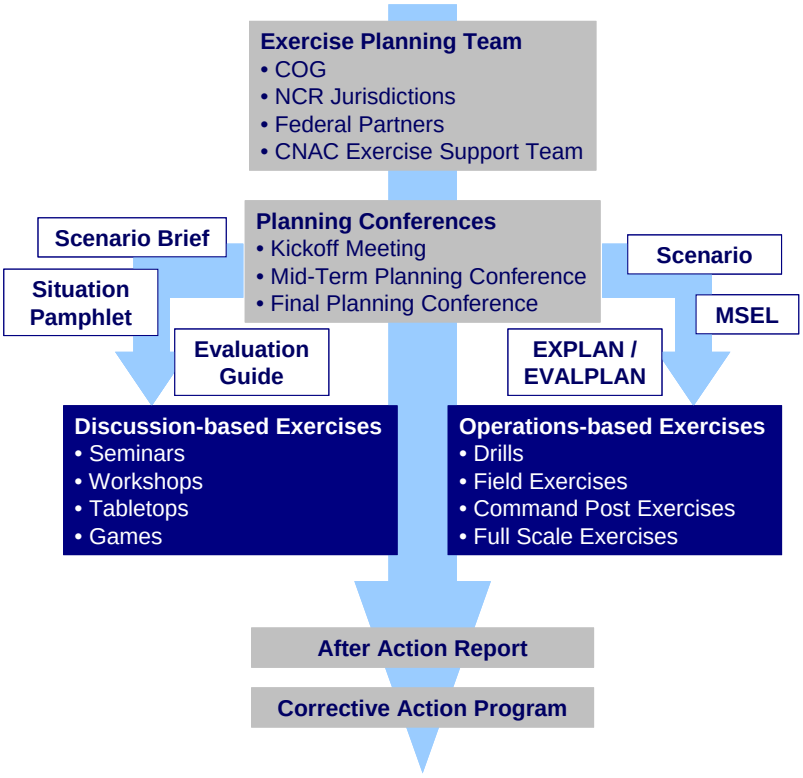


Figure 3.1-2: Our Exercise Approach

3.2 Specific Tasks

This section discusses our approach to the specific tasks called for in the RFP. It also incorporates the deliverables associated with each task. An aggregated table of deliverables is also provided in section 3.4.4.

3.2.1 Kickoff Meeting

We will host a kickoff meeting to begin the planning process for the entire project 10 days after contract award. The purpose of this meeting will be:

- To establish the overall direction for the project and review the key objectives and desired outcomes
- Develop the project plan and schedule, and
- Identify the core planning group.

Deliverable 2.a Kickoff Meeting
Deliverable 1.a Preliminary Project Plan and Schedule
Deliverable 1.b Final Project Plan and Schedule

Following the meeting, we will disseminate meeting minutes to the participants. We will develop the preliminary project plan and schedule, and we will work with the NCR to establish a core planning group that includes representatives from the NCR Regional Emergency Support Function (RESF) committees. Although each exercise will have a separate planning group, we anticipate that overlap with this core planning group will occur for some of the activities.

3.2.2 Registration Web Site

We will develop and maintain an exercise website that includes:

- Online pre-registration and corresponding registration management reports
- Posting of documents prior to the exercise including the player's guide, agenda, and objectives
- A *secure* area for the planning team to review participants' status and to post draft after-action reports.

The website will also serve as a mechanism for collecting and consolidating comments. We will develop a single website with links to each individual exercise for persons to register. We will use the services of a professional website provider to host the website, and provide the following:

- Create, edit, and manage the event registration sites
- Brand the registration site with a logo selected by the COG
- Set a maximum number of registrants, if required
- Include maps and driving directions (the registration web site will be free of advertisements)
- Design the site so participants only have to login once; they will be "remembered", which is particularly useful for those participants attending multiple events
- Send e-mail invites, reminders, and custom messages to proposed participants
- Resend invites to proposed participants not yet registered
- Send e-mail confirmations and receipts automatically to participants
- Provide e-mail notification each time someone registers for an event
- Provide the capability to view and download participant information
- Provide the capability to view and download participant survey responses
- Add sections for an agenda or speaker profile on a limited basis
- Capture custom registrant information using questions COG creates
- Provide the capability to export responses to spreadsheets
- Provide the capability to view responses by question and by registrant, and
- Provide the capability to create custom reports and download into a spreadsheet.

Deliverable 11 Exercise Website

3.2.3 Tabletop Exercises

Tabletop exercises (TTXs) are discussion-based exercises in which participants react to and discuss a scenario typically presented in a series of "moves." A more complex version involves actual decision-making by the participants and evolution of the scenario according to these decisions.

Of the six stated objectives in the RFP, key objectives for TTXs are likely to be:

TTX Focus

- Senior Leader TTX: Decision-making and policy issues requiring leadership attention
- TTXs 1, 2 and 3: Framework of the Regional Emergency Coordination Plan (RECP)—the Regional Emergency Support Functions (R-ESFs)—and how multiple jurisdictions will coordinate within this structure

- Review decision-making processes and the coordination of these processes within and between jurisdictions
- Review command and operating processes and procedures
- Understand jurisdictional roles and responsibilities under the NRP and regional plans
- Build partnerships between regional agencies and with Federal partners, and
- Understand the laws and authorities guiding the inter-jurisdictional response.

Our Team Has Engaged Senior Leadership in TTXs

We have designed/evaluated senior leader TTXs for many different agencies, including:

- *Silent Night* smallpox decision-making exercises for the White House Policy Coordinating Committee and Deputy Secretaries Committee
- Senior Officials Exercises (SOEs) for the DHS National Exercise Program, and
- Several TTXs focused on emergency public health issues for senior District DOH leadership

Because of the large number of proposed participants, we propose the use of breakout sessions as part of the exercises. We have found it is important to design large TTXs in a way that engages all participants, and allows them to contribute to the exercise and interact with other participants. For large groups, a single facilitated session is not sufficient. As described below, we will work with the NCR exercise planning group for each exercise to set specific objectives, select the appropriate exercise design (facilitated discussion or decision-making, large group session and/or breakout sessions) to accomplish the stated objectives, and conduct an evaluation focused on the objectives.

3.2.3.1 Exercise Planning Team

The NCR Exercise Team will support the NCR in establishing a planning group for each TTX. This team will be responsible for developing specific and more detailed sub-objectives under the general exercise objectives listed in the RFP, providing background information and material to support the exercise design and development process, helping to ensure the scenario is tailored to jurisdictional needs, and reviewing exercise materials. The planning meetings discussed in the next section are the structure through which these activities will take place.

3.2.3.2 Exercise Planning Meetings

The planning and coordination of each TTX will occur through a series of planning meetings with the NCR exercise planning group, including:

- **Kickoff Meeting**: The purpose of the kickoff meeting, sometimes called the Concepts and Objectives Meeting, is to clarify exercise objectives, desired outcomes, and scope of the scenario for each TTX. This meeting lays the foundation for the exercise design and development process.
- **Mid-Term Planning Conference** (MPC): At this meeting we conduct initial reviews of the exercise scenario, exercise materials, and logistical arrangements. Goals of this meeting are to validate the scenario, identify key issue areas to incorporate into the facilitated working sessions, and ensure the scenario and working sessions are tailored to the exercise objectives.
- **Final Planning Conference** (FPC): This meeting provides the final forum for the core NCR planning group to review all exercise materials and the processes and procedures for executing the exercise.

These meetings are critical to ensuring a coordinated planning process that results in an exercise designed to achieve the selected objectives. It is also important that we include Federal partners and engage senior leadership in this process. We will leverage the experience of our key personnel with critical Federal partners (DHS, FEMA, HHS, and DOJ) and with the NCR senior leadership to ensure that this occurs. The planning process itself can also help to build partnerships between regional agencies and Federal partners, one of the key objectives in the RFP

Deliverable 2b. Kickoff meeting for each exercise
Deliverable 12. Exercise meeting minutes

We will schedule each meeting and distribute an agenda and read-ahead materials (such as the documents being reviewed) ahead of time, prepare meeting minutes and distribute them to the exercise planning group following each meeting.

3.2.3.3 Exercise Agenda

After the kickoff meeting for each exercise, we will develop a draft exercise agenda based on the discussion during the meeting. This agenda will be reviewed by the exercise planning group and we will incorporate all changes into a final agenda.

Deliverable 3. Exercise agenda

3.2.3.4 Individual Interviews

Individual interviews are a key source of information for the exercise planning process. For TTXs, these interviews help clarify, confirm and/or refine objectives and issues surrounding the exercise, and optimize the utility of the scenario. We also use these interviews to gather key reference documents, graphics, and write-ups that will be used in developing exercise materials. As shown in the accompanying text box, our familiarity with this material will speed the interview process.

Our Team's Familiarity with Key Reference Material Will Save Us Time

- Our Project Director was a member of the COG Task Force that developed the RECP
- We are familiar with many event AARs through our work with NCR agencies
- We have helped develop NCR plans such as the COG Bioterrorism Planning Guidance and the NCR Plan for the Receipt and Distribution of the Strategic National Stockpile (SNS)
- We have helped develop and test NCR jurisdictional plans such as the DRP and City and County SNS plans
- We evaluated the NRP and NIMS in TOPOFF 3
- We helped DHS/ODP develop initial versions of the Universal Task List (UTL) and Target Capability List (TCL)

We will plan and conduct these interviews according to the following steps:

- Consult with the NCR exercise planning group to identify key individuals that possess knowledge and expertise relevant to the exercise scenario
- Prepare for the interviews by reviewing all of the relevant and available plans, policies, and procedures for the agency
- Develop an interview guide that identifies the information we plan to collect during the interviews
- Conduct semi-structured interviews in coordination with the exercise planning group using the interview guide, and
- Document the interviews in notes for use in the planning of the current and future exercises.

To the extent practical, we will interview key persons in support of multiple exercises at once to reduce the overall number of interviews needed. For example, we can discuss high level policy and doctrine (needed for the TTXs) at the same time we discuss related policies and procedures that will be tested in the CPX.

3.2.3.5 Exercise Locations

The venues we secure will be capable of accommodating all participants in both plenary and break-out sessions. We will work with the NCR to select a facility that is convenient to exercise participants and has access to mass transportation. The venue will include all necessary audio-visual equipment, such as a laptop and projector, and microphones.

Team members, Alutiiq and CNAC have state of the art conference facilities located in McLean and Alexandria, VA that could serve as a potential locations for these tabletop exercises.

3.2.3.6 On-Site Registration

Each TTX will have an on-site registration area. Our staff will welcome attendees, confirm attendance of registered participants, and distribute pre-prepared registration badges and name tents. Based on the particular exercise plans, some name tents will be pre-positioned.

Deliverable 8. Name tags and table tents

3.2.3.7 Exercise Materials

We develop the following exercise materials during the planning process described above:

- **Scenario Briefing**: These are the presentation slides used by our facilitator to describe the scenario and situation, and advance game play during the exercise. It tells the story of the scenario, using graphics as well as text, and includes discussion points, framing questions, and instructions to guide participants through the discussions and working sessions.
- **Situation Pamphlet**: This handout will be distributed to participants during the exercise. It tells the story of the scenario, includes graphics (such as photos of the event or charts of casualties) and other materials (e.g., mock news reports, memos, situation reports) supporting the scenario, and contains questions focusing on key issues to spur discussion and instructions for working group assignments.
- **Exercise Guide**: This guide will be distributed to exercise participants, and provides background information on the exercise, the agenda, key participants and organizations, policies, new and existing initiatives and programs, and workshop logistical information including maps and lodging information. This document is made available to participants prior to the exercise so that they can prepare for game play. Much of the material that will be assembled in the first exercise guide can be re-used, reducing the effort needed to produce subsequent exercise guides.

We will prepare drafts of all documents for review by the exercise planning group and incorporate all comments into the final versions.

Deliverable 4. Situation pamphlet
Deliverable 5. Exercise Guide
Deliverable 6. Scenario briefings

3.2.3.8 Exercise Facilitation

In keeping with a building block approach, we propose to increase the complexity of the TTXs, and hence the complexity of our implementation approach, as described below.

TTX 1 and 2

We will use a combination of plenary and working group sessions. Our lead facilitator, Dr. Walks, supported by additional experienced facilitators, will guide the breakout or smaller working groups. Facilitation of group discussions requires keeping discussions on track, allowing all participants to speak, and ensuring key issues are addressed and the objectives are met. We develop a series of framing questions for each exercise move built around key policy issues. The facilitators use these framing questions to drive the exercise discussions. Working groups report back in plenary sessions so that participants can share their key thoughts and issues.

Deliverable 9a. Conduct Senior Leader Exercise
Deliverable 9.b Conduct TTX 1
Deliverable 9.c Conduct TTX 2
Deliverable 9.d Conduct TTX 3

TTX 3 and the Senior Leader TTX

To meet the objective of reviewing decision-making processes and coordination within and between jurisdictions, we propose adding a dynamic element to the largest TTXs (TTX 3 and the Senior Leader TTX). In addition to using group discussions, we propose breaking the participants into working groups according to their jurisdictions and the framework of the RECP. Each group will address individual taskings and issues within the scenario, and interact and coordinate with other groups as dictated by the scenario. This approach has two advantages:

- It simulates existing boundaries between jurisdictions and entities, and identifies where coordination and information sharing connections need to occur
- It requires participants to build working relationships with their counterparts in other jurisdictions and agencies (a key objective stated in the RFP).

This approach also introduces an element of free play into the tabletop exercise when participants are required to make decisions that can affect other players. As a result, it requires a more dynamic approach to control, where the facilitators react to these decisions and provide additional information into the exercise based upon them. Our facilitators have the exercise experience and subject matter expertise to successfully use this type of approach.

For the Senior Leader TTX, we will separate the senior leadership in a group that works on policy issues and creates taskings for the other participants to carry out and brief back to the leadership. This will allow all participants to participate and interact with the other players. As the accompanying box indicates, we used this approach successfully in a series of senior decision-making TTXs for HHS.

Example: Using TTXs to Assess Coordination and to Build Partnerships within HHS

- We designed a series of TTXs to engage both senior leadership and agency level personnel
- These exercises included multiple agencies within HHS that are located in different geographic areas (e.g., CDC, USPHS)
- Agencies had to share information and coordinate among groups to make recommendations for senior leadership
- Participants briefed recommendations to senior leaders, who discussed them and made decisions

3.2.3.9 Presentation Support

An experienced member of the exercise implementation team will control the computer presentation equipment (e.g., laptop and projector) to ensure presentations run smoothly and address technical difficulties if they arise.

3.2.3.10 Issue Capture

Our exercise implementation team includes experienced recorders and data collectors to capture issues that arise during exercise play. When possible, we capture notes electronically so that they can be efficiently incorporated in the after action analysis. We often organize electronically captured notes into a power point presentation to help focus the hotwash discussion.

3.2.3.11 Food and Beverages

We will provide food and non-alcoholic beverages for all participants. This will include a continental breakfast, lunch, and snacks.

3.2.3.12 After Action Report (AAR)

The NCR Exercise Team will define evaluation requirements during the planning process and develop a plan for evaluating the exercise. We then train the facilitators and recorders on the information to collect and record during the exercise. The evaluation is focused on the exercise goals and captures key policy issues, gaps in inter-jurisdictional coordination and improvement opportunities identified by the exercise participants.

In addition to notes taken by facilitators and recorders, we will conduct a hotwash following each exercise to gain input from the players on key issues. Participant feedback forms are another means we employ to collect information from the players.

Following the exercise, the evaluation team will analyze the data collected during the exercise and compare what participants said they would do to respond to the scenario with existing plans, policies, procedures, resources, and agreements. We then identify and analyze differences or gaps. The dynamic design of the TTX 3 and the Senior Leader TTX will provide a more rigorous evaluation opportunity than TTX 1 and 2 because it will help drive participants to make decisions and describe the concrete actions they would take.

The evaluation team focuses on clarifying plans, policies, and procedures; assessing their consistency across jurisdictions; assessing jurisdictional roles, responsibilities, and authorities; assessing coordination and cooperation among jurisdictions; and identifying lessons learned. Recommendations for improvement focus on changes needed to policies, plans and procedures; organizational structures; leadership and management processes; training; and resources. One focus of the AAR for the Senior Leader TTX will be to identify key inter-jurisdictional policy issues and make recommendations for addressing those issues. Finally, we will also collect information on the conduct of the exercise itself to help improve future exercises.

Deliverable 10 a. After Action Report

We will document our analysis in an HSEEP-compliant AAR. We will post a draft AAR on the Internet for comment and review. We will then incorporate all comments and changes into a final AAR.

3.2.4 Operations-Based Exercises: CPX/EOC Functional Exercise and Full Field Exercise

The RFP calls for two Operations-Based Exercises: A Command Post Exercise (CPX) and a Full Field Exercise.

CPXs are designed to test and evaluate the processes and procedures within Emergency Operations Centers (EOCs). A SIMCELL is used to inject information into the EOC to create a dynamic and realistic environment based on the exercise scenario. CPXs are typically the next level of complexity in an exercise cycle. We will design, conduct, and evaluate a multi-jurisdictional CPX that focuses on command and operating processes within individual EOCs as well as coordination and communications among EOCs.

We Bring Experience in Designing CPXs to Evaluate Coordination in a Multi-Jurisdictional Environment

- We designed, conducted and evaluated the TOPOFF 3 National CPX.
- We are currently planning t he TOPOFF 4 National CPX
- We conducted a multi-state CPX examining a foreign animal disease outbreak for the USDA. The exercise also involved play by Canadian EOCs.

Full Field Exercises can range from single or multi-site field exercises to full scale exercises (FSEs) designed to evaluate the operational capability of emergency management systems in an integrated manner. They can involve a multi-agency response to a scenario in multiple venues that includes agency EOCs, Incident Command Posts (ICPs), hospitals, and simulated incident sites. FSEs are complex events—often with a substantial "free play" component—requiring detailed planning and coordination, and a well prepared exercise control and SIMCELL team. An FSE is typically conducted as the culmination of the exercise cycle.

However, the RFP requires a full field exercise without the integration of EOCs such as is found in FSEs. We will conduct one full field exercise that includes three field sites. The exercise may require the use of volunteers to act as mock victims. We assume that if necessary, volunteer recruitment and site preparation (including moulage makeup and simulated destruction) will be accomplished by the COG. Of the six objectives called out in the RFP, key objectives for these two exercises are likely to be:

- Review command and operating processes and procedures
- Evaluate communication processes
- Understand jurisdictional roles and responsibilities under the NRP and regional plans
- Build partnerships between regional agencies and with Federal partners, and
- Understand the laws and authorities guiding the inter-jurisdictional response.

The Full Field Exercise will focus an achieving these objectives at incident sites while the CPX will focus on meeting these objectives in the multi-jurisdiction, multi-agency EOC environment. Additionally, the CPX will address one additional RFP objective: Review decision-making processes and the coordination of these processes within and between jurisdictions.

As we describe below, we will work with the NCR to set specific objectives for each exercise, select the appropriate exercise design to meet the stated objectives within the general objectives

specified in the RFP, and conduct an evaluation focused on these objectives. For example, the CPX may assess the use of the Regional Incident Communication and Coordination System (RICCS). Thus the exercise must be designed to support the use of this system during the exercise, and we must develop appropriate performance measures and data from the system to support an analysis of its performance.

3.2.4.1 Exercise Planning Team

We will work with the NCR to establish a planning group for each exercise. This team will be responsible for developing specific exercise sub-objectives under the general ones listed above, providing background information and material to support the exercise design and development process, helping to ensure the scenario is tailored to jurisdictional needs, and reviewing exercise materials. The planning meetings discussed in the next section are the structure through which these activities will take place.

3.2.4.2 Exercise Planning Meetings

We follow the exercise planning process described previously in Section 3.2.3.2. For the CPX and Full Field exercises, an important additional purpose of the MPC and FPC is to conduct rigorous reviews of the MSEL. This review involves assessing whether proposed injects are realistic and will meet exercise objectives. In addition, expected player actions for each agency shown in the MSEL are confirmed.

Deliverable 2b. Kickoff meeting for each exercise
Deliverable 12. Exercise meeting minutes

3.2.4.3 Exercise Agenda

After the kickoff meeting, we will develop a draft exercise agenda based on the discussion during the meeting. This meeting agenda will be reviewed by the NCR exercise planning group and we will incorporate all changes into a final agenda.

Deliverable 3. Exercise agenda

3.2.4.4 Individual interviews

We use individual interviews to gather information for the exercise planning process as described in Section 3.2.3.3. For the CPX and Full Field Exercise, these interviews will also be used to help us refine the MSEL (discussed below), and craft realistic exercise injects. For the CPX, the interviews also help develop material that allows us to simulate non-participating agencies and organizations.

3.2.4.5 Exercise Materials

We develop a Scenario Briefing and Exercise Guide for the CPX as described in Section 3.2.3.7. In addition, we develop the following for both types of exercises:

- **Master Scenario Event List** (MSEL): This is the primary exercise control document used by the exercise implementation team to provide player injects and track exercise play. It is a detailed schedule of exercise events that describes exercise injects and expected player actions and includes the supporting material needed by controllers and the SIMCELL to initiate injects during the exercise. We develop the MSEL using a Microsoft Access ™ MSEL database. Through the MPC and FPC, the MSEL is reviewed, validated, and synchronized.
- **Exercise Plan** (EXPLAN): This document is designed to assist the exercise implementation team in executing the exercise. It provides an overview of the exercise concept, scenario, and objectives, assigns roles and responsibilities (e.g., controller, data collector, evaluator, SIMCELL), and contains logistical and administrative information. The Evaluation Plan (EVALPLAN) and Control Staff Instruction (COSIN) are typically included as annexes to this plan.

How We Develop the MSEL

- Start with the basic chronology of the exercise scenario
- Based on plan reviews and interviews, add the actions that we expect the players to take in response to the scenario events
- Add injects to simulate actions of non-participating agencies and organizations (this is important in the CPX where there is no field play and information must be fed to the EOCs from the simulated incident sites)
- Develop additional injects focused on specific sub-objectives that the planning group would like players to address (e.g., support to special needs populations)
- Develop contingency injects to stimulate players to take actions in the event that they do not take actions necessary to advance the game play

Deliverable 5. Exercise Guide
Deliverable 6. Scenario Briefings
Deliverable 7. Master Scenario Events List

We will prepare drafts of all documents for review by the exercise planning group.

3.2.4.6 Food and Beverages

We will provide food and non-alcoholic beverages for all participants. This will include a breakfast, lunch, and snacks.

3.2.4.7 Exercise Control

Our control cell enables "dynamic" control of the exercise—that is, it supports a true "free-play" exercise. The control methodology for each exercise is spelled out in the COSIN. Controllers track the MSEL and observe exercise play to ensure it is staying within the designed boundaries. Controllers also deliver injects to advance exercise play and take actions to bound play when necessary. For the CPX, exercise control is assisted by a SIMCELL (see below) to help move the exercise event timeline forward. The text box shows how our control approach responds to player actions in a free play environment.

Dynamic Control Ensures Outcomes Are Achieved

Example: Operation Diamond Shield II, Delaware FSE

Desired Outcome: Test field epidemiological investigation procedures

Example of Dynamic Control:

- During exercise, epidemiologists in the State Health Operations Center (SHOC) failed to deploy epidemiological response teams early in the exercise
- These teams were needed to gather data from the hospitals
- Exercise controllers withheld these data from the epidemiologists until they took the actions necessary to get the data

Deliverable 9f. Conduct Functional Exercise
Deliverable 9g. Conduct Full Field Exercise

We train all controllers prior to the exercise. This training includes a review of the MSEL so that all of the control staff knows what is expected to happen and how to implement injects. Because the RFP specified only evaluators, our control staff will also serve as evaluators to reduce the overall size of the exercise implementation team.

3.2.4.8 Simulation Cell (SIMCELL)

A SIMCELL will be used in the CPX to inject information into the EOC to create a dynamic and realistic environment based on the exercise scenario. Controllers within the SIMCELL also simulate actions by individuals or agencies that are not participating in the exercise. This might include some Federal agencies, neighboring state officials, or organizations such as hospitals.

We Will Leverage Our SMEs in the SIMCELL

As former government emergency response personnel, our subject matter experts have the experience necessary to:

- Simulate these roles in a realistic manner
- React quickly to unanticipated requests or actions by players.

In Operation Diamond Shield II, members of the SIMCELL had to play diverse roles, such as hospital, emergency management and Federal public health personnel. They interacted with players and answered many unanticipated questions during the exercise.

3.2.4.9 Exercise Evaluation

Our evaluation methodology reflects the experience we acquired during TOPOFF 2 and 3, and numerous exercises for state and local agencies. Key characteristics of our evaluation approach are shown in the figure below. It is designed to support the NCR in the development of a Corrective Action Program and the testing of these corrective actions in future exercises.

Developing the Evaluation Plan (EVALPLAN)

We will develop an exercise evaluation plan that is focused on the objectives chosen for each exercise. As shown in the figure below, we draw from national and regional doctrine, such as the NRP, TCL, and RECP to select specific outcomes to evaluate during the exercise. We link each outcome to a capability and define the critical tasks and activities that are associated with each. For the NCR, jurisdictional plans and the exercise planning group will guide this process. In the final step, we define specific measures and the data that we will collect for the evaluation. These are defined in the evaluation plan and the supporting evaluation guides. We use the HSEEP Exercise Evaluation Guides (EEGs) where appropriate, but we have found that further refinements are required to evaluate complex cross-jurisdictional issues. We illustrate this with an example below.

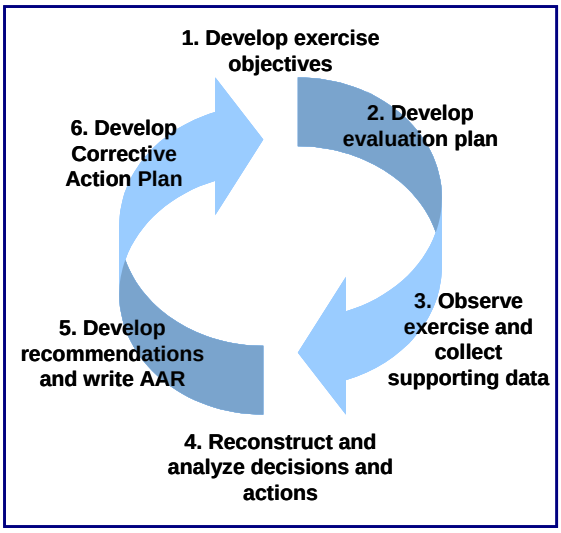


Figure 3.2.4.9-1: Evaluation Methodology

The current HSEEP EEGs (and the UTL and TCL) focus on the execution of individual tasks and activities, and are not sufficiently developed at this point to permit full evaluation of inter-jurisdictional issues, such as coordination, policy-making, and decision-making. We experienced this issue during our work on the TOPOFF 3 evaluation. TOPOFF 3 focused heavily on inter-agency and multi-jurisdictional coordination, communication and senior level decision-making.

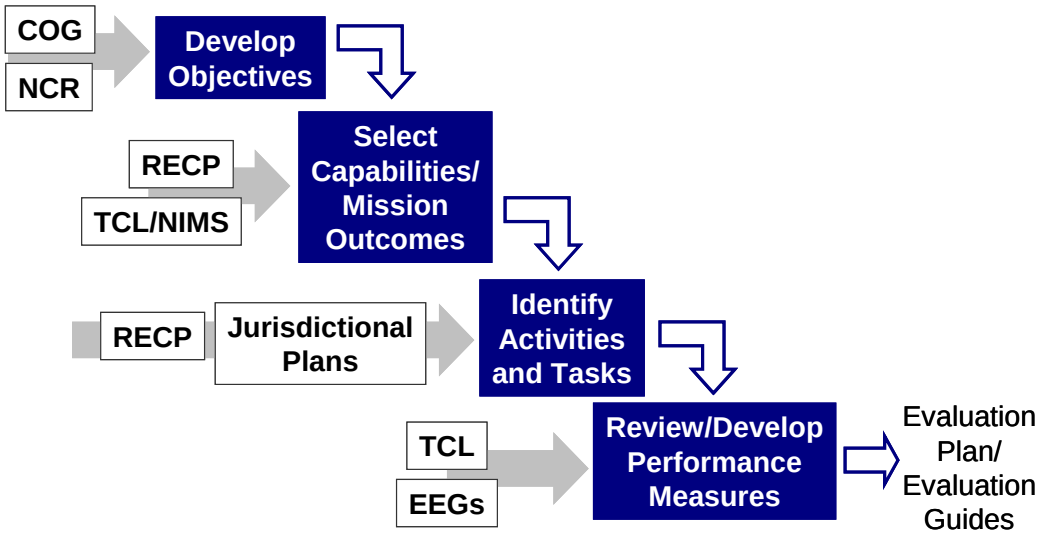


Figure 3.2.4.9-2: Developing an Evaluation Plan

A key area of interest that has emerged in CPXs and full scale exercises like TOPOFF 3 is shared situational awareness (also called maintaining a common operating picture or COP) among agencies and jurisdictions during an emergency response. Current tasks and metrics within the TCL and EEGs focus on activities like the frequency of situation reports and the execution of related tasks. However, these meas-

ures do not address the quality of such reports and how they compare across jurisdictions. As a result, they do not permit an assessment of shared situational awareness. We have developed additional approaches to analyze this issue.

In Figure 3.2.4.9-3 we show an example measure that could be used during the CPX to assess shared situational awareness among EOCs in the NCR. The figure hypothetically compares the fraction of ground truth (i.e., the actual exercise scenario) known to different EOCs at set times during this exercise. Using an evaluative approach and metric like this, we would examine how much of the operating picture the EOCs had correct, how much they had in common, and how this improved (or worsened) over time. Based on this type of analysis, the exercise could lead to specific recommendations on how to improve coordination and communication processes.

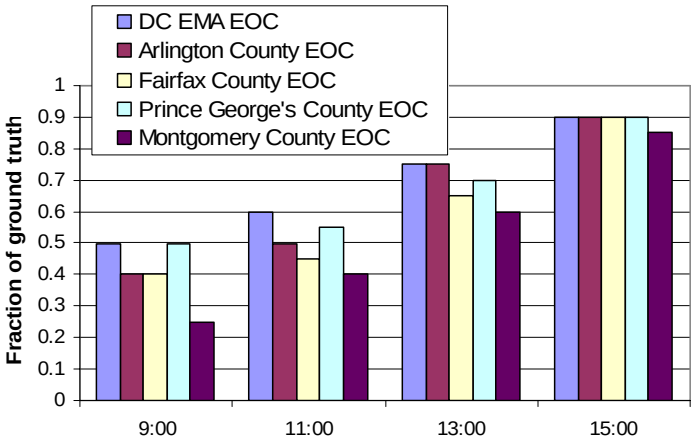


Figure 3.2.4.9-3. Sample Performance Measure

Data Collection During the Exercise

Our data collection and evaluation team consists of a core group of subject matter experts with both emergency management and exercise expertise per the RFP. We will provide 20 evaluators for the Full Field exercise and 50 evaluators for the CPX. We train all exercise evaluators on:

- The evaluation methodology and EVALPLAN
- How to use the evaluation guides during the exercise
- What additional data they need to collect (e.g., situation reports, EOC logs)
- The MSEL and what to expect during the exercise.

We also train our evaluators to look for the unexpected. We have evaluated many complex exercises, such as the TOPOFF FSEs, that involve senior leaders, multiple jurisdictions and large numbers of players. Unanticipated decisions and actions that can have important implications for the evaluation are likely to happen in this type of environment. Thus, evaluators cannot only focus on filling out an evaluation guide or checklist. They need to understand the objectives and issues, and be able to interpret what is going on during the exercise and how it will impact the evaluation.

The impressions of exercise participants are also an important source of data. At the close of each exercise, an experienced facilitator will conduct a hotwash to gain immediate feedback from the participants. It is important to collect these observations while they are still fresh in the participant's minds. In addition, we use player feedback forms as another avenue for collecting input from the exercise participants. We also collect information on the conduct of the exercise itself to help improve future exercises.

3.2.4.10 After Action Report (AAR)

In the analysis phase, our evaluation team reviews and synthesizes the data gathered during the exercise. We conduct a detailed reconstruction of the exercise to provide a fact-based time-synchronized sequence of events that took place. Our experience indicates that exercise reconstruction is the key step in ensuring that the evaluation and recommendations are based on facts about what actually happened as opposed simply to recollections of what observers or players think may have happened. We build the reconstruction using the MSEL database as the basic framework. The format of our reconstruction database also allows participants to effectively "replay" the exercise and see how their agency decisions and actions interacted with those of other agencies. The reconstruction can be used subsequently by NCR jurisdictions in future training activities (for example, to develop scenario-based training sessions on emergency plans and procedures).

Because of the large number of venues and participants for the CPX, we will collect a large amount of data that must be quickly synthesized and incorporated into the reconstruction. Through our experience on TOPOFF, we have developed procedures for capturing data electronically, which will speed the reconstruction process and help us meet the quick turnaround times dictated in the RFP for the AAR.

For the CPX/EOC functional exercise, we anticipate that areas of focus could be:

- The execution of actual policies, procedures and processes within each individual EOC
- The coordination and communications among the jurisdictions, possibly assessing the ability of the EOCs to achieve and maintain a common operational picture early in the response.

We have found it is important to address both areas to determine whether EOC policies and procedures are sufficient to support quality senior leader decision-making and coordinated information flow within the NCR. For the Full Field exercise, we anticipate that the evaluation could focus on multi-jurisdictional coordination at incident sites.

Deliverable 10a. After Action Report

The evaluation team will then prepare a draft after action report that conforms to HSEEP guidelines. This report will be posted on the Internet for comment and review by the planning group and other participating agencies. The AAR will identify issues, summarize findings, and include recommendations for improvements.

3.2.5 Event AARs

For actual (i.e. real world) events AARs, we have developed three approaches over time:

- **Direct observation**: We put dedicated observers with emergency response personnel to observe and document the response first-hand. This speeds up the process of creating an AAR by allowing us to make observations and collect data while the response is ongoing. Following the event, we incorporate elements of the retrospective analysis, discussed below, to develop the AAR.
- **Retrospective analysis and reconstruction**: We conduct the analysis using a retrospective data collection process that relies on using two main sources of information: hotwash meeting and/or a series of interviews with key individuals. In addition, we collect and analyze agency logs, situation reports, incident action plans, and related types of data. For complex events, we compile a reconstruction, which is important for ensuring a fact-based and accurate analysis.
- **Focus group**: We convene a single meeting of personnel involved in the response to an event to discuss issues and lessons learned, and develop recommendations in a workshop environment. We typically use a combination of facilitated working sessions and group discussions to formulate and refine the issues and recommendations.

Examples of Our Customized Approach to AARs

Direct observation during Hurricane Katrina

- Deployed analysts on the USNS Comfort (the Navy's hospital ship)
- Deployed analysts with the U.S. Public Health Personnel who set up and operated Federal Medical Shelters
- Stationed analysts to observe and work in DoD and HHS command centers

Using retrospective analysis and reconstruction

- 2004 Florida hurricanes
- 2004 Ricin incident in the Dirksen Senate Office building
- 2002-2003 Exotic Newcastle Disease outbreak

Using Focus Groups

- Brought HHS and DHS personnel together to examine the interaction of the HHS regional emergency coordinators with their counterparts in the DHS National Disaster Medical System during the Federal response to Hurricanes Katrina, Rita, and Wilma.

These three approaches have distinct advantages and disadvantages. For example, through a focus group we can produce an AAR in a short period of time, one that allows agencies to quickly move forward in implementing corrective actions. A retrospective reconstruction and analysis takes more time and effort, but provides a more comprehensive and fact-based analysis, which can be important in large-scale or complex events. We will work with the NCR to determine which approach is best for the events it chooses to evaluate. For the four event AARs, we have assumed the following:

- One (1) will use a large-scale retrospective analysis (with reconstruction)
- One (1) will use a smaller-scale retrospective analysis
- Two (2) will use focus groups.

We will work with the NCR to identify individuals that played key roles in the designated events or possess relevant knowledge and expertise. The number of interviews conducted will depend on the scope of the event and the AAR and whether we conduct an event hotwash. We use these

interviews to help identify and clarify what parts of the response to the event went well, what issues arose, and what the possible solutions are. Our process for interviews was described earlier in Section 3.2.3.3.

In the analysis phase, we will review and synthesize other data gathered along with the interview notes. We will identify key issues, perform root cause analyses, and identify best practices and lessons learned. The evaluation team will then prepare a draft after action report. This report will provide a summary and analysis of the information collected as well as recommendations for improvement. It will be posted on the Internet for comment and review.

Deliverable 10b. After Action Reports for Events

3.3 Work Plan

3.3.1 Overview

We will take a task-organized approach to executing the work specified in the RFP. The Project Manager, Mr. Rickman, has the following teams to execute each exercise including the supporting activities as well as develop the event AARs:

- **Exercise development and design team:** This team is responsible for helping the NCR establish a core planning group, developing the content for all exercise planning meetings, developing all material used to execute the exercise except the COSIN and EVALPLAN, developing the MSEL (for the CPX/EOC functional and full field exercises), and providing the exercise SIMCELL for the CPX/EOC functional exercise.
- **Exercise control/evaluation team:** This team is responsible for developing the COSIN and EVALPLAN (in the case of the CPX/EOC functional and full field exercises), training and providing evaluators for the TTXs and the required number of controller/evaluators for the CPX/EOC functional and full field exercises, and note-takers to capture issues for the AAR at all exercises and events. This team will also write the AARs for all exercises and events.
- **Exercise logistics team:** This team is responsible for securing spaces for and setting up all meetings and TTXs, for providing food and beverages, for supporting on-site registration, and for providing a computer operator to run the presentations. In addition, this team will develop the NCR exercise website.
- **Exercise Facilitator:** This individual is responsible for facilitating the Senior Leader Exercise and other TTXs. Other experienced facilitators will support him as required in the TTXs.

Key personnel from CNAC will lead each of the first three teams and have overall responsibility for all exercises and tasks in their areas. As each exercise or event AAR is released under this contract, each team lead will identify the personnel required to conduct the required subtasks from the team's pool of qualified personnel (key and supporting). As a result, each specific exercise and event will have a small core team to conduct all the planning, design and development activities. This type of organization will be critical if we are to execute the many concurrent activities required to complete six exercises and four event AARs by March 31, 2007.

The team's subject matter experts (key and supporting) will provide the following support:

- They will support the Project Manager and the team leads with the planning meetings, specifically working with NCR and Federal government agencies.
- They will provide expertise and expert reviews to the exercise development and design teams and control/evaluation teams.
- They will participate in the CPX/EOC functional exercise SIMCELL.

The Project Manager will also be supported by an individual with project control responsibilities who will be responsible for overseeing the production of bi-weekly progress reports.

The task organization described above is an approach that has been used to successfully execute the TOPOFF series exercises. As noted elsewhere in this proposal, the TOPOFF series requires a number of concurrent activities in order to support sequential exercise events.

For the four event AARs, we have proposed two different analytical approaches. Two of the AARs will be developed using a hotwash/focus group approach. The other two are a more involved form of retrospective analysis where we conduct individual interviews and do an extensive review of records, logs and other data. The former approach might be taken for an AAR covering a special event on the mall; the latter for a natural disaster like a hurricane. The work plan reflects these different approaches.

3.3.2 Specific Tasks

This section describes the execution of each specific task. The WBS in Section 3.4.3 provides details of the execution and the resources we propose for each task and subtask. Our proposed schedule is in Section 3.4.3.

3.3.2.1 Task 1 Kickoff Meeting

Objective: Present project plan and schedule, identify core planning group, review project objectives and outcomes
Outcome: An approved project plan, core planning group identified and a clear understanding between project team and COG of exercise objectives and desired outcomes.

Our Project Manager and team leads will participate in this meeting.

3.3.2.2 Task 2 Exercise Website

Objective: Develop a website and maintain it for nine months after the kickoff meeting.
Outcome: Website successfully supports the Comprehensive Exercise Program

Our exercise logistics lead will work with our DBE to develop this website according to the specifications outlined in the proposal.

3.3.2.3 Task 3 TTX 1

Objective: Design, conduct and evaluate a half-day tabletop exercise with 125 participants

Outcome: Exercise successfully executed on the planned date with draft AAR delivered 15 days after the exercise

Our key personnel team leads (Mr. Rickman, Mr. Hall, Ms. Giovachino and Ms. Sherman) will oversee exercise design activities by a core team of individuals. The lead facilitator will support these activities as well. For the exercise, we will add additional facilitators to support breakout sessions and one note taker for each session. After the exercise, a team of two individuals will be responsible for writing the AAR.

3.3.2.4 Task 4 TTX 2

Objective: Design, conduct and evaluate a half-day tabletop exercise with 125 participants.
Outcome: Exercise successfully executed on the planned date with draft AAR delivered 15 days after the exercise.

Our key personnel team leads (Mr. Rickman, Mr. Hall, Ms. Giovachino and Ms. Sherman) will oversee exercise design activities by a core team of individuals. The lead facilitator will support these activities as well. For the exercise, we will add additional facilitators to support breakout sessions and one note taker for each session. After the exercise, a team of two individuals will be responsible for writing the AAR.

3.3.2.5 Task 5 TTX 3

Objective: Design, conduct and evaluate a full day tabletop exercise with 225 participants
Outcome: Exercise successfully executed on the planned date with draft AAR delivered 15 days after the exercise

Our key personnel team leads (Mr. Rickman, Mr. Hall, Ms. Giovachino and Ms. Sherman) will oversee exercise design activities by a core team of individuals. The lead facilitator will support these activities as well. For the exercise, we will add additional facilitators to support breakout sessions and one note taker for each session. This TTX is larger than the other two, so we have adjusted the number of support facilitators and note takers to reflect this. After the exercise, a team of two individuals will be responsible for writing the AAR.

3.3.2.6 Task 6 Senior Leader TTX

Objective: Design, conduct and evaluate a full day Senior Leader tabletop exercise with 250 participants
Outcome: Exercise successfully executed on the planned date with draft AAR delivered 15 days after the exercise

Our key personnel team leads (Mr. Rickman, Mr. Hall, Ms. Giovachino and Ms. Sherman) will oversee exercise design activities by a core team of four individuals. The lead facilitator will support these activities as well. Because of the primary audience for this exercise, we will bring in experienced individuals who have supported the DHS Senior Officials Exercise including Dr. Speer. For the exercise, we will add additional facilitators to support breakout sessions and one note taker for each session. The Senior Level TTX is also larger than the first two TTXs, so we

have adjusted the number of support facilitators and note takers to reflect this. After the exercise, a team of two individuals will be responsible for writing the AAR.

3.3.2.7 Task 7 CPX/EOC Functional Exercise

Objective: Design, conduct and evaluate a CPX/EOC exercise with 25 EOCs and 600 participants
Outcome: Exercise successfully executed on the planned date with draft AAR delivered 15 days after the exercise

Our key personnel team leads (Mr. Rickman, Mr. Hall, Ms. Giovachino and Ms. Sherman) will oversee exercise design activities by a core team of individuals. A significant additional task in this exercise is the development of the MSEL. This effort has two components: developing the actual MSEL entries and the material to support exercise injects and developing the database that will be used to track the MSEL during the exercise. We have individuals dedicated to these particular sub tasks. As the date for the exercise draws near, the core exercise team will be expanded with 50 controller/ evaluators and a SIMCELL. Just prior to the exercise, these individuals will receive training. The evaluators will support the exercise, participate in the hotwashes, and provide exercise observations to the AAR writers. After the exercise, a team of two individuals will be responsible for writing the AAR.

3.3.2.8 Task 8 Full Field Exercise

Objective: Design, conduct and evaluate a full field exercise with three sites and 500 participants
Outcome: Exercise successfully executed on the planned date with draft AAR delivered 15 days after the exercise

Our key personnel team leads (Mr. Rickman, Mr. Hall, Ms. Giovachino and Ms. Sherman) will oversee exercise design activities by a core team of individuals. As in the case of the CPX/EOC functional exercise, a significant additional task in this exercise is the development of the MSEL. This effort has two components: developing the actual MSEL entries and the material to support exercise injects and developing the database that will be used to track the MSEL during the exercise. We have individuals dedicated to these particular sub tasks. As the date for the exercise draws near, the core exercise team will be expanded with a minimum of 20 controller evaluators. Just prior to the exercise, these individuals will receive training. The evaluators will support the exercise, participate in the hotwashes, and provide exercise observations to the AAR writers. After the exercise, a team of two individuals will be responsible for writing the AAR.

3.3.2.9 Task 9 Event 1 AAR

Objective: Develop an AAR for event specified by the COG
Outcome: AAR delivered 30 days after each event

We will identify an event AAR lead under the overall direction of the AAR team lead. The event AAR lead will be supported by a small group of individuals who will help set-up and conduct

the hotwash/focus group. Two of the team members will write up the AAR. For each event AAR our Exercise Design Lead will play an important role because of past experience.

3.3.2.10 Task 10 Event 2 AAR

Objective: Develop an AAR for event specified by the COG
Outcome: AAR delivered 30 days after each event

We will identify an event AAR lead under the overall direction of the AAR team lead. The event AAR lead will be supported by a small group of individuals who will help set-up and conduct the hotwash/focus group. Two of the team members will write up the AAR. For each event AAR our Exercise Design Lead will play an important role because of past experience.

3.3.2.11 Task11 Event 3 AAR

Objective: Develop an AAR for event specified by the COG
Outcome: AAR delivered 30 days after each event

We will identify an event AAR lead under the overall direction of the AAR team lead. The event AAR lead will be supported by a group of individuals who will conduct interviews and review data made available by NCR agencies. Two of the team members will write up the AAR. For reference, we used the Hurricane Isabel AAR review commissioned by the District. This AAR included 85 interviews. For event 3, we have assumed an AAR somewhat smaller than the Hurricane effort. The event 4 AAR is assumed to be of the same scope as the Hurricane Isabel AAR. For each event AAR our Exercise Design Lead will play an important role because of past experience.

3.3.2.12 Task11 Event 4 AAR

Objective: Develop an AAR for event specified by the COG
Outcome: AAR delivered 30 days after each event

We will identify an event AAR lead under the overall direction of the AAR team lead. The event AAR lead will be supported by a group of individuals who will conduct interviews and review data made available by NCR agencies. Two of the team members will write up the AAR. For reference, we used the Hurricane Isabel AAR review commissioned by the District. This AAR included 85 interviews. For this event, we have assumed the AAR will be the same scope as the Hurricane Isabel AAR. For each event AAR our Exercise Design Lead will play an important role because of past experience.

3.4 Management Plan

The NCR Exercise Team's approach to managing the CECAP contract is based on CNAC's highly successful professional management structure and mature processes. We have been managing complex and broad-based projects for Government agencies for more than 60 years. We have the management structure, personnel systems and policies, financial support systems, and experience to ensure responsive and accountable management.

3.4.1 Proposed Management Structure

The NCR Exercise Team's management structure for CECAP is depicted in Figure 3.4.1-1. Our streamlined structure includes the following elements: (1) direct lines of authority and responsibility between COG and the NCR Exercise Team PM; (2) NCR Exercise Team PM reports directly to CNAC IPR President; (3) individual Task Managers oversee task teams that are assembled from the best talent in our team, and (4) oversight and problem resolution are rapid because all players in the chain maintain current knowledge of project needs and performance. The NCR Exercise Team's proposed PM, Mr. Steve Rickman is empowered with full authority to make decisions and manage all day-to-day activities of the project.

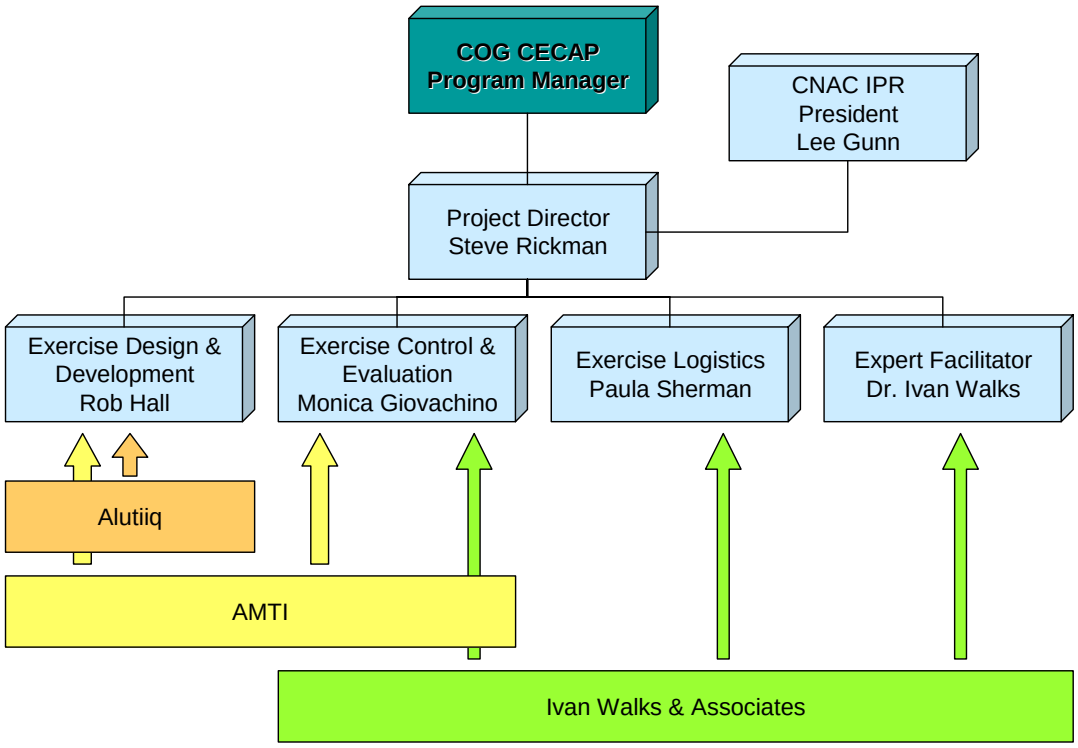


Figure 3.4.1-1. CNAC's Streamlined Management Structure for CECAP

Task Leadership. The NCR Exercise Team has selected task managers based on their ability to provide the best available technical leadership and experience. Task managers manage day-to-day activities of individual tasks and will serve as the primary point of contact between task teams and the appropriate COG managers when appropriate. NCR Exercise Team task managers

have direct responsibility for successful performance of work, and command the authority and resources to accomplish this goal. They are responsible for managing technical activities, schedules, resources, time monitoring, budget, and on-time delivery. They will report to the NCR Exercise Team PM and provide ongoing communication with him and CNAC's infrastructure support organizations such as Human Resources, Finance and Accounting, and Contracts.

Problem Resolution. The NCR Exercise Team's proposed CECAP PM will have responsibility and authority for resolving any problems that may arise, including allocation of resources. The NCR Exercise Team's breadth and depth of staff (over 1500 strong) mean that talented, experienced staff is available as needed.

As appropriate, our Task Managers and relevant staff will also communicate directly with COG on task issues through conference calls and project meetings to ensure a constant flow of communication and up-to-date status assessments. Mr. Rickman is assisted by CNAC's skilled contracts administration group and human resources staff. Dr. Paul Speer, Director of CNAC's Safety and Security business practice, provides CNAC executive oversight of the project, and Dr. Katherine McGrady provides independent quality reviews.

Table 3.4.1-1 describes the role and function of all key personnel on this project.

Table 3.4.1-1. Key Personnel Roles and Responsibilities

Key Person	Role/Responsibilities
Stephen Rickman	Project Manager.
Matthew Payne	Subject Matter expert: emergency public health response; assist exercise development and design team and control evaluation team
Paul Speer	Subject Matter expert: exercise design, control and evaluation; responsible for quality control
Rob Hall	Exercise Design and Development Lead
Monica Giovachino	Exercise Control/Evaluation Lead
Paula Sherman	Exercise Logistics Lead (e.g. facilities, workshop support,)
Rosemary Speers	Exercise Control/evaluation support
Joseph Zelinka	Subject matter expert: NCR emergency response panning, preparedness and operations; assist exercise design and development
Stephen Sharro	Subject matter expert: exercise design and execution, Federal response operations; assist exercise design and development lead and control/evaluation lead
Ivan Walks	Subject matter expert: NCR medical/public health response; assist exercise design and development, control and evaluation teams; Senior Leadership TTX facilitator
Rich Irwin	Subject matter expert: Federal emergency response operations and support to NCR response; assist exercise design and development team
Doug Boyd	Exercise design and development, facilitator
Samara Adrian	Exercise design and development, exercise control

3.4.2 Project Management

CNAC has over 60 years of experience successfully managing government contracts. We have established proven processes in place to ensure project success. The NCR Exercise Team's approach for organizing, staffing, and managing CECAP tasks builds on the following six elements: (1) an exceptionally qualified PM; (2) a strong plan for managing team members and a

team resource pool; (3) online collaboration and knowledge bases to support CECAP projects; (4) a proven approach for managing simultaneous multiple tasks (5) an Online Collaboration and Project Management System (OCPMS) for timely monitoring and reporting; and (6 a well-established plan for managing subcontractor relationships. Our entire approach is focused on timely, responsive support and a commitment to superior results. Later in this section, we describe our processes, approach, and methodologies for managing CECAP tasks. CNAC's management tools provide complete and timely visibility into progress toward cost, schedule and performance objectives.

3.4.2.1 Project Planning

The NCR Exercise Team knows that superior results are the product of two key principles: (1) excellent planning that accurately forecasts project activity and (2) application of the best resources for the job. For our team, the best resources mean program knowledge; experience; skills and technical disciplines; methodologies; tools; and data. Our Team uses a disciplined approach to task planning. Beginning with the planning phase, we will submit to COG detailed task plans that include the following:

- Development of appropriate levels of work breakdown structure (WBS).
- Schedule of optimized cost vis-à-vis product delivery dates.
- Critical path analysis (when appropriate).
- Resource allocation and just-in-time staffing.
- Method and milestones for reporting cost, schedule and performance based upon selected performance metrics or service level agreements.

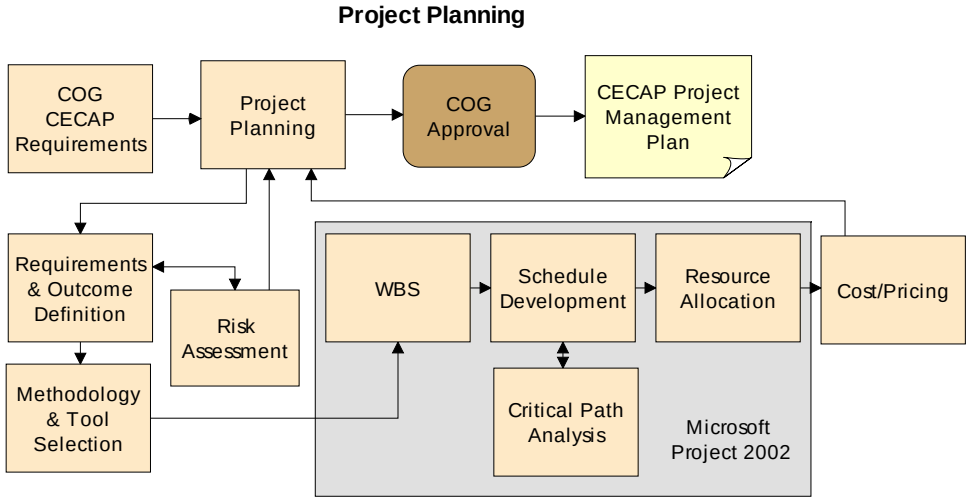


Figure 3.4.2.1-1. NCR Exercise Team's Approach for Task Planning

The above approach is depicted in Figure 3.4.2.1-1 in which we define clear task products and deliverables, along with progress metrics for evaluating task performance. A key to task planning is correctly identifying critical success factors that can affect outcomes. We make this activity integral to our approach. Additionally, when tasks involve risks other than normal cost/schedule risks, the Team develops a risk assessment using simplified fault tree analysis to

quantify the risks and develop risk mitigation measures. We facilitate the planning process by using MS Project 2002 loaded with labor rates and other planning factors.

We use this project planning information to develop the project management plan that will be applied by the task managers. Managers share this management plan with appropriate team members using the OCPMS so that staff familiarization can proceed seamlessly. The task management plan becomes the project operating plan after COG approval.

3.4.2.2 Project Controlling, Monitoring, and Reporting

Figure 3.4.2.2-1 depicts our approach to controlling task orders and includes task execution, monitoring progress, status reporting, resolving critical issues, and planning for subsequent phases of work.

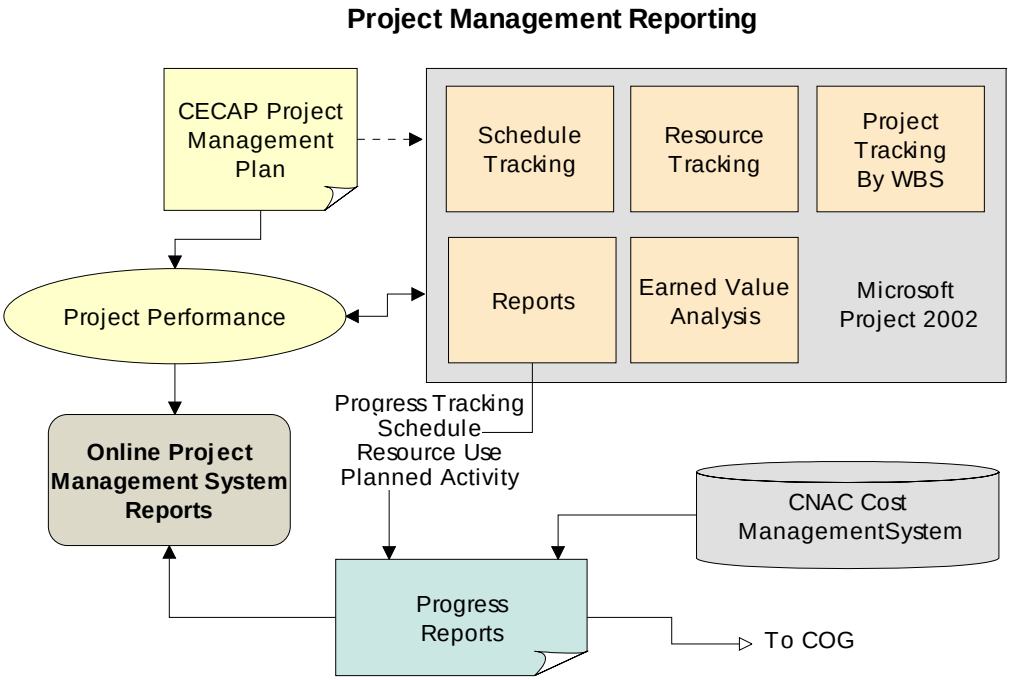


Figure 3.4.2.2-1: Project Reporting

Completing Tasks within Budget and on Schedule. Team members have a reputation for getting the job done in a timely manner while achieving excellent quality and task performance. We accomplish this via our strong commitment to rapid response accompanied by the following activities:

- Rapid, comprehensive task planning facilitated through our OCPMS and computer-aided tools for project planning.
- Team collaboration tools that enhance the efficiency of project work.
- Proven methodologies and relevant experience that assures “first-pass” success.
- Excellent tools for monitoring progress toward cost, schedule and performance objectives and managing rapidly changing events.

- A large, expert resource pool on which to draw when additional resources are required to meet demanding schedules
- A continuing review of schedule risks and prompt risk mitigation efforts.

3.4.2.3 Governance and Reporting Structure

CNAC has developed strong governance, contracting, and reporting structure for financial and contract accountability. Operation of these functions is depicted in Figure 3.4.2.3-1. CNAC has successfully served Federal, state, and local Government for more than 60 years and our systems for accountability are mature. Using our OCPMS, we will provide COG with timely access to costs, schedules, task performance, and QA reporting.

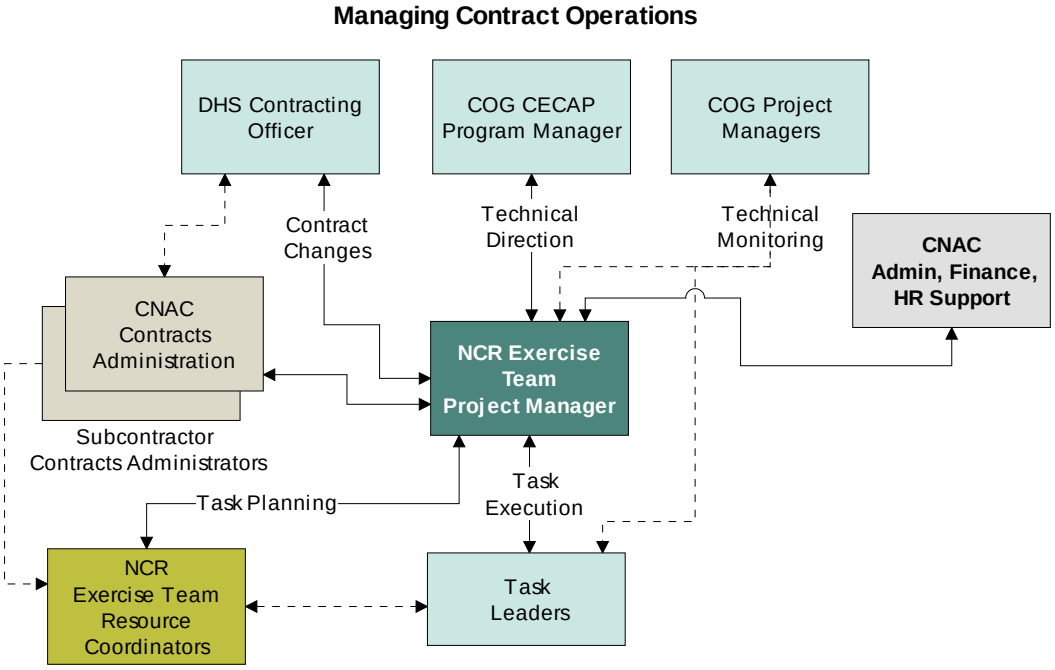


Figure 3.4.2.3-1. CNAC's Structure for Contract Governance

We monitor and track work progress using Gantt charts, milestone schedules, and event tracking against the previously developed MS Project 2002 project plan. Real-time tracking of task activities and performance metrics is available through the OCPMS, while we make cost tracking and reporting available from our approved cost accounting system. The Project Manager prepares monthly progress reports, which include technical progress, discussions of any problems and remedial action planned or taken to address them, summaries of planned activities for the following month, and detailed financial information. CNAC uses our integrated project planning and tracking system to monitor activities. CNAC's accounting system tracks actual rates of expenditure and levels of effort. Projected versus actual expenditure rates and performance metrics are displayed graphically for ease of monitoring. Reports are provided to senior management who ensure financial and contract performance.

3.4.2.4 Management Involvement

CNAC is committed to a strong, continuous management presence to ensure project success. At the same time, we believe in a management approach that fosters individual staff member creativity and responsibility. The integration of these two approaches results in the insertion of fresh new ideas and concepts within an established structure resulting in consistently superior project outcomes.

3.4.2.5 Customer Communications

CNAC believes in continuous communication with COG. This will occur in meetings or conferences calls, held at least monthly, between the CNAC team and COG. Mr. Rickman will lead these meetings for the CNAC team and the Task Managers will participate, along with selected staff members. Mr. Rickman is committed to a collegial, collaborative, supportive relationship with COG. He will be our principal point of contact with COG. We strongly encourage more frequent informal communication, in the form of phone calls, emails, or meetings, between our Project Manager and COG representatives and between our Task Managers and COG staff. This enables real time resolution of questions, issues, and potential problems.

Mr. Rickman will prepare and deliver a bi-weekly progress report that describes our activities during the preceding two week period, our planned activities during the subsequent two week period, and any problems foreseen or encountered. Additionally, we will clearly describe our progress in meeting upcoming deliverables.

3.4.2.6 Quality Assurance

Overview of QA Solution

QA is a primary element of every task the NCR Exercise Team undertakes. There are two distinct aspects of quality for CECAP: (1) the quality of the technical work and (2) the quality of project management. Our quality processes and standards are described in our Quality Assurance Policy. Our overall process for QA is depicted in Figure 3.4.2.6-1.

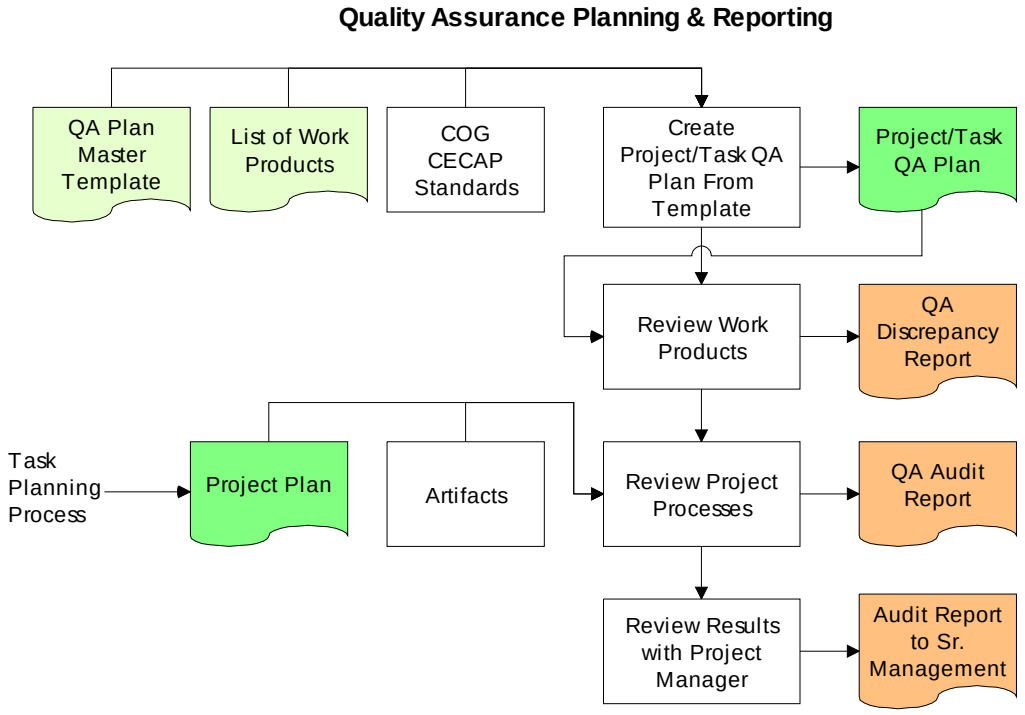


Figure 3.4.2.6-1. CNAC's Overall Process for QA

QA Planning. During task planning, the task team follows a QA planning process that incorporates quality standards and task-unique quality metrics. We use a standard QA plan template to ensure completeness, including assignment of a QA lead, an escalation policy, and a detailed process for QA inspection and reporting. Once a task begins, QA actions proceed in accordance with the management plan. During task kickoff, the task leader reviews the QA plan with the PM to account for all aspects important to the success of the task.

QC Review/Audit Process

CNAC employs a formal QA review and process, depicted in Figure 3.4.2.6-1. As part of QA, CNAC's senior management sponsors independent QA review of every project. The CECAP project will be subjected to the same stringent standards, where a qualified individual not connected with the project will conduct regular QA audits. The audit report is provided directly to Dr. Katherine McGrady, CNAC Vice President for Corporate Quality Control who will provide an independent corporate level quality review of all project work products and deliverables to ensure that they meet CNAC's stringent quality standards. Deficiencies identified in the report are tracked and reported until project personnel correct them.

Periodic QA Reviews

The CECAP PM will conduct a monthly quality review in conjunction with progress reviews or on a milestone-based schedule, depending on the task activities. The PM has ultimate authority

for overseeing all aspects of QA for all CECAP work. The work of our subcontractors is subject to the same QA standards.

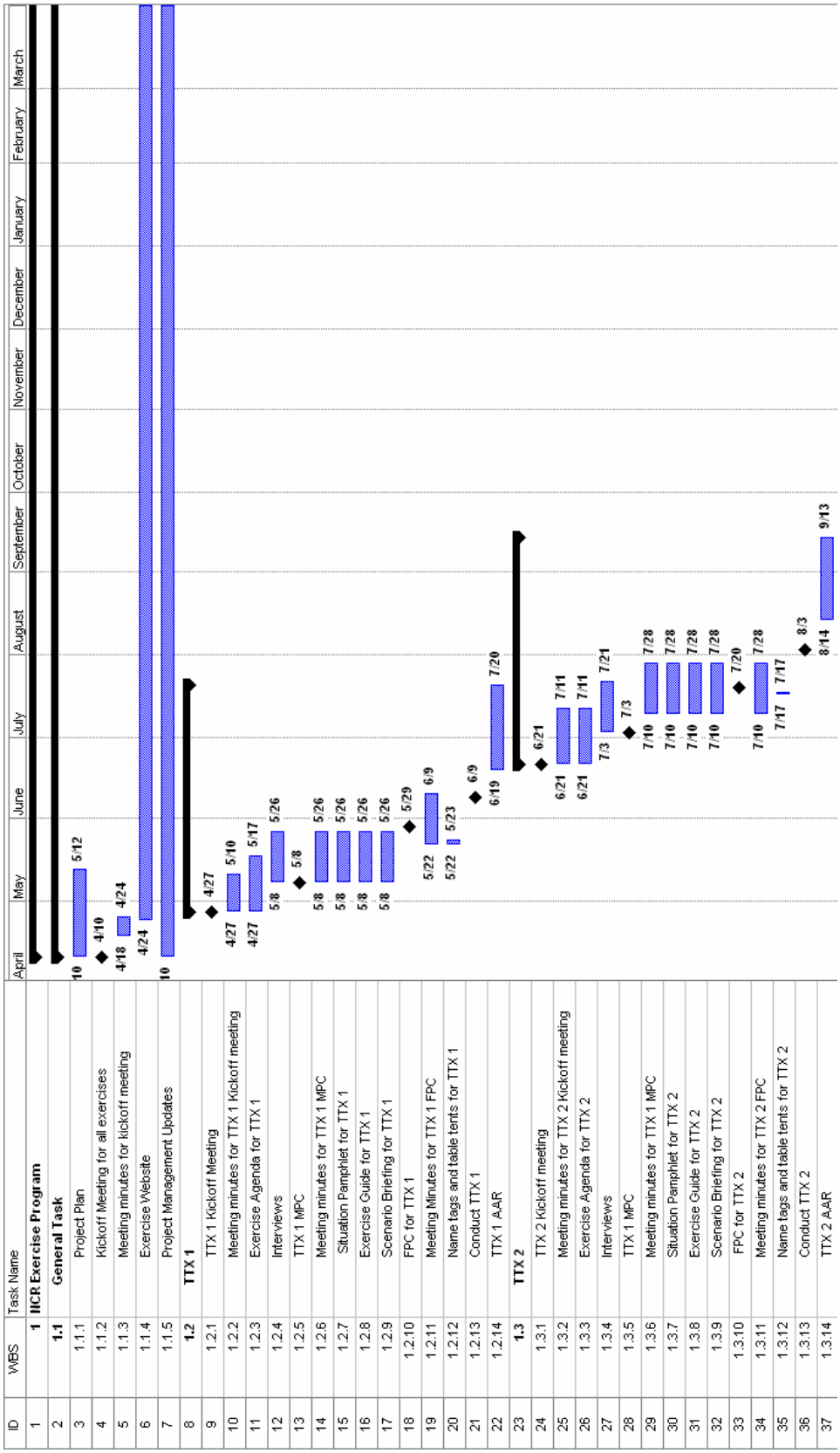
CNAC also conducts regular program reviews with our customer management. QA is the main focus of such reviews. CNAC IPR's President, Vice President of Contracts and Administration, Director of Human Resources, Corporate QA Manager, NCR Exercise Team's PM, and other managers will be invited to attend this review. These reviews have proven invaluable in ensuring communication and confirmation of contract performance at the highest level of both organizations.

Role of Senior Management in Quality
All QA functions report independently to Dr. Katherine McGrady, CNAC Vice President for Corporate Quality Control, Dr. McGrady will provide an independent corporate level quality review of all project work products and deliverables to ensure that they meet CNAC's stringent quality standards. She reports directly to CNAC's Chief Executive.

Handling Corrective Actions
CNAC insists on QA being in the forefront of every project. Every staff member is trained to understand that quality inspection and peer review are every staff member's job. Whenever a quality deficiency or potential for one exists, staff members are trained to take action to prevent the deficiency or correct it on the spot if possible, or at a minimum to bring it to the attention of the PM. Any deficiency not corrected on the spot is fully documented in a deficiency report using procedures described in our QA Handbook. Deficiency reports require immediate action by the PM and are reviewed by the QA Manager. When the deficiency is corrected, a Corrective Action Report is completed. The Corporate QA Manager reviews all deficiency and corrective action reports.

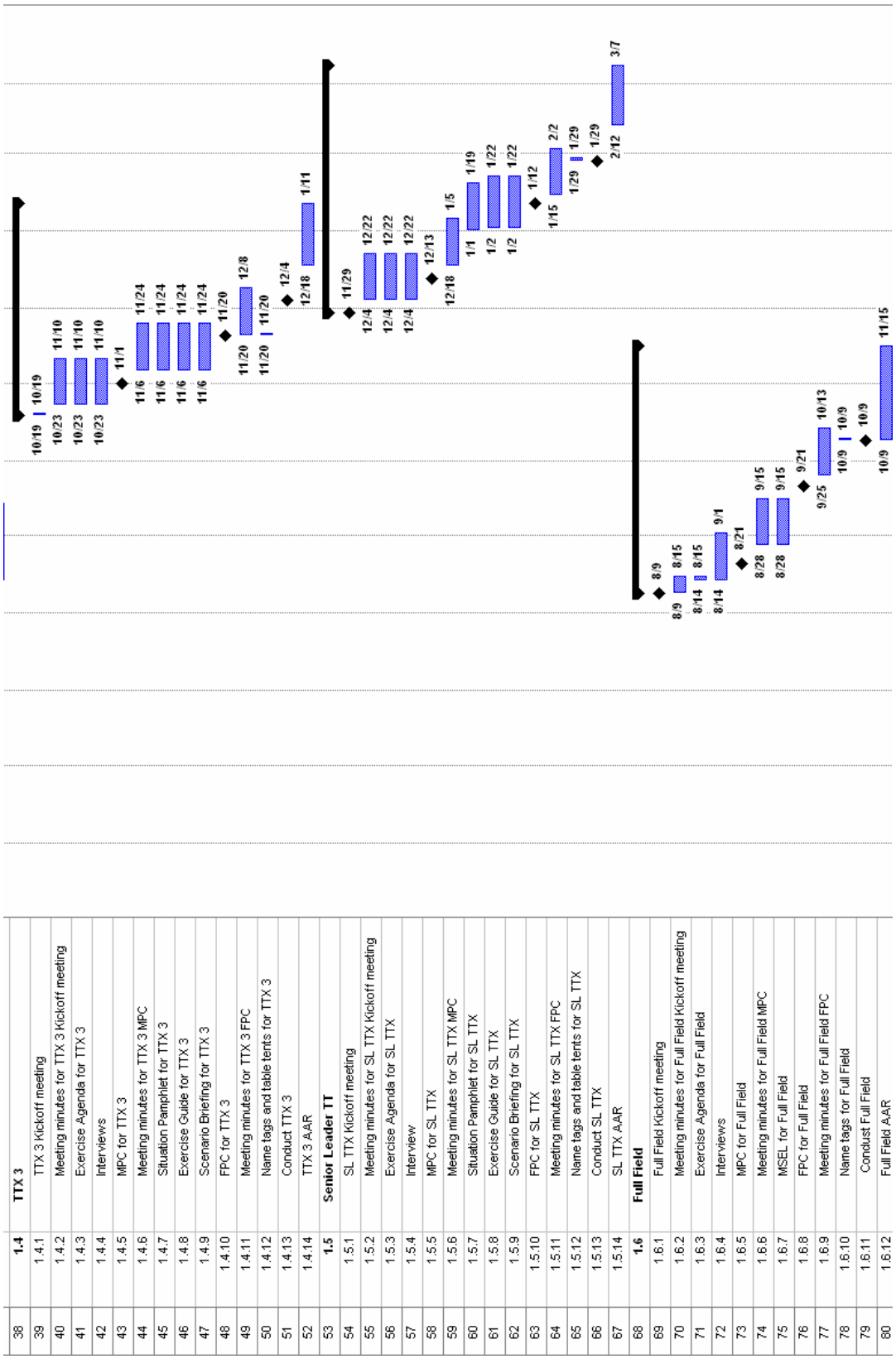
3.4.3 Project Schedule

Figure 3.4.3-1 through Figure 3.4.3-3 on the subsequent pages show the CNAC Team's proposed project schedule developed using Microsoft Project.



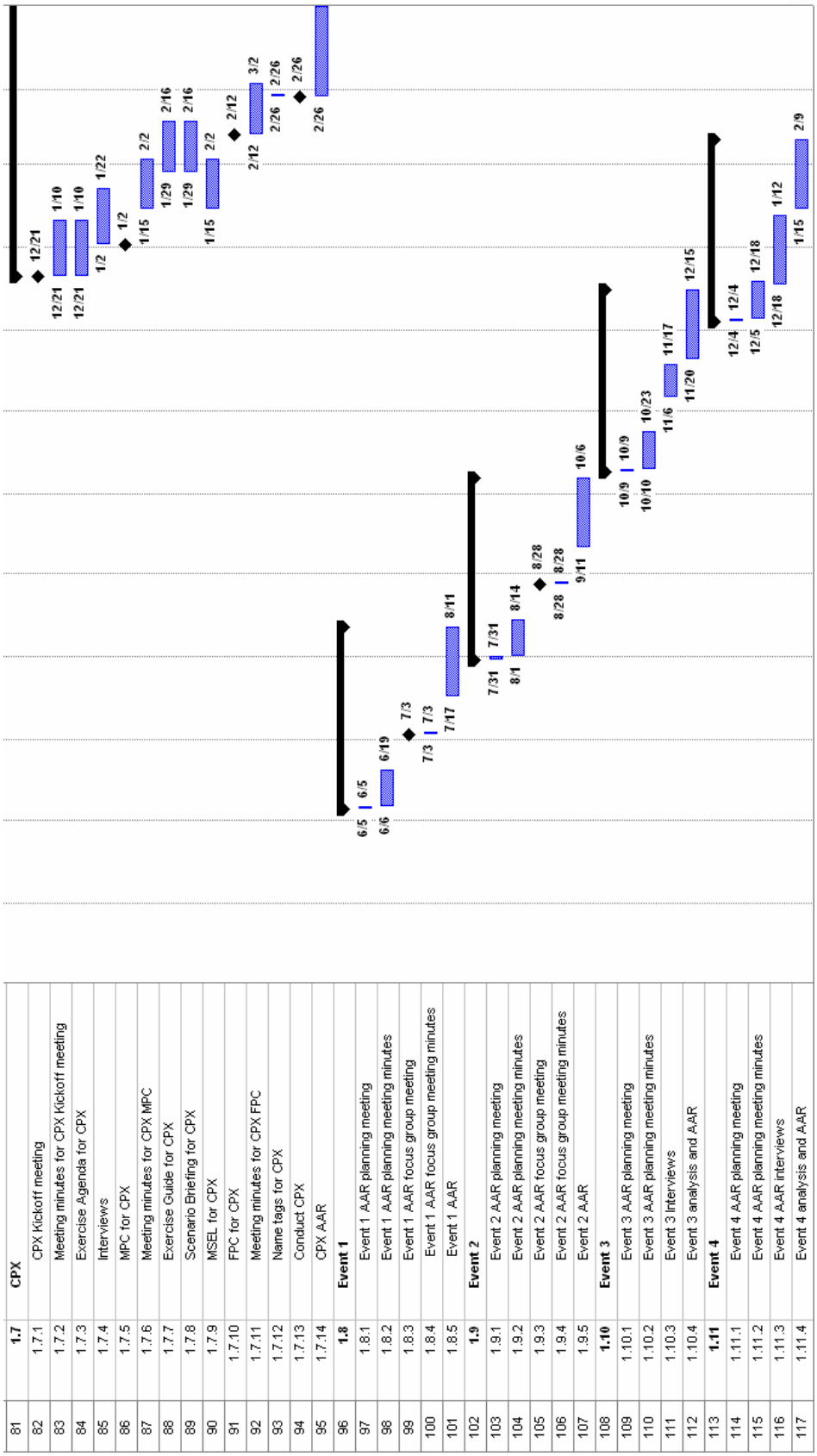
ID	WBS	Task Name
1	1	**IICR Exercise Program**
2	1.1	**General Task**
3	1.1.1	Project Plan
4	1.1.2	Kickoff Meeting for all exercises
5	1.1.3	Meeting minutes for kickoff meeting
6	1.1.4	Exercise Website
7	1.1.5	Project Management Updates
8	1.2	**TTX 1**
9	1.2.1	TTX 1 Kickoff Meeting
10	1.2.2	Meeting minutes for TTX 1 Kickoff meeting
11	1.2.3	Exercise Agenda for TTX 1
12	1.2.4	Interviews
13	1.2.5	TTX 1 MPC
14	1.2.6	Meeting minutes for TTX 1 MPC
15	1.2.7	Situation Pamphlet for TTX 1
16	1.2.8	Exercise Guide for TTX 1
17	1.2.9	Scenario Briefing for TTX 1
18	1.2.10	FPC for TTX 1
19	1.2.11	Meeting Minutes for TTX 1 FPC
20	1.2.12	Name tags and table tents for TTX 1
21	1.2.13	Conduct TTX 1
22	1.2.14	TTX 1 AAR
23	1.3	**TTX 2**
24	1.3.1	TTX 2 Kickoff meeting
25	1.3.2	Meeting minutes for TTX 2 Kickoff meeting
26	1.3.3	Exercise Agenda for TTX 2
27	1.3.4	Interviews
28	1.3.5	TTX 1 MPC
29	1.3.6	Meeting minutes for TTX 1 MPC
30	1.3.7	Situation Pamphlet for TTX 2
31	1.3.8	Exercise Guide for TTX 2
32	1.3.9	Scenario Briefing for TTX 2
33	1.3.10	FPC for TTX 2
34	1.3.11	Meeting minutes for TTX 2 FPC
35	1.3.12	Name tags and table tents for TTX 2
36	1.3.13	Conduct TTX 2
37	1.3.14	TTX 2 AAR

Figure 3.4.3-1. Project Schedule



38	1.4	**TTX 3**			
39	1.4.1	TTX 3 Kickoff meeting	10/19	10/19	
40	1.4.2	Meeting minutes for TTX 3 Kickoff meeting	10/23	11/10	
41	1.4.3	Exercise Agenda for TTX 3	10/23	11/10	
42	1.4.4	Interviews	10/23	11/10	
43	1.4.5	MPC for TTX 3	11/1	11/1	
44	1.4.6	Meeting minutes for TTX 3 MPC	11/6	11/24	
45	1.4.7	Situation Pamphlet for TTX 3	11/6	11/24	
46	1.4.8	Exercise Guide for TTX 3	11/6	11/24	
47	1.4.9	Scenario Briefing for TTX 3	11/6	11/24	
48	1.4.10	FPC for TTX 3	11/20	11/20	
49	1.4.11	Meeting minutes for TTX 3 FPC	11/20	12/8	
50	1.4.12	Name tags and table tents for TTX 3	11/20	11/20	
51	1.4.13	Conduct TTX 3	12/4	12/4	
52	1.4.14	TTX 3 AAR	12/18	1/11	
53	1.5	**Senior Leader TT**	11/29	3/7	
54	1.5.1	SL TTX Kickoff meeting	12/4	12/22	
55	1.5.2	Meeting minutes for SL TTX Kickoff meeting	12/4	12/22	
56	1.5.3	Exercise Agenda for SL TTX	12/4	12/22	
57	1.5.4	Interview	12/4	12/22	
58	1.5.5	MPC for SL TTX	12/13	1/5	
59	1.5.6	Meeting minutes for SL TTX MPC	12/18	1/19	
60	1.5.7	Situation Pamphlet for SL TTX	1/1	1/22	
61	1.5.8	Exercise Guide for SL TTX	1/2	1/22	
62	1.5.9	Scenario Briefing for SL TTX	1/2	1/22	
63	1.5.10	FPC for SL TTX	1/12	2/2	
64	1.5.11	Meeting minutes for SL TTX FPC	1/15	1/29	
65	1.5.12	Name tags and table tents for SL TTX	1/29	1/29	
66	1.5.13	Conduct SL TTX	1/29	1/29	
67	1.5.14	SL TTX AAR	2/12	3/7	
68	1.6	**Full Field**	8/9	11/15	
69	1.6.1	Full Field Kickoff meeting	8/9	8/15	
70	1.6.2	Meeting minutes for Full Field Kickoff meeting	8/14	8/15	
71	1.6.3	Exercise Agenda for Full Field	8/14	9/1	
72	1.6.4	Interviews	8/21	8/21	
73	1.6.5	MPC for Full Field	8/28	9/15	
74	1.6.6	Meeting minutes for Full Field MPC	8/28	9/15	
75	1.6.7	MSEL for Full Field	9/21	9/21	
76	1.6.8	FPC for Full Field	9/25	10/13	
77	1.6.9	Meeting minutes for Full Field FPC	10/9	10/9	
78	1.6.10	Name tags for Full Field	10/9	10/9	
79	1.6.11	Conduct Full Field	10/9	10/9	
80	1.6.12	Full Field AAR	10/9	11/15	

Figure 3.4.3-2 Project Schedule



81	**1.7**	**CPX**		
82	1.7.1	CPX Kickoff meeting	12/21	12/21
83	1.7.2	Meeting minutes for CPX Kickoff meeting	12/21	1/10
84	1.7.3	Exercise Agenda for CPX	12/21	1/10
85	1.7.4	Interviews	1/2	1/22
86	1.7.5	MPC for CPX	1/2	1/2
87	1.7.6	Meeting minutes for CPX MPC	1/15	2/2
88	1.7.7	Exercise Guide for CPX	1/29	2/16
89	1.7.8	Scenario Briefing for CPX	1/29	2/16
90	1.7.9	MSEL for CPX	1/15	2/2
91	1.7.10	FPC for CPX	2/12	2/12
92	1.7.11	Meeting minutes for CPX FPC	2/12	3/2
93	1.7.12	Name tags for CPX	2/26	2/26
94	1.7.13	Conduct CPX	2/26	2/26
95	1.7.14	CPX AAR	2/26	2/26
96	**1.8**	**Event 1**	6/5	8/11
97	1.8.1	Event 1 AAR planning meeting	6/5	6/5
98	1.8.2	Event 1 AAR planning meeting minutes	6/6	6/19
99	1.8.3	Event 1 AAR focus group meeting	7/3	7/3
100	1.8.4	Event 1 AAR focus group meeting minutes	7/3	7/3
101	1.8.5	Event 1 AAR	7/17	8/11
102	**1.9**	**Event 2**	7/31	8/14
103	1.9.1	Event 2 AAR planning meeting	7/31	7/31
104	1.9.2	Event 2 AAR planning meeting minutes	8/1	8/14
105	1.9.3	Event 2 AAR focus group meeting	8/28	8/28
106	1.9.4	Event 2 AAR focus group meeting minutes	8/28	8/28
107	1.9.5	Event 2 AAR	9/11	10/6
108	**1.10**	**Event 3**	10/9	10/9
109	1.10.1	Event 3 AAR planning meeting	10/10	10/9
110	1.10.2	Event 3 AAR planning meeting minutes	11/6	10/23
111	1.10.3	Event 3 Interviews	11/20	11/17
112	1.10.4	Event 3 analysis and AAR	12/5	12/15
113	**1.11**	**Event 4**	12/4	12/4
114	1.11.1	Event 4 AAR planning meeting	12/5	12/4
115	1.11.2	Event 4 AAR planning meeting minutes	12/18	12/18
116	1.11.3	Event 4 AAR interviews	1/15	1/12
117	1.11.4	Event 4 analysis and AAR	1/15	2/9

Figure 3.4.3-3

Project Schedule

3.4.4 Deliverables

Table 3.4.4-1 lists the proposed deliverables on this project.

Table 3.4.4-1. Deliverables

Deliverable	Draft Due Date	Final Due Date
1.a Preliminary Project plan and schedule	15 days after award	10 days after comments are received
1.b Final Project Plan and Schedule	10 days after Task 2.a	10 days after Task 2.b
2.a Kickoff Meeting (for all exercises)	NA	10 days after award
2.b Kickoff Meeting for Each Exercise	NA	15 days after task 2.a
3. Exercise Agenda (for each exercise)	5 days after 2.b	5 days after comments are received
4. Situation Pamphlet (for each tabletop exercise)	20 days before each exercise	10 days before each exercise
5. Exercise Guide (for each tabletop, functional and no-notice exercise)	20 days before each exercise	10 days before each exercise
6. Scenario Briefings (for each tabletop, functional and no-notice exercise)	20 days before each exercise	10 days before each exercise
7. Master Scenario Events List (for each functional and full field Exercise)	30 days before each exercise	15 days before each exercise
8. Name Tags and Table Tents for Exercise Participants (for all exercises as appropriate)	NA	5 days before exercise
9 Conduct Exercises	TBD	TBD
9.a Conduct Senior Leader Exercise	TBD	TBD
9.b Conduct Table Top Exercise 1	TBD	TBD
9.c Conduct Table Top Exercise 2	TBD	TBD
9.d Conduct Table Top Exercise 3	TBD	TBD
9.e Conduct Table Top Exercise 4	TBD	TBD
9.f Conduct Functional Exercise	TBD	TBD
9.g Conduct Full Field Exercise	TBD	TBD
10.a After Action Report for Exercises	15 days after each exercise	5 days after comments are received
10.b After Action Reports for Events	30 days after each event	5 days after comments are received
11. Exercise Website (One website for all events)	NA	45 days after award
12. Meeting Minutes (for all planning and COG update meetings)	5 days after meeting	15 days after meeting
13. Project Management Updates	NA	1200hrs 2nd and 4th Thursday of each month

3.4.5 Disadvantaged Business Enterprise Participation

CNAC will subcontract 35% of the total value of this contract to our Disadvantaged Business Enterprise (DBE) partner Ivan Walks & Associates. IWA has been certified as DBE by the Metropolitan Washington Unified Certification Program. A copy of their DBE certification is provided in Attachment C.

Importantly, our DBE, Ivan Walks & Associates, will make substantial technical contributions to this project, including leading the Expert Facilitation task, providing exercise logistics, and assisting with exercise evaluation and control.

4 Cost Proposals

5 References

5.1 CNAC

Past Performance Reference#1:
District of Columbia Department of Health Emergency Health Management, Planning and Training Support

Name	Ms. Sherry Adams (202) 671-0487	Title	Asst Senior Deputy Director
Name	Dr. Gabriela Gonzalez (202) 671-0674	Title	Chief, Emergency Medical Services/Strategic National Stockpile
Office/Agency/Firm	DC Dept of Health, Emergency Health and Medical Services Administration	Cell	
Address	64 New York Avenue, NE, Suite 5000, Washington, DC 20001	Email	saadams@dchealth.com ggonzalez@dchealth.com
Telephone		FAX	
Key Personnel	**Steven Rickman, Paul Speer, Monica Giovachino, Paula Sherman**		

Past Performance Reference#2:
State of Delaware Operation Diamond Shield Exercise

Name	Benjamin Brown	Title	Training Administrator
Office/Agency/Firm	Public Health Preparedness Section Division of Public Health	Cell	
Address	Blue Hen Corporate Center, Suite 4G 655 South Bay Road Dover, DE 19901	Email	Benjamin.brown@state.de.us
Telephone	(302) 744-5450	FAX	
Key Personnel	**Steven Rickman, Paul Speer, Monica Giovachino, Paula Sherman, Rosemary Speers**		

Past Performance Reference#3:
National Exercise Program (NEP)

Name	James Kish	Title	Director, NEP
Office/Agency/Firm	Dept of Homeland Security The Office of Domestic	Cell	

	Preparedness		
Address	810 Seventh St, NW Washington, DC 20531	Email	James.kish@dhs.gov
Telephone	(202) 786-9580	FAX	
Key Personnel	**Paul Speer, Monica Giovachino, Rosemary Speers**		

Past Performance Reference#4:
USDA Equinox Exercise

Name	Dr. Mark Teachman	Title	Senior Staff Veterinarian
Office/Agency/Firm	US Dept of Agriculture VS Emergency Management	Cell	(240) 508-9750
Address	4700 River Road, Unit 41, Room 5D20 Riverdale, MD 20737	Email	Mark.e.teachman@aphis.usda.gov
Telephone	(301) 734-8908	FAX	
Key Personnel	**Paul Speer, Monica Giovachino, Rosemary Speers**		

5.2 AMTI

Past Performance Reference#1:
TOPOFF 3 CPX/FSE

Name	Brady O'Hanlon	Title	Program Manager
Office/Agency/Firm	US DHS	Cell	
Address	810 7th Street NW, Suite 401 Washington, DC 20531	Email	Brady.ohanlon@dhs.gov
Telephone	(202) 786-9593	FAX	(202) 353-3369
Key Personnel	**Thorton Boyd**		

Past Performance Reference#2:
NC Triple Play FSE

Name	Doug Griffin	Title	Public Health Program Administrator
Office/Agency/Firm	North Carolina Division of Public Health	Cell	
Address	1931 Mali Service Center Raleigh, NC 27699-1932	Email	Douglas.k.griffin@ncmail.net
Telephone	(919) 715-1411	FAX	(919) 715-2246
Key Personnel	**Samara Adrian**		

Past Performance Reference#3:
TOPOFF 2 FSE

Name	Dave Brannegan	Title	Program Manager/COTR
Office/Agency/Firm	US DHS, Technical Assistance Div, Office of Grants & Training	Cell	
Address	810 7th Street NW Washington, DC 20531	Email	Dave.brannegan@dhs.gov
Telephone	(202) 786-9751	FAX	(202) 786-9921
Key Personnel	**Thorton Boyd**		

5.3 Ivan Walks & Associates

Past Performance Reference#1:
Bioterrorism – National Pharmaceutical Stockpile Distribution Exercise (*Deadly Rat*)

Name	James Resnick	Title	Battalion Chief, BA, NREMT-P, Program Manager
Office/ Agency/ Firm	Montgomery County Fire and Rescue Service (MCF&RS), Office of Emergency Management (OEM)	Cell	N/A
Address	101 Monroe Street, 12th Floor Rockville, MD 20850	Email	James.Resnick@montgomerycountymd.gov
Telephone	(240) 777-2300	FAX	N/A
Key Personnel	**Dr. Ivan Walks**		

Past Performance Reference#2:
MD Technical Consulting Contract/Pandemic Flu Planning Support

Name	Donna Sampson	Title	Program Manager
Office/Agency/Firm	Ivy Planning Group, LLC	Cell	N/A
Address	15204 Omega Drive, Suite 110 Rockville, MD 20850	Email	dsampson@ivygroupllc.com
Telephone	(301) 963-1669	FAX	(301) 963-8068
Key Personnel	**Dr. Ivan Walks**		

Past Performance Reference#3:
Bioterrorism Strategic Planning Support

Name	Paula Rae Sherman	Title	Project Manager
Office/Agency/Firm	The CNA Corporation	Cell	N/A
Address	4825 Mark Center Drive	Email	shermap@cna.org

	Alexandria, VA 22311-1850		
Telephone	(703) 824-2655	FAX	(703) 824-2511
Key Personnel	**Dr. Ivan Walks**		

5.4 Alutiiq

Past Performance Reference#1:
Weapons of Mass Destruction Response Programs, Army National Guard Bureau

Name	Major Karen Smith	Title	Contracting Officer
Office/Agency/Firm	Army National Guard Bureau	Cell	
Address	1411 Jefferson Davis Hwy Arlington, VA 22202-3231	Email	Karen.smith@sgb.ang.af.mil
Telephone	(703) 607-1127	FAX	
Key Personnel	**Rich Irwin**		

Past Performance Reference#2:
Strategic Plan for Emergency Response to Terrorism Incidents

Name	Daniel Mahan	Title	Homeland Security Planner
Office/Agency/Firm	Cecil County, MD	Cell	
Address	107 Chesapeake Blvd, Suite 108 Elkton, MD 21921	Email	dmahan@ccgov.org
Telephone	(410) 392-2016	FAX	
Key Personnel	**Rich Irwin**		

Past Performance Reference#3:
Security and Law Enforcement Contract, Kwajalein, Marshall Islands

Name	Dianne Trimble	Title	Contracting Officer
Office/Agency/Firm	U.S. Army Space & Mis-sile Defense Command	Cell	
Address	USASMDC; ATTN SMDC-CM-AP PO Box 1500 Huntsville, AL 35807	Email	Dianne.trimble@smdc.army.mil
Telephone	(256) 995-4056	FAX	
Key Personnel	**Rich Irwin**		

6 Appendix A Resumes

6.1 Stephen Rickman MS, Project Manager

Qualifications Summary

Mr. Stephen Rickman brings an exceptional record of hands-on experience in the management of emergency preparedness at all levels, including as an official of the DC government. He has managed numerous government programs and commercial contracts of the size and complexity of the current project. Mr. Rickman recently served as Project Director of CNAC's contract with the DC Department of Health (DOH) where he managed the design, facilitation, and analysis of tabletop and functional exercises, including exercises involving WMD. These exercises included District first responder agencies, Federal officials, and local community stakeholders.

Currently, Mr. Rickman is Project Director on a Performance Metrics contract for the Department of Homeland Security. The objectives of this project are to establish baseline performance capabilities and metrics to effectively assess these capabilities for emergency responder agencies at the state and local level.

As Director for Readiness in the White House Office of Homeland Security, he coordinated activities of Federal agencies responsible for assuring the readiness of America's communities to respond and recover from acts of terrorism including those involving weapons of mass destruction (chemical, biological, radiological, nuclear, and explosives). He assisted in the development and implementation of the national homeland security strategy, especially those areas encompassing emergency response planning and training for first responders. In this role he promoted the development of national standards for first responder equipment, weapons of mass destruction training, and exercises. He was also responsible for assisting Federal efforts in conjunction with state and local entities to enhance prevention, preparedness, and response capabilities for protecting the national capital region including counter-terrorist activities, protecting critical infrastructure, evacuation planning, emergency response communication and response protocols, and citizen awareness and mobilization.

As Director, Executive Office for Weed and Seed, Office of Justice Programs, Mr. Rickman directed the Department of Justice's premier neighborhood-based crime reduction and crime prevention program.

As Director, Office of Emergency Preparedness (State Emergency Management Agency), District of Columbia Government, Mr. Rickman served as a member of the Mayor's Cabinet and Director of the agency with primary responsibility for assuring readiness to respond to local and national emergencies. He provided leadership and coordinated responses of the District agencies including Police and Fire Departments, Public Works, and Emergency Medical Services to emergencies and disasters. He was also responsible for developing emergency response plans and protocols and for supervision of the Executive Command and Communications Center, which served as the base for emergency operation functions. Mr. Rickman provided a strong liaison with community groups, private sector, and other interests to assure public awareness of readi-

ness strategies and emergency response procedures. In earlier positions, he served as Public Safety Coordinator, Office of City Administrator, where he was the Chief Public Safety Advisor to the Mayor and City Administrator, and coordinated the activities of the District's public safety agencies. As Director, Office of Criminal Justice Plans and Analysis, Criminal Justice Statistical Analysis Center, District of Columbia Government, Mr. Rickman was responsible for the administration of the District's criminal justice data center including supervision of data collection, analysis, report formulation, and publications.

Role

Mr. Rickman will serve as Project Manager with the authority and responsibility for all work performed on this contract. He is empowered by CNAC to make any necessary decisions and take prompt action to address any COG NCR issues or concerns. Mr. Rickman provides overall direction to our Task Managers, who are charged with managing day-to-day project activities. Mr. Rickman will ensure a constant flow of communication and up-to-date project status.

Education

PH.D. Candidate (ABD) Clinical and Community Psychology, Howard University, Washington, D. C.
Master of Science, Clinical and Community Psychology, Howard University, Washington D. C.
Bachelor of Science, Psychology, Howard University, Washington D. C.
Graduate Studies, Criminal Justice Planning and Evaluation, University of Wisconsin, Graduate School, Oshkosh, Wisconsin

Relevant Experience

CNA Corporation 2002 – Present
Mr. Rickman was Project Director for the D. C. Department of Health Emergency Health Management Planning and Training Support Contract. His contractual activities included management of the design, development, execution, and analysis of a tabletop exercise involving local agencies and community members and a functional exercise on the grounds of D. C. General assessing smallpox vaccination procedures. These exercises also involved local agencies and community stakeholders as well.

Mr. Rickman was Project Director for a statewide tabletop exercise project for the state of Delaware. He currently is Project Director for a performance metrics contract with the Department of Homeland Security.

White House, Office of Homeland Security 2001 – 2002
Mr. Rickman was responsible for coordinating readiness and preparedness programs in a post 9/11 environment for the National Capital Region. He organized the first homeland security regional summit.

U. S. Department of Justice 1996 – 2001
Mr. Rickman was Director of Weed and Seed, a community based crime prevention imitative with over 300 sites nationwide. He directed three community-based sites In the District of Columbia, including Langston/Carver terrace area, Marshal Heights, and Columbia Heights.

District of Columbia Government 1991– 1995
Mr. Rickman was Director of the Office of Emergency Preparedness (Emergency Management Agency). He was responsible for coordinating responses to disasters and emergencies in the District. He worked closely with other District agencies and community stakeholders. Mr. Rickman was responsible for management of District's emergency management training and exercise programs.

6.2 Matthew Payne MPA, Subject Matter Expert

Qualifications Summary

Mr. Matthew Payne is a senior advisor within the CNA Corporation's (CNAC) Institute for Public Research, providing expert insight into the public health and medical aspects of emergency preparedness and response. Mr. Payne brings eight (8) years governmental emergency preparedness and response experience to CNAC from the U.S. Department of Health and Human Services (HHS). While at HHS, he served in a variety of leadership roles, including his most recent assignment as the Deputy Director for Operations, within the Office of Emergency Operations and Security Programs. In this role, Mr. Payne was responsible for the management of the Secretary's Operations Center (SOC) and Secretary's Emergency Response Team (SERT) during national emergencies (e.g., hurricanes Katrina and Rita) and full-scale field exercises (e.g., TOPOFF III and Pinnacle).

While at HHS, Mr. Payne has interacted with officials from the National Capitol Region (NCR) in many ways. In 1997, Mr. Payne was integrally involved with the development of the Metropolitan Medical Response System (MMRS) concept. This involvement included working closely with the Washington MMRS, the DC Hospital Association and the Metropolitan Washington Council of Governments. As part of this process, Mr. Payne also participated in several NCR exercises including exercise "Rock 'n Roll" and "Foggy Office." Both included regional response from partners in the NCR.

In 2001, Mr. Payne participated in the region's response to the anthrax attack, supporting the screening and distribution operations for Postal Service employees. Mr. Payne has also served as a liaison to area coordination centers for several national security special events including the State Funeral of President Reagan, the Presidential Inauguration, Independence Day celebrations and each State of the Union Address since 1998.

In his Federal role, Mr. Payne has worked extensively on Federal emergency preparedness programs and response mechanisms. He was responsible for managing the Department's input to the National Response Plan (NRP), National Incident Management System (NIMS) and several Homeland Security Presidential Directives (e.g., HSPD 5, 8, and 10). Additionally, as the Team Leader for the Preparedness and Planning Team, he worked extensively with the Department of Homeland Security's (DHS) current Office of Grants and Training. Mr. Payne has deployed on numerous occasions and has served in most of the Federal interagency coordination centers, including the National Response Coordination Center (NRCC), Strategic Information and Operations Center (SIOC) and the Interagency Incident Management Group (IIMG).

Role

Mr. Payne will support the Project Director as a subject matter expert, providing insights into the Federal interagency process and the public health and medical aspects of the exercises.

Education

M.P.A., Maxwell School of Citizenship & Public Affairs, Syracuse University, NY
B.A. (Biology), College of Arts & Sciences, Syracuse University, NY

Relevant Experience

The CNA Corporation November 2005 – Present
Senior Advisor within the Institute for Public Research, responsible for providing expert insight into public health and medical aspects of emergency preparedness (e.g., exercises, planning). Currently completing a research project to explore the inherent roles of government in responding to catastrophic disasters with particular emphasis placed on regional mutual aid assistance.

U.S. Department of Health and Human Services
Office of Public Health Emergency Preparedness 2004 – 2005
Deputy Director for Operations within the Office of Emergency Operations and Security Programs. Managed emergency operations (e.g., hurricanes Katrina and Rita) and Departmental input to crosscutting programmatic activities (e.g., TOPOFF III, Senior Officials Exercises). Responsible for identifying and recommending solutions to address key national and Departmental policy, planning and operational issues.

U.S. Department of Health and Human Services
Office of Public Health Emergency Preparedness 2002 – 2004
Senior Public Health Analyst and Team Leader for the Preparedness and Planning Team. Responsible for the development, implementation and management of national domestic preparedness initiatives including strategic planning documents, Departmental plans, Departmental input to national plans (e.g., NRP, NIMS) and complex national exercises (e.g., TOPOFF II & III).

U.S. Department of Health and Human Services
Office of Emergency Response 1997 – 2002
Program Analyst responsible for program management of a variety of domestic preparedness initiatives including the Metropolitan Medical Response System (MMRS) development contracts.

Rural Metro Medical Services (Syracuse, NY) 1993 – 1997
Part-time field paramedic, responsible for the total pre-hospital care of patients during emergency situations. Full-time emergency call-taker / dispatcher, responsible for the systems status management of up to 15 ambulances across 3 counties in New York State.

6.3 Paul Speer PHD, Subject Matter Expert

Qualifications Summary

Dr. Speer is currently the Director for Research for the Institute of Public Research (IPR) at the CNA Corporation. In this position he is responsible for research quality for all of CNAC's projects for clients outside of the Department of Defense. This includes projects for a wide range of Federal, state and local government clients in the areas of public health and health care policy, homeland security and public safety, education, human capital management and air traffic management.

He is also directly responsible for the execution of all CNA Corporation projects in the areas of homeland security, public safety and emergency public health preparedness. This work supports local/state and Federal clients including among others the Washington DC EMA, the DC DOH, state public health agencies in Delaware and North Carolina, the California Department of Food and Agriculture, the Office of the Assistant Secretary for Public Health Emergency Preparedness (ASPHEP) in HHS, the CDC, APHIS/USDA and various directorates in DHS including the Office for Domestic Preparedness.

Dr. Speer has twenty years of exercise experience with Federal clients that include the Department of Defense, Department of Health and Human Services, and Department of Homeland Security/Office for Domestic Preparedness as well as state/local clients including Washington DC, New York City and the State of North Carolina.

He directed the efforts of the team that designed and carried out the successful evaluation methodology and produced the Quick Look and After Action Reports for TOPOFF 2, the nation's largest homeland security exercise to date. He recently oversaw the evaluation of the TOPOFF 3 CPX and full-scale exercises. He is currently responsible for exercise evaluation for the Senior Official Exercise (SOE) series of the DHS National Exercise Program. SOEs are senior leadership tabletops at the Assistant Secretary and Deputy Secretary level.

Dr. Speer has extensive experience with bioterrorism and other emergency response exercises and games including senior level tabletops and functional exercises as well as full-scale exercises. These have included the full range of exercise types from tabletops to CPXs and FSEs.

Dr. Speer has also directed the efforts of project teams with extensive experience developing emergency response plans, policies and concepts of operations at all levels of government. His team worked with the DC DOH to develop the District's Bioterrorism Response Plan and with the DC EMA to update the District Response Plan and supporting ESFs. He is also experienced in developing preparedness or readiness metrics—for example, leading a study that conducted a readiness assessment of the National Disaster Medical System (NDMS). In addition, his team supported DHS in the initial development of the Universal Task List and the Target Capability List.

Role

As Director of CNAC's safety and security business practice, Dr. Speer will provide executive oversight of this project. He will assist Mr. Rickman with obtaining any needed corporate staff or resources. Dr. Speer will also review all project work products from a technical perspective to ensure quality and accuracy. Additionally, he will provide subject matter and exercise expertise as needed as a member of the core project team.

Education

Ph.D. Massachusetts Institute of Technology, Cambridge, MA
B.A. Williams College, Williamstown, MA

Relevant Experience

CNAC 1984 – Present
Dr. Speer is currently the Director for Research of the Institute for Public Research (IPR), a division of the CNA Corporation. In this position he is responsible for research quality for all of CNAC's projects for clients outside of the Department of Defense. This includes projects for a wide range of Federal, state and local government clients in the areas of public health and health care policy, homeland security and public safety, education, human capital management and air traffic management. He is also Director of the Safety and Security Center at CNAC and oversees the execution of all CNAC projects in the areas of homeland security, public safety and public health. Since 2000, he has had overall responsibility for a number of projects for District agencies including bioterrorism and emergency response planning and exercise activities for the DOH, update of the DRP and development of the 2005 District Homeland security Strategy for the EMA, and a project with NCR Interoperability Program (NCRIP) in the DC Office of the Chief Technology Officer (OCTO) to support the Data Exchange Hub (DEH).

Since 2002, he has been involved in the TOPOFF exercise series and the National Exercise Program (NEP). He was responsible for a team of analysts who planned the evaluation and developed the After Action Reports for the TOPOFF 2 full-scale exercise, and the TOPOFF 3 Command Post and full-scale exercises. He is currently responsible for evaluating Senior Officials Exercises (a component of the NEP) and writing the quick looks and AARs.

He has also been the project manager for two large contracts that CNAC has held with the Office of Assistant Secretary for Public Health Emergency Preparedness (ASPHEP) in HHS since 2002. Under these contracts, CNAC has developed and/or evaluated numerous exercises including tabletops, CPXs, and FSEs, analyzed HHS operations during real-world events, helped HHS develop plans, policies and procedures and facilitated workshops and hotwashes. Prior to these projects, he provided technical oversight to a multi-year contract with the CDC that focused on building emergency preparedness capabilities. Among other tasks, CNAC analysts designed and conducted exercises and conducted an evaluation of the Health Alert Network (HAN) during the fall 2001 anthrax attacks.

Since 2004, Dr. Speer has been the technical lead on a multi-year Performance Metrics Project for DHS/Office for Domestic Preparedness. On this project CNAC helped DHS/ODP develop the initial Universal Task List and Target Capability List. We also assisted DHS in the analysis of the ODP 2003 State Homeland Security Assessment with a particular focus on the analysis of costs for equipment, exercises, and training needs. He has also had overall responsibility for a series of CNAC projects for DHS S&T including inter-operability for SAFECOM, UAV applications on the SW Border, and bioterrorism exercises.

In addition to the District, he has overseen CNAC support to state and local agencies from 2001 to the present. This work includes bioterrorism and emergency response exercises for state public health departments in North Carolina and Delaware, the New York City Department of Public Health, and the California Department of Food and Agriculture among others.

Prior to assuming his current positions, Dr. Speer was the project director for a large number of projects for the Department of the Navy and the Department of Defense. He helped plan, design and analyze a wide range of exercises for the DON and DOD.

6.4 Monica Giovachino MS, Exercise Control / Evaluation Lead

Qualifications Summary

Ms. Monica Giovachino is a project director and task leader with an 11-year career at The CNA Corporation. She has designed, implemented, and evaluated emergency preparedness exercises at the local, state, and Federal levels, and has supported and analyzed real-world emergencies. She has extensive experience with the National Capital Region (NCR), and has worked with the District of Columbia, Prince George's County, and Arlington County to design and evaluate tabletop and functional exercises. For the DC Department of Health (DOH), Ms. Giovachino designed and implemented two tabletop exercises and one functional exercise. The results of the latter, a site test of a Strategic National Stockpile (SNS) Dispensing Center, were published in the Journal of Public Health Management and Practice. She recently evaluated a similar SNS functional exercise for Prince George's County. She also led a project to design, execute, and analyze a full-scale exercise for the Delaware Division of Public Health. This three-day exercise included 400 participants located in more than 10 command post and field venues spread across the state.

At the Federal level, Ms. Giovachino was part of the evaluation teams for TOPOFF 2 and TOPOFF 3, two full-scale exercises sponsored by the U.S. Department of Homeland Security. She also helped the U.S. Department of Health and Human Services (HHS) develop a Strategic Exercise Plan and design, implement, and evaluate tabletop and functional exercises. She recently supported HHS operations during the response to Hurricanes Katrina and Rita by leading a 24/7 analytical support team in the Secretary's Operations Center (SOC). She also wrote an after action report on the hurricanes for HHS and developed a pandemic influenza playbook designed to aid the Secretary of HHS in a cabinet-level avian influenza tabletop exercise.

She has also worked in a variety of other areas related to emergency preparedness, including helping agencies draft emergency plans, performing capabilities and readiness assessments, and analyzing the response to real-world events. Ms. Giovachino is currently designing a tabletop and functional exercise for the DC Citizen Corps and is serving as the evaluation leader for the upcoming TOPOFF 4 Command Post Exercise (CPX).

Role

Ms. Giovachino will be the Evaluation Lead for the project.

Education

M.S. Environmental Engineering, The George Washington University, Washington, DC
B.A. Physics, Virginia Tech, Blacksburg, VA

Relevant Experience

CNA Corporation 1994 – Present
Monica Giovachino has assisted local, state, and Federal agencies with emergency preparedness activities. Her recent projects include:

- Hurricane Katrina and Rita. Monica Giovachino led a team of CNAC personnel that supported the U.S. Department of Health and Human Services during the response to Hurricane's Katrina and Rita. The team provided 24/7 analytical support to the planning section in the Secretary's Operations Center (SOC) by reviewing, synthesizing, and cataloguing incoming information and drafting the daily situation reports and incident action plans. She also led several after action activities, including an after action report on HHS Federal medical shelter operations during the hurricanes and an after action retreat for HHS response personnel.
- Pandemic Influenza Preparedness. Monica Giovachino helped the Office of Public Health Emergency Preparedness in HHS develop a "playbook" for the response to pandemic influenza. The playbook was designed to support the Secretary's participation in a cabinet-level pandemic influenza tabletop exercise as well as the response to an actual epidemic. The playbook listed HHS response activities, assigned roles and responsibilities, and highlighted key decision points for senior decision-makers. The exercise was held in December, 2005.
- Delaware Full-Scale Bioterrorism Exercise. Ms. Giovachino led this project to design, implement, and analyze a full-scale bioterrorism exercise for the Delaware Division of Public Health. The three-day exercise was held in June 2005, and involved more than 400 participants located in more than 10 venues spread across the state. Participants included public health personnel, hospitals, and members of the medical volunteer corps, who worked in emergency operations centers (EOCs), hospitals, laboratories, a field hospital, and as members of field response teams during the exercise.
- Prince George's County SNS Exercise. Ms. Giovachino led the evaluation of a Prince George's County Strategic National Stockpile exercise, held in August 2005. The evaluation team documented the exercise, collected throughput data to determine the capacity of the dispensing center, and conducted a hotwash. Ms. Giovachino analyzed the data collected and wrote an after action report that provided recommendations for improving and optimizing dispensing operations.
- District of Columbia District Response Plan and State Strategy. Ms. Giovachino was a member of a project team that updated the District Response Plan and aligned it with the new National Response Plan. The team also helped the District develop a state homeland security strategy. Ms. Giovachino served as a workshop facilitator and helped conduct facilitated work sessions.
- TOPOFF 3. Ms Giovachino was part of the evaluation team for TOPOFF 3. She served as the lead analyst for the National Resource Coordination Center (NRCC) at FEMA headquarters and led data collection efforts at that venue. Following the exercise, she assisted in compiling the reconstruction, analyzing the data, and writing the after action report.
- Hurricanes Frances and Ivan. Ms. Giovachino led an after action analysis of the Federal public health response to Hurricanes Frances and Ivan, which hit Florida in 2004. Ms. Giovachino facilitated a hotwash on the response, conducted additional interviews with response personnel, and collected data from the response. Ms. Giovachino and other analysts used this information to

reconstruct the response and support an objective analysis, which was documented in an event after action report.

- Delaware Strategic National Stockpile tabletop exercise. Ms. Giovachino designed this exercise, held in April 2004, which was focused on analyzing Delaware plans for requesting, receiving, and distributing medicals supplies from the Strategic National Stockpile. She created a plague scenario specific to the State of Delaware, and developed exercise materials, including player instructions, a facilitator guide, and other materials to support the scenario.
- Bioterrorism Support to the District of Columbia Department of Health. This multi-year project focused on public health emergency preparedness activities. Ms. Giovachino assessed existing emergency response plans and analyzed response capabilities. As part of the assessment, she developed a simulation model that estimates the consequences of attacks using several different bioterrorist agents (including anthrax and smallpox). The model allows planners to vary disease assumptions and compare the results of different intervention programs. Ms. Giovachino helped DOH draft new plans, including a bioterrorism response plan and a plan for distributing the Strategic National Stockpile (SNS). She helped DOH test these plans by designing and implementing several tabletop exercises and planning workshops for health department personnel and representatives from other District agencies and organizations. She recently led a site test of the DOH's SNS dispensing center plan. This site test measured the throughput of a DOH dispensing center and used computer modeling to optimize the dispensing plan (e.g., numbers of stations and workers needed). The results of this analysis were published in the July 2005 issue of the Journal of Public Health Management and Practice.
- State of California FMD Field Exercise. Monica Giovachino was part of a team that designed, implemented, and evaluated a Foot-And-Mouth Disease (FMD) field exercise for the California Department of Food and Agriculture in November 2004. The exercise involved players from multiple state and Federal agencies that participated at multiple venues, including a unified Incident Command Post and several local dairy farms. Ms Giovachino served as the lead analyst in the field, controlling and documenting players involved in site visits and site investigations at dairy farms. She also contributed to the after action report.
- USA-Canada Cross-Border Exercise. Monica Giovachino was part of a team that designed, implemented, and evaluated a command post exercise for the U.S. Department of Agriculture that involved participants in 10 locations in the U.S. and Canada. Monica Giovachino was the venue lead for the state of Vermont, where she controlled and documented the exercise. She also contributed to the after action report.
- North Carolina TRIPLE PLAY Exercise Series. Ms. Giovachino led the evaluation of this three-part bioterrorism full-scale exercise series for the North Carolina Department of Health and Human Services. She wrote the evaluation plan for the exercise series, trained data collectors, and observed all phases of the exercise (which included two 2-1/2 day field exercises and one 1-day tabletop exercise). She also designed the third exercise in the series—a tabletop exercise focusing on isolation and quarantine issues. After each exercise, she facilitated hotwashes and wrote "quick-look" reports. Ms. Giovachino completed a final after action report that documented all three phases of the exercise and provided recommendations for improving North Carolina emergency response plans.
- TOPOFF 2. Ms. Giovachino led an after action analysis of HHS' participation in TOPOFF 2, a full-scale exercise sponsored by the Department of Homeland Security. Ms. Giovachino participated in pre-exercise planning meetings, observed HHS play during the exercise in the Secretary's Command Center (SCC), and coordinated the after action analysis with other CNAC

analysts who observed the exercise in the SCC and in Chicago. She also participated in the HHS "hotwash" and after action meetings, prepared a "quick-look" report on HHS play during TOPOFF 2, and prepared a formal after action report focusing on the performance of new HHS emergency response resources.

- Smallpox Vaccination Clinic Site Test. This project tested the CDC vaccination clinic guide through a functional vaccination clinic exercise held in January 2003. The purposes of the test were to validate and refine the CDC Guide, and the Maxi-Vac software associated with it. Ms. Giovachino and other CNAC analysts collected data on the times it took mock patients to complete various steps in the clinic process. Ms. Giovachino analyzed these data and created a queuing model to simulate the clinic vaccination process. This model helped the project team make recommendations for improving clinic setup and the CDC software.

Selected Publications

- After Action Review of Federal Medical Station Operations During Hurricanes Katrina and Rita, IPR 11710, March 2006, Draft
- Joint HHS-NDMS Hurricane Workshop: Summary Report, IPR 11725, February 2006, Draft
- Joint OSG-OPHEP Hurricane After Action Retreat: Meeting Summary, February 2006, Draft
- Red Carriage After Action Report: Analysis of a Strategic National Stockpile Point of Dispensing Site Test, IPR 11600, October 2005
- Operation Diamond Shield II: After Action Report, IPR 11520, August 2005
- Tripartite Series: Analysis and Recommendations from Equinox 2005, IPR 11472, August 2005
- Optimizing a District of Columbia Strategic National Stockpile Dispensing Center, Journal of Public Health Management and Practice Vol. 11 No. 4, July 2005
- Analysis and Recommendations from Operation "Aphtosa", IPR 11238, December 2004
- Hurricanes Frances and Ivan: Improving the Delivery of ESF#8 Support, IPR 11208, November 2004
- Roles and Responsibilities of OASPHEP During the 2003 SARS Outbreak, IPR 10998, March 2004
- GenEx: A Site Test of a DC Department of Health Dispensing Center, IPR 11005, February 2004
- TRIPLE PLAY After Action Report: Recommendations for Improving North Carolina Public Health Emergency Response Plans, IPR 11006, January 2004
- HHS Participation in TOPOFF 2: Exercise Report, IPR 10939, July 2003
- How Well Are We Keeping Watch? Current Applications in Syndromic Surveillance, CRM D0008240.A1, June 2003
- Modeling the Consequences of a Biological Attack: A Tool for Emergency Planners, CRM D0008221.A1, April 2003
- A Field Test of the CDC Smallpox Vaccination Clinic Model, IPR 10847, April 2003
- Assessing NDMS Response Team Readiness: Focusing on DMATs, NMRTs, and the MST, IPR 10785, December 2002
- Modeling the Consequences of Bioterrorism Response, Military Medicine Vol. 166 No. 11, November 2001
- Improving the District of Columbia's Department of Health Bioterrorism Preparedness, IPR 10541, December 2000

6.5 Paula Rae Sherman MSW, Exercise Logistics Lead

Qualifications Summary

Ms. Paula Rae Sherman has more than 28 years of public safety and emergency management experience in policy, planning; training; exercise planning, development, facilitation and evaluation; administration; and project management at the state, local and national level encompassing national, state, local, regional and private sector partnerships. She served as a member of the Executive Management Teams of the District of Columbia Office of Emergency Preparedness (DC EMA), the District of Columbia Fire Department, and the Arlington County Fire Department and was responsible for interacting with various officials throughout the National Capitol Region (NCR) jurisdictions. Ms. Sherman developed, monitored and reported on Comprehensive Cooperative Agreements with the Federal Emergency Management Agency (FEMA), provided resource and support analysis for first responders in the areas of administration, human resources, equipment and supplies, budgets, various organizational and operational assessments, and public education programs (community-wide and schools). She participated on and lead various project teams in planning and conducting training and exercises and conducting research involving the National Incident Management System (NIMS), the National Response Plan (NRP), HESSEP, Weapons of Mass Destruction (WMDs) and various other homeland security and emergency preparedness Federal, state and local guidance and regulations.

As Exercise Training Officer and Training Officer for the D.C. Office of Emergency Preparedness, Ms. Sherman's major functions included public and community education, and emergency exercise (tabletop, functional and full-field) design, implementation, evaluation, and after-action report development. She designed, coordinated, facilitated, and evaluated the District's response to various FEMA initiatives and tailored training to meet the unique nuisances of the District for mandated emergency planning, training an exercise needs. Additionally, Ms. Sherman staffed various community events coordinated by the D.C. Special Events Task Force. Ms. Sherman is a former Assistant Professor and Field Instruction Director for Southern University, Baton Rouge, LA and Adjunct Faculty for the FEMA National Fire Academy.

Role

Ms. Sherman will serve as a Subject Matter Expert on this project with responsibility for overall exercise logistical coordination.

Education

Ph.D. Studies in Sociology, Howard University, Washington, DC
M.S.W., Social Work (Policy/Planning/Administration), Howard University, Washington, DC
B.S., Liberal Studies, Southern University, Baton Rouge, LA
Management Excellence Certificate, Senior Executive Institute, Weldon Cooper Center for Public Policy, University of Virginia, Charlottesville, VA

Relevant Experience

CNAC 2003 – Present

Ms. Sherman serves as Deputy Project Manager in support of the Project Director and Task Lead on a Life-Cycle Cost Model project for the U.S. Department of Homeland Security. She recently served as Deputy Project Manager in support of the projector Director on a project that involved the development of performance metrics and the assessment of levels of preparedness of state and local jurisdictions. In addition, Ms. Sherman recently served as Project Manager for the District of Columbia, Emergency Management Agency Disaster Response Plan Update project and the District State Strategy Project. Directly analogous to her role on these projects, Ms. Sherman's responsibilities included ensuring resource availability to support the project, that the project remains on task, resolving issues, timely preparation and submission of quality deliverables, and preparation of monthly progress reports. In addition, Ms. Sherman recently served as Project Director for the customized All Hazards Disaster Management Training development and implementation for Mental Health Professionals for the DC Department of Mental Health, Child and Family Services Division and Department of Youth Rehabilitative Services. She also served as Project Director for the Hospital and Non-Hospital Bioterrorism Preparedness and Response Support project including developing, conducting and evaluating a customized Basic Bioterrorism Awareness Training curriculum, Train-the-Trainer and Training Video for the management and staff of the Greater Southeast Community Hospital. This project was a HRSA award to the DC Department of Health, Emergency Health and Medical Services Administration.

Ms. Sherman was onsite Project Manager for the District of Columbia Government, Department of Health, Emergency Health and Medical Services Administration, Emergency Health Management, Planning, and Training Support Program contract. Similar to her proposed role on the current project, Ms. Sherman's major responsibilities included working with CNAC task leaders and subcontractors to ensure resource availability to support the project that the project remained on task, anticipating and resolving problems, timely preparation and submission of quality deliverables, and preparation of monthly progress reports. Fifteen task orders were placed under this contract and deliverables produced included updates to the Bioterrorism Plan and Strategic National Stockpile Plan; the development, conduct, evaluation, and preparation of after-action reports for tabletop and field exercises; review of the Continuity of Operations Plan (COOP) and development of a COOP template; review of the Emergency Support Function 8 (ESF-8) of the District Response Plan (DRP); audit of the emergency resources inventory and development of an inventory tracking system; SARS Health Risk Assessment; Communications System Processes and Procedures; Call Center Consolidation Feasibility Assessment, Call Center Operations Plan, and Risk Communication Plan; and the Ballou High School Mercury Incident After-Action Report.

Arlington County Fire Department 1994 – 2003

As Administrative Services Chief, Ms. Sherman managed all administrative functions in support the Department's first responders. She coordinated and monitored Fire Department administrative support functions during and after the Y2K Event and September 11 Pentagon Terrorist Attack.

District of Columbia Office of Emergency Preparedness 1984 – 1994

During her tenure, Ms. Sherman held several positions beginning with Exercise Training Officer, Training Officer and Chief of Staff. As Exercise Training Officer and Training Officer, Ms. Sherman's major functions included public and community education and training, and emergency exercise (tabletop, functional and full-field) design, implementation, evaluation and after-action report development. As exercise manager and director, Ms. Sherman designed exercises to enhance the city's emergency management processes and disaster operational responses, specifically testing the Executive Command and Communications Center/Emergency Operation Center disaster response and recovery operations. Major exercises included Hazmat '90 – a full-scale exercise involving the derailment of a CSX train transporting hazardous materials which required the evacuation and sheltering of residents located in the danger zone, National Security '89 – a full-scale exercise involving DC government officials, COG officials, officials from various Federal and private sector agencies participated in a mock response to terrorism and hazmat accident involving multiple sites and multiple deaths and injuries and testing the new Incident Command System , Potomac Plunge '88, full scale exercise involving a mock plane crash in the Potomac River that included the participation of various jurisdictions that test the Incident Command System, DC RADEX '85 ALPHA - a tabletop exercise based on the Calvert Cliffs Nuclear Power Plant Ingestion Zone Plan and Train #81 – an AMTRAK tunnel accident involving the evacuation of passengers. In addition, Ms. Sherman prepared After Action Reports for various emergency exercises, special events and emergency events including Presidential Inaugurals, The American University Munitions Event, and various severe weather events including the 1989 Severe Weather Presidential Disaster Declaration, and reported on these events to District officials and to FEMA.

As the Training and Exercise Manager, Ms. Sherman planned, executed, evaluated and was a key facilitator in the Annual Public Officials Emergency Preparedness Conferences and the Annual Business and Industry Emergency Preparedness Conferences hosted by the DC EMA. These conferences brought together officials representing the District and Federal governments, independent agencies, private sector agencies and businesses. The Metropolitan Washington Council of Governments participated in all major planning training and exercise activities, specifically relative to mutual aid topics. Ms. Sherman consistently served periodically as Acting Chief of Plans and Training Division from 1984-1992.

As Chief of Staff, Ms. Sherman senior advisor with responsibilities to supervise and oversee daily operations of divisions and units within the Office of the Director. Administered personnel, budget, resource procurement and allocation, public information ad information systems. Served as principal agent and key liaison with senior managers throughout the District government and spoke on behalf of the Director with top-level officials, private and civic groups and organizations and jurisdictional officials throughout the National Capitol Region (NCR). Primary duties involved initiating and directing action on major agency programs and priorities. Planned and coordinated all Executive Leadership Team and Senior Staff meetings, agency organizational development advances, and other special meetings to ensure that emerging issues are addressed and follow-up action completed. Prepared all testimony, briefing materials, white papers articulating agency policy and plans for presentation at Council hearings, Congressional hearings and other public forums.

Southern University 1982 – 1984

Ms. Sherman was Assistant Professor and Field Instruction Director. Curricular and evaluation development, developing and facilitating workshops for field instructors, chaired committees for various special projects and served as academic and career advisor. Identified appropriate field placements for students, negotiated contracts with agencies to accept student interns and monitored and evaluated student performance. Also monitored agency standards to ensure that student experiences were in accordance with the university's requirements and expectations. In addition, Ms. Sherman taught Orientation to Social Work, Women's Issues and the Social Work Senior Seminar.

FEMA, National Emergency Training Center USFA 1980 – 1982
Ms. Sherman was adjunct faculty for the Public Fire Education Curriculum. Assisted the lead instructor in developing and teaching a Public Fire Education Specialist Course. The course provided models for developing and implementing public fire education programs for different jurisdictions throughout the country.

District of Columbia Fire Department 1977 – 1980
Ms. Sherman was Director of the Public Fire Education Program. Developed and implemented fire safety programs to benefit the citizens of the District of Columbia, specifically the elderly and school children. Researched, compiled and analyzed statistics f fire problems; designed public education programs to alleviate the most common causes of fire.

Selected Publications

"Celebrating a Decade of Emergency Preparedness in DC", Emergency Management Report (1991)
"Public Fire Education From a Minority Perspective", Resource Exchange Bulletin US Department of Commerce, National Fire Prevention and Control Administration (August 1978)
"An Assessment of the Needs of the Low Income Residents in Northeast Washington, DC" (Ivy City and Trinidad), Washington Urban League SOS '76 - Part III, Masters Thesis, Howard University (May 1977)

Selected Presentations

"Project Management 101", National Congress for Community Economic Development, Annual Neighborhood Leadership Forum, "Value Based Violence Prevention Initiative Management and Community Development Training Series", St. Petersburg, Florida
"Targeting Public Fire Education Toward Minority Inner City Residents: The Community Organization Approach", Sixth Annual United States Fire Administration Conference, San Francisco, California, FEMA Annual Public Fire Education Conference, Airlie, VA and the Regional Public Education Conference, University of Maryland Fire and Rescue Training Institute, College Park, MD
"A National Assessment of Public Fire Education Programs for Lower Income Urban Residents", National Safety Council, Chicago, IL (Assessment Team Member)

6.6 Rosemary Speers PH.D., Exercise Controller / Evaluator

Qualifications Summary

Dr. Rosemary Speers is a research analyst and project director in the CNA Corporation's Operations Evaluation Group. Dr. Speers' experience includes on-scene analysis of emergency command centers during actual response operations for events such as the anthrax incidents of October 2001 and the 2003 outbreak of Severe Acute Respiratory Syndrome (SARS). She has examined response operations at the Emergency Operations Center in Arlington, Virginia, the Secretary's Operations Center in the Department of Health and Human Services, the Centers for Disease Control Prevention, and the U.S. Department of Agriculture Division of Veterinary Services (in Riverdale, Maryland). During the anthrax incidents of October 2001, Dr. Speers worked with the District of Columbia Department of Health to develop their plan to receive and distribute the Strategic National Stockpile.

Dr. Speers was the project director for CNAC's readiness assessment of disaster medical assistance teams (DMATs) within the National Disaster Medical System. She has led two large reconstruction and analysis efforts for the U.S. Department of Agriculture – examining response operations during the exotic Newcastle disease outbreak of 2002-03 and the BSE ("mad cow disease") case investigation of 2005. Also in 2005, she worked with U.S. Joint Forces Command to examine the coordination of response efforts among militaries, United Nations agencies and other international organizations following the tsunami in Southeast Asia.

Dr. Speers continues to serve as lead analyst and exercise designer for the Tripartite exercise series involving Federal agriculture agencies in the U.S., Canada, and Mexico. She most recently led CNAC's team to design, facilitate, document and analyze the Equinox 2005 exercise examining multi-jurisdictional response communications and organization among States and Provinces in the U.S. and Canada, along with National Emergency Response Teams. The execution of this exercise built upon CNAC's previous experience with emergency response operations during animal disease outbreaks and other response exercises.

Dr. Speers has performed extensive analysis of the response of field operators as well as government decision makers to simulated terrorist-initiated events, accidental outbreaks, and natural disasters. She has facilitated games and exercises involving local, state, Federal, military, and foreign government officials. Dr. Speers reconstructed the key actions, decisions, and events to determine lessons learned and best practices, and to formulate recommendations. Her team's work has provided the analytical basis for changes in procedures for the North American Foot and Mouth Disease Vaccine Bank and for changes in animal health response structures across jurisdictions and levels of government.

Role

Dr. Speers will be and Exercise Controller and Evaluator for the project.

Education

Ph.D., Biomedical Engineering, University of Michigan, Ann Arbor, MI
M.S.E., Mechanical Engineering, University of Michigan, Ann Arbor, MI
M.S., Biomedical Engineering, Northwestern University, Evanston, IL
B.S., Biomedical Engineering (minor in Mathematics), Wright State University, Dayton, OH

Relevant Experience

CNA Corporation 2000 – Present
Dr. Speers has performed extensive analysis of the response of field operators as well as government decision makers to both real-world and simulated events. She has facilitated games and exercises involving local, state, Federal, military, and foreign government public health and agriculture officials. During such projects, Dr. Speers reconstructed the key actions, decisions, and events to determine lessons learned and best practices, and to formulate recommendations.

As part of a CNAC team of analysts, Dr. Speers wrote the District of Columbia's plan to receive and distribute the Strategic National Stockpile during the anthrax incidents of October 2001. During that time she also conducted on-scene analysis of the emergency operations center at CDC. More recently, she directed CNAC's reconstruction and analysis of eradication efforts during the 2002-03 outbreaks of exotic Newcastle disease and the 2005 BSE case investigation.

Dr. Speers also compared different response strategies, operations, and high-level decision-making during the 2003 outbreak of Severe Acute Respiratory Syndrome (SARS). Following on-scene observations for over six months at the HHS Secretary's Operations Center (SOC), she reconstructed the operations of the Office of the Assistant Secretary for Public Health Emergency Preparedness in response to that outbreak. Most recently, she worked in the HHS SOC during Hurricane Katrina response operations to examine interagency coordination and shared situational awareness.

During the Tripartite exercise series involving Federal agriculture agencies in the U.S., Canada, and Mexico, Dr. Speers identified cross-cutting issues that arose during the simulated outbreaks of Foot and Mouth Disease (FMD), and built upon those lessons learned for the design of subsequent exercises. She has assisted with CNAC's ongoing work to design and facilitate public health response exercises for HHS, Arlington County, Virginia, and the Delaware Department of Health and Social Services. She also analyzed exercise play during the TOPOFF 3 exercise at the U.S. Embassy in Ottawa, Ontario. In addition, Dr. Spers has worked with officials in the states of North Carolina and California to reconstruct and evaluate multi-phase exercises examining response coordination between agriculture and other agencies at the local, state, and Federal levels.

National Security Studies program 2002-2005
Dr. Speers serves as a consultant to the National Security Studies program hosted by the Maxwell School of Syracuse University. She has co-facilitated a large-scale simulation game focused on high-level Federal government decision-making during both domestic and international incidents.

University of Michigan Medical Center 1998-2000
Dr. Speers was the Acting Director of the Vestibular Testing Center within the Department of Otolaryngology. She led a team of health professionals conducting diagnostic testing on problems related to dizziness and vestibular disorders. During her tenure at the University of Michigan, Dr. Speers authored a number of peer-reviewed scientific publications on topics ranging from postural adaptations following space flight, vestibular rehabilitation, and changes in control of human movement due to aging.

Honors and Awards

Pre-Doctoral Young Investigator Award, American Society of Biomechanics
NASA Graduate Student Research Fellowship
National Science Foundation Graduate Research Fellowship

6.7 Ivan C. A. Walks MD, Expert Facilitator /Subject Matter Expert

Qualifications Summary

While Chief Health Officer (CHO) of the District of Columbia and Director of the city's Department of Health (DOH), Dr. Ivan C.A. Walks was the incident commander during the October 2001 anthrax attacks across the National Capital Region (NCR). He was responsible for the coordination of local, regional and Federal resources. Dr. Walks' performance during this national crisis earned him a "Public Health Hero" designation from the American Public Health Association. Dr. Walks also received the Mayor's Distinguished Public Service Award for the successful management of the $1.5 billion Washington, DC Department of Health Budget, designed and implemented the international award winning DC Healthcare Alliance, and was a member of the team of public health and public safety experts that developed the World Trade Center Registry. Since leaving the Washington, DC Government two and one half years ago, Dr. Walks has participated in projects supported by the Federal government's Department of Health and Human Services (DHHS), Institutes of Medicine, and General Accounting Office (GAO) among others. He is frequently invited to participate in state and local emergency preparedness policy, planning and training efforts across the country in addition to select international health policy development efforts. In addition, Dr. Walks currently serves as a member of the Board of Governors of the American Red Cross' Liberty Oversight Commission, the National Advisory Committee of the Harvard University Kennedy School of Government Leadership for State Health Officials Program, and the Association of State and Territorial Health Officials (ASTHO) Preparedness Committee. He is also an Adjunct Associate Professor of Health Services Management and Leadership at The George Washington University School of Public Health and Health Services.

In May 2002, Dr. Walks founded Ivan Walks and Associates, LLC (IWA), a multi-disciplinary consulting firm delivering innovative solutions that align and integrate process, structure, and technology for a variety of healthcare industry clients. His primary responsibilities at IWA focus on healthcare and homeland security system design and implementation. Most recently, he has been the IWA principal responsible for providing technical assistance under a cooperative agreement between the National Urban League and the Department of Health and Human Services in response to the obesity epidemic among the African American population.

Role

Dr. Walks will serve as an expert consultant delivering subject matter expertise (SME) relevant to COG's requirements for the design, development, and execution of tabletop, functional and full field exercises as well as the associated after-action reporting and improvement plans. Specific tasks would include, but are not necessarily limited to, providing guidance to the CNAC Technical Advisory Group responsible for technical assistance to the exercise planning team, with tasks specifically related to health and public health issues; lead facilitation of tabletop exercises, and the development and review of Scenario Briefings, as assigned; attendance at the Midterm Planning Conference (MPC) and Final Planning Conference (FPC) in support of all tabletop exercises, and evaluation for the EOC CPX and Full Field Exercise.

Education

Leadership for State Health Officials, Harvard University (Cambridge, MA)
Senior Primary Care Policy Fellowship, Public Health Service of the U.S. Department of Health and Human Services (DHHS)
Transcultural Psychiatry Fellowship, University of California at Los Angeles (UCLA)
Doctor of Neuropsychiatry, Neuropsychiatric Institute at the University of California at Los Angeles (UCLA)
M.D., University of California at Davis (UCD) School of Medicine

Relevant Experience

Ivan Walks and Associates, LLC. 2002-Present
Serves as President and Chief Executive Officer (CEO) with primary responsibilities focused on healthcare and homeland security system design and implementation. Dr. Ivan Walks has established himself as a credible authority in the areas of health care and homeland security system design and implementation. He has participated in projects supported by the Federal government's Department of Health and Human Services (DHHS), Institutes of Medicine, and General Accounting Office (GAO) among others. And, he is frequently invited to participate in state and local emergency preparedness policy, planning and training efforts across the country in addition to select international health policy development efforts. Recent engagements have seen Dr. Walks providing:

Support to the U.S. Substance Abuse and Mental Health Services Administration (SAMHSA) to develop the national disaster planning framework for substance abuse treatment centers. Moreover, through a "Cadre of Consultants" contract with the SAMHSA Disaster Technical Assistance Center (DTAC) Dr. Walks was deployed by the Federal government to support its recent (2005/2006) hurricane disasters response efforts in the Gulf Coast Region;

Concept of operations (COOP)/business continuity guidance and technical assistance to states through the Office of Domestic Preparedness (ODP), Department of Homeland Security DHS);

Input on the development of a Bioterrorism Strategic Plan for Greater Southeast Community Hospital;

Input on the design, development, and execution of an intensive facilitated workshop course on Disaster Preparedness Training for Mental Health Professionals for the District of Columbia government;

Subject matter expertise (SME), guidance, and assistance to a team of IWA consultants responsible for revision and update of both the Maryland Strategic National Stockpile (SNS) Plan and Maryland Pandemic Flu Preparedness Plan.

Government of the District of Columbia
Washington, DC 1999-2002
As the District's Chief Health Officer and Director of the Department of Health, Dr. Walks' responsibilities included setting health policy, promoting and assessing the health of District residents, implementing and administering the District's health insurance programs, and assuring a healthy environment and cultural quality health care were available to every District resident and

visitor, while safeguarding public health within the District. Dr. Walks became a fixture in many households in the United States and throughout the world during the anthrax attack on Washington. As the operational commander of one of the largest public health interventions ever seen in the United States, Dr. Walks delivered "real time" updates on television and radio. Since the attack, Dr. Walks' expertise in preparing for and responding to a bioterror attack has been nationally recognized. He became a national resource on bioterrorism and other public health threats at numerous conferences and official meetings on Homeland Security.

Dr. Walks envisioned and oversaw a dramatic transformation of the Department of Health, one of the District's largest agencies with 1400 employees and a $1.3 billion budget. . During his tenure, Dr. Walks re-engineered a failing public hospital into the DC Healthcare Alliance: a collaboration between private hospitals, community clinics and the government serving the uninsured and underinsured.

In establishing health policy for the District of Columbia, Dr. Walks was instrumental in developing proactive programs and interventions that have resulted in unprecedented improvements in the District's health indicators. Under his leadership, infant mortality in Washington, DC was reduced by more than twenty percent to its lowest rate in the District's history.

ValueOptions
Virginia 1996 – 1999
As Vice President/Associate National Medical Director, Dr. Walks oversaw the design and development of managed behavioral health and child welfare initiatives, and the overall activities surrounding health and human services privatization. Designed and implemented DC – KIDS, a comprehensive integrated health care delivery system for the District of Columbia's children in foster care. Responsibilities as Associate National Medical Director included Chairing of the National Credentialing Committee and Cultural Competence Program design and implementation. Other duties included representation as the ValueOptions National Medical Director at academic and industry conferences. Dr. Walks was also accountable for corporate NCQA preparation, provider education and interdisciplinary and interagency coordination of care. Further, during 1998, he represented ValueOptions on the AMBHA Board of Directors while serving on the AMBHA Executive Committee as chair of its Public Policy/Public Sector Committee.

County of Los Angeles Department of Mental Health
Los Angeles, CA 1995-1996
Responsibilities as Medical Director for Managed Care included clinical design and management of the County-wide Managed Care Program and interface with state and local officials, local community leaders, consumer groups, other stakeholders and policy makers. Additional duties included new program and network development as well as provider training.

Charter Behavioral Health Systems
Covina, CA 1994-1996
Medical Director of Education and Outreach Programs responsible for design and presentation of public health focused community, consumer and provider education programs. Areas of particular focus were Cultural Competence, diversity training and interagency collaboration.

Los Angeles County Mental Health Commission
Los Angeles County Board of Supervisors 1993-1995
Dr. Walks served as a politically appointed Commissioner responsible for oversight of the activities of the County's Department of Mental Health (DMH). In order to take a more intimate role in ensuring the delivery of quality services during the implementation of the Department's new managed care initiative, Dr. Walks resigned after two years to take the position of DMH Medical Director of Managed Care.

The Community Health Councils Project 1994-1996
Los Angeles, CA
In the capacity of Member of the Board of Directors for this not-for-profit corporation, funded by grants from the Robert Wood Johnson Foundation and others, Dr. Walks worked closely with local organizations and elected officials to develop a community-based approach to addressing the significant deficiencies in the public health care systems serving residents throughout the County of Los Angeles.

Private Practice Neuropsychiatry/Integrated Health Resources, Inc.
Pomona, CA 1992-1996
CEO of a community-focused provider group that provided the full range of behavioral health care services and some general health screening services

6.8 Joseph Zelinka MA, Subject Matter Expert

Qualifications Summary

Mr. Zelinka is an independent consultant with 15 years experience in regional public safety matters. He brings unique expertise in regional planning, exercise, and communications from his years at the Metropolitan Washington Council of Governments (COG). His breath of experience includes comprehensive planning with Federal, military, state, and local law enforcement agencies, fire services, EMS organizations, health departments, and particularly emergency management agencies throughout the metropolitan Washington area and National Capitol Region. His comprehensive knowledge of regional public safety and health issues was gained from direct involvement with numerous committees, subcommittees and working groups established at COG to address threats at all levels of regional public safety and health, from snow emergencies to bio-terrorism. He is well informed on the issues, the players, the systems and the planning involved in arriving at regional solutions.

Role

Mr. Zelinka will serve the national capitol regional subject matter expert in the design, observation, and evaluation of tabletop exercises, CPX and full field exercises and in recommendations for improvements in operational plans.

Education

M.A. Public Administration, The George Washington University, Washington, DC
B.A. History, The Catholic University of America, Washington, DC

Relevant Experience

Metropolitan Washington Council of Governments (COG) 1987- 2002
Public Safety Planner I, II, Senior, Principal and Program Manager.
Mr. Zelinka developed the first Regional Snow Emergency Plan for the Washington area in 1987 under a grant from the Urban Mass Transit Administration (UMTA). The plan was operational for every subsequent snowstorm between 1987 and the Blizzard of “96 when the plan was revised. Mr. Zelinka facilitated the regional conference calls for each storm. In December 1993, EPA notified the region of a potential Water Emergency and Advisory to Boil Water because of a threat to the drinking water supply of DC and Arlington County with repercussions for the entire metropolitan region. Mr. Zelinka assumed responsibility for oversight of the operational center established at COG to respond to this three-day emergency. Subsequently, EPA provided COG with a grant to conduct a Water Summit and for an updated Water Supply Plan, both in which he was directly involved.

On January 18-19, 1994 the metropolitan region experienced a Power Emergency during single digit temperatures resulting in record demands for electric and natural gas service. Once again Mr. Zelinka led COG’s quick response to coordinate a regional curtailment to conserve energy.

"The Blizzard of 1996" crippled the region for a week because of two back-to back heavy snow-storms. Mr. Zelinka was the primary assistant to the COG Executive Director in coordinating the regional response to this prolonged disaster. Once again the US Department of Transportation provided COG with a grant to improve snow coordination and Mr. Zelinka drafted the new plan. Y2K was the next challenge for Mr. Zelinka and COG. Y2K preparations sponsored by COG greatly aided member local governments to prepare for a variety of anticipated contingencies that fortunately never materialized. He was totally involved in planning for the regional training exercise in September of 1999 and in the evaluation that determined that a regional center was not needed on December 31st.

The events of 9-11 and the subsequent Anthrax Scare provided the Washington region with its greatest public safety challenge. Mr. Zelinka was instrumental in gathering key local, state and Federal officials on a series of conference calls to determine the region's response to both events. 9-11 chiefly involved the Chief Administrative Officers (CAOs) of the region, whereas the Anthrax scare mainly involved the regional health officers. Mr. Zelinka was heavily involved with planning for the West Nile Virus epidemic, with a series of meeting with medical officials and the preparation a regional plan. From a DHHS grant, COG contracted with Battelle Memorial Institute to develop a Medical Response to a Bio-Terrorism Event in the National Capital Region. Mr. Zelinka was the point of contact for the development of the plan, which addressed the need for procedures to quickly identify an attack, to share information and to distribute assets from the National Medical Stockpile. In addition to the above real world events, Mr. Zelinka worked on the communications systems to support decision-makers, such as the Washington Area Warning System (WAWAS), CapWin, PSWIN, and an early stage RICCS - a regional voice and data system.

United States Air Force 1963-1986
Mr Zelinka is a retired Lieutenant Colonel with 23 years of service in the Executive Support and Planning career fields. He is a veteran of Vietnam and of NATO. He had two tours in Headquarters Air Force in the Office of the Assistant Chief of Staff for Studies and Analyses. He was the Executive Officer in the Defense Security Assistance Agency - the Foreign Military Sales in the Office of the Secretary of Defense. He was the Military Assistant to the Air Deputy in Allied Forces Northern Europe, and Aide to the Commander of the Defense Electronic Supply Center in Dayton, Ohio. He retired as the Chief of Plans, first for the 76th Airlift Division and when the Division deactivated, for the 1776th Air Base Wing at Andrews Air Force Base, Maryland.

Professional Associations

Air Force Association
Past Member: International Association of Chiefs of Police
International Association of Fire Chiefs

6.9 Stephen Sharro MS, Subject Matter Expert

Qualifications Summary

Mr. Sharro has more than 30 years experience as a Federal manager and executive. For the last 15 years, Mr. Sharro served in various leadership positions with the Federal Emergency Management Agency and the Department of Homeland Security. Before joining FEMA, Mr. Sharro managed education, training, and information technology programs for the Department of Defense, serving in the United States, Europe, and Southeast Asia. His work with DOD included a tour as deputy and acting director of education for the U.S. Army Europe.

As Superintendent of the Emergency Management Institute, Mr. Sharro led efforts to train state, local, and Federal government officials in disaster preparedness and to professionalize the business of emergency management.

With an academic background in education, years of professional experience in training senior leaders for DOD, FEMA, and DHS, and a wealth of hands-on operational experience in Federal response operations, Mr. Sharro brings a unique perspective to the business of homeland security.

Role

Mr. Sharro will serve as a subject matter expert on the National Response Plan and the intergovernmental interface; he may also serve as a facilitator and controller.

Education

Diploma, Federal Executive Institute, Charlottesville, Virginia
Diploma, United States Army War College, Carlisle Barracks, Pennsylvania
M.S. Education, University of Southern California, Los Angeles, California
B.S. English Education, Indiana University of Pennsylvania, Indiana, Pennsylvania

Relevant Experience

Department of Homeland Security / FEMA 1990 - Present
Director of Training and Superintendent of the Emergency Management Institute from 2000 to 2006.
Designated and trained as a DHS Principal Federal Official to represent the Secretary in incidents of national significance.

Selected Publications

Numerous articles, textbooks, and instructor guides at the Emergency Management Institute.
“The Training of Officers,” Proceedings, July 1990
Numerous book reviews in the Journal of Civil Defense

Committees, Panels, and Advisory Boards

Federal Law Enforcement Training Center Board of Visitors
Charter Chair of the Department of Defense Education Services Advisory Panel

Professional Associations

International Association of Chiefs of Police
American Society for Training and Development
Senior Executives Association
U.S. Army War College Alumni Association
Army Historical Institute

6.10 Richard Irwin BS, Subject Matter Expert

Qualifications Summary

Mr. Richard Irwin has 29 years of extensive operational and senior management experience managing situations involving stress and potential crises. Areas of expertise and specialization include: crisis management and emergency and disaster preparedness; National Special Security Event planning; counter terrorism programs; threat assessments; protective operations; personal and VIP protection; anti-terrorism and force protection; personnel security; physical and technical security; residential security; information security; operational security; airport security; security education training and awareness; investigations and inspections; access control; emergency destruction; post blast investigation; surveillance, counter-surveillance; counterintelligence, and Interagency Coordination.

Mr. Irwin, as the Director of Incident Management at the Office of Homeland Security (OHS), the Homeland Security Council (HSC) at the White House, and the Department of Homeland Security (DHS), was involved in the following exercises and real time incidents, several of which involved or directly impacted the National Capitol Region (NCR). Exercises included TOP OFF II (May 2003), Determined Promise (August 2003), Unified Defense (February 2004), Eligible Receiver (May 2004), TOPOFF III CPX / Forward Challenge (May 2004). Incident management events included the North East U.S. Blackout (August 2003), Hurricane Isabel (September 2003), Holiday Threat Period (December 2003 - January 2004), President Reagan Funeral (June 2004), G-8 Summit (June 2004), Elevated Threat NYC/Washington DC (August 2004), Presidential Elections (November 2004), Presidential Inauguration (January 2005) and State of the Union (February 2005).

Role

Mr. Irwin will serve as a subject matter expert and as a supporting facilitator for the two tabletop exercises.

Education

BS, York College, York, PA
Emergency Medical and First Responder Qualified

Relevant Experience

Director of Incident Management, Department of Homeland Security
Mr. Irwin was responsible for providing strategic situational awareness, synthesizing key intelligence and operational information, framing operational courses of action/policy recommendations, anticipating evolving requirements, and providing decision support to the Secretary DHS, the Homeland Security Advisor and other National authorities as requested. Co-chaired the National Special Security Events working group, which coordinated interagency planning and security measures for events of national significance.

Director of Incident Management, the Homeland Security Council and the Office of Homeland Security at the White House.
Mr. Irwin served as an advisor to the Assistant to the President for Homeland Security, on homeland security issues, intelligence and warning, domestic counter-terrorism, and incident management. Coordinated incident management efforts for all domestic departments and agencies prior to, during and immediately after a terrorist threat or attack in the United States.

Emergency Preparedness Program Manager, CIA
Mr. Irwin developed and implemented contingency plans focusing on prevention and preparedness to decrease threats to CIA personnel, assets, activities, programs and systems immediately after 9/11; and plans to support mitigation to improve emergency response and on-scene measures with emphasis on preservation of life and safety of personnel.

6.11 Thorton Boyd AA, Subject Matter Expert

Qualifications Summary

Mr. Thornton Boyd has many years of direct management level participation in national/homeland security and counter-terrorism (CT) response readiness programs and clearly understands their complex history, participants and challenges. Directly participated in numerous COOP/COG related activities since the early 1990s and possesses deep understanding of related strategic, tactical and technical operational imperatives. Proven leadership, management and communications skills gained and proven in a series of relevant and successful organizations and programs focused on national level readiness. Mr. Boyd is also an experienced Weapons of Mass Destruction (WMD) Explosive Ordnance Disposal (EOD) operator and educator. Engaged in the national WMD response effort from its beginnings, his focus has been on readiness training and exercises for national-level responders for the past ten years. His technical expertise spans WMD and improvised device design, advanced Render Safe Procedures (RSPs), and innovative training and readiness program design and implementation.

Role

Mr. Boyd will serve as a subject matter expert in the Exercise Design, Development and Exercise Control on this project.

Education

A.A. College of Southern Maryland, 1986
B.A. Excelsior College-pending, Fall 2006
National Nuclear Security Agency (NNSA) Vulnerability Assessment Course, 2002, Albuquerque, NM
CIA Nonproliferation Course, 1996, McLean, VA

Relevant Experience

Applied Marine Technology, Inc. 2002 - Present
Operations Program Manager: Manages collaborative efforts of Federal, State and local responder communities on Congressionally-mandated TOPOFF Weapons of Mass Destruction (WMD) exercise series in domestic and international venues, co-sponsored by the U.S. Departments of Homeland Security (DHS) and State. Participates in DHS-sponsored vulnerability assessment programs providing formal threat analyses based on real-time intelligence of complex terrorist organization tactics and techniques applied to physical, cyber and WMD security aspects of domestic infrastructure targets.

Oak Ridge Institute for Science and Education (ORISE) 1996 – 2002
Senior Operations Advisor: Represented U.S. Department of Energy (DOE) in interagency Counter Terrorist Technical Operations Technical Support Working Group (CTTO TSWG) processes for deriving and fulfilling advanced technology requirements for CT responders.

Trained FBI Hostage Rescue Team and Bomb Data Center response elements in WMD operations, including advanced render safe procedures using latest available technologies. Facilitated FBI advanced technologies requirements assays.
Authored and implemented nuclear/radiological WMD syllabus for FBI Hazardous Devices School (HDS) in Huntsville, Alabama where civilian and military law enforcement bomb technicians are trained and nationally certified. Managed six-million dollar annual DOE WMD Exercise program budget; personally awarded for manifold process improvements that cut costs by 16%. Program changes resulted in very favorable comments in the Government Accounting Office (GAO) report on national CT preparedness. Led DOE planning teams for WASATCH RINGS WMD exercise series preparatory to the 2002 Winter Olympics, TOPOFF 2000 in the National Capital Area and numerous similar CBRNE CT events including infrastructure protection operations for Y2K.

United State Navy 1976 – 1996
Master Explosive Ordnance Disposal (EOD) Operator-UK, Caribbean, Middle and Far East

- Master Training Specialist at joint EOD School, trained U.S. and international special operations personnel and other U.S. government agents. Developed and managed several advanced curricula for U.S. and international bomb technicians worldwide.
- Pentagon Enlisted Community Manager for all USN Special Warfare and Operations personnel—performed cradle-to-grave strategic management for Navy Divers, EOD and SEAL operators and Combatant Craft Crewmember communities.
- Joint Special Operations Command (JSOC), Ft Bragg, NC as battle staff National Security WMD response officer, managed related special category (SPECAT) programs, planned and executed several classified operations.
- Designed, implemented and managed WMD readiness program for DoD special operations elements tasked with extraordinary national security missions.
- Modified DoD special operations command and control structure and processes to accommodate CT WMD response.
- Designed and executed precedent-setting Front End Analysis program to identify and solve advanced technology shortfalls for national WMD response. Results shaped multi-million dollar procurement and research strategy for U.S. Special Operations Command for years to follow, emphasizing advanced technologies and WMD sensor methodologies.

6.12 Samara Adrian BA, Subject Matter Expert

Qualifications Summary

Ms. Samara Adrian is an unquestioned expert in the field of training and exercises and Domestic Emergency Response planning, managing, assessing, executing, and reporting. She brings almost a decade of current, relevant State-level experience planning, controlling, evaluating, conducting, and assessing disaster preparedness exercises. She wrote the original prototype plan that was subsequently adopted by the 100 counties of the State of North Carolina. In recent years, Ms. Adrian has become known as the North Carolina Department of Public Health subject matter expert on bioterrorism exercises and response planning. She is an outstanding Training Manager, and has developed the curriculum and training materials currently in use throughout the State. Her work in North Carolina is famous, and her skills and energies have been requested all along the Southeastern United States. Ms. Adrian is the consummate team player. She now supports AMTI's aggressive National-level emergency response exercise planning team, which recently conducted America's largest ever National-level exercise for the Department of Homeland Security, Office of Domestic Preparedness.

Role

Ms. Adrian will serve on this project as an Exercise Design, Development, and Control Specialist and as the Scenarist.

Education

B.A. Fine Arts, University of New Mexico, Albuquerque, NM

Relevant Experience

Applied Marine Technology, Inc. 2003 – Present
Senior Exercise Designer for the Illinois National Guard Heartland Strike Full Field Exercise being planned during Fall 2005 and Spring 2006 for an exercise period of 5-9 April, 2006. Developed all meeting materials, attended planning meetings with AMTI personnel, produced meeting summaries, all exercise materials except for patient cards and terrorist weapons design. AMTI personnel developed patient cards under my supervision and Illinois National Guard designed weapons. Supervised MSEL development by contractors. Jointly surveyed exercise sites and arranged for location of support for logistics and provision of volunteer role players.

Senior Exercise Specialist for Orbit Comet, a full-scale annual exercise at Fort Bragg Army, Pope Air Force Base, and Camp Lejeune Base joint Department of Defense full-scale annual exercise. Developed HSEEP mandated exercise document Materials and presentations included, but were not limited to: scenarios, scenario summaries, Master Scenario Event Lists (MSEL) and MSEL messages, COSINs, EVALPLANs, EXPLANS, exercise handbooks, staff, actor, and participant training manuals and presentations Also provided intelligence materials in advance of

and during game days, in support of and response to FBI and USSS, EPA and SBI investigative requirements.

Exercise Specialist for the Illinois State Exercise Program under the Illinois Emergency Management Agency for 2005. Duties included co-producing and co-editing exercise materials and PowerPoint presentations for tabletop and field exercises for five Illinois counties, the City of Chicago and the State of Illinois. Materials and presentations included, but were not limited to: scenarios, scenario summaries, Master Scenario Event Lists (MSEL) and MSEL messages, COSINs, EVALPLANs, EXPLANS, exercise handbooks, staff, actor, and participant training manuals and presentations, meeting agendas and minutes, and Quick Look Reports and After Action Reports. Operated SIMCELLs for several of these exercises.

Exercise Team Leader for the North Carolina Public Health Bioterrorism Exercise Series for 2004-2005. Series included developing and conducting a Senior Leadership Seminar, a Tabletop Exercise, a Command Post Exercise and supporting NCPH participation in a Full Field Exercise. Quick Look reports were provided for all but the last event and an After Action Report was provided which addressed all parts of the 2005-2005 series. In 2003-2004, Ms. Adrian participated in planning, training; implementation of the North Carolina Public Health Bioterrorism Exercise entitled "Triple Play". This exercise consisted of three phases. The first was a multi-site operational field exercise of a convert biological release of a zootoxic agent and the epidemiological investigation in response. The second phase was a full field, multi-state exercise involving continued epidemiological investigation, request and receipt of the Strategic National Stockpile and Vendor Managed Inventory and conducting multiple dispensing sites. The third phase was in the form of a seminar game addressing the key decisions and actions taken as part of isolation of quarantine of confirmed or suspected infected people and animals.

MSEL specialist experience includes the co-development of an advanced Access-based Master Scenario Events List Exercise development tool and training manual that has been used in multiple state and military exercises.

University of North Carolina at Chapel Hill
School of Public Health October 2003 – September 2004
Exercise Curriculum Designer and Instructor at the University of North Carolina at Chapel Hill, School of Public Health. Activities included writing curriculum and course materials for and instruction of two on-line interactive courses on disaster exercise design for the university's Masters Certificate Program in Disaster Management.

North Carolina Division of Public Health
Department of Health and Human Services January 2000 – June 2003
Public Health Bioterrorism Education and Training Coordinator for the North Carolina Division of Public Health, Department of Health and Human Services. Responsible for development and design of a system to address bioterrorism, infectious disease, and health disaster preparedness at the state and local level. This system addresses state and local staff training needs assessments; development of core material, supplemental material, new curriculums, and alternative delivery systems. It involves grant application as well as awarding, supervision and administration of grants and contracts to promote the state's goals. It requires the training, integration and coordi-

nation of personnel and related activities from the NC Public Health Office of Preparedness and Response, seven state-funded county Public Health Regional Surveillance Teams, local health departments and primary care providers as well as local and state emergency response teams and their public and private partners. It includes assisting state and local governments in development of plans for health disasters including man-made and natural events, and drafting of bioterrorism response plans, disease specific response plans such as the Smallpox Vaccination Plan and National Pharmaceutical Stockpile plan.

Public Health Bioterrorism Preparedness Planner for the North Carolina Division of Public Health, Department of Health and Human Services. Under CDC grants, responsible for state and local public health's preparedness and response planning for bioterrorism, infectious disease, and health disasters. This effort involved recruiting and coordinating internal and multi-agency planning and response partners to assist in development of plans and operational and strategic guidelines. It included conducting one of the first state level bioterrorism tabletop exercises, and training and exercising local planning and response partners across the state. These initiatives required participation in state and national task forces, committees, and planning groups. Drafted and edited all North Carolina bioterrorism related plans and annexes. Wrote, produced and developed multiple scenario tabletop exercises and provided them to over 2,400 people in 60 + counties and 3 states.

North Carolina Division of Emergency Management
Department of Crime Control and Public Safety 1996 – 1999
Terrorism Preparedness and Response Planner for the North Carolina Division of Emergency Management, Department of Crime Control and Public Safety. Responsible for identifying and defining state's terrorism (Weapons of Mass Destruction – Nuclear, Biological, Incendiary, Chemical, and Explosive) short term and long term planning and preparedness goals. Lead state Terrorism Task Force and served on multiple state, county, local, private and military task forces and workgroups to assist in development of preparedness and response plans on all levels. Drafted state plans for terrorism and foreign animal disease outbreaks.

Deputy Chief of Information and Planning for the North Carolina Division of Emergency Management, NC Department of Crime Control and Public Safety. Supervised Information and Planning and Geographic Information Systems sections in research, training, productions of internal and external reports and grant applications. These provided support of North Carolina's Disaster Response Operations Center (DROC) activities including Grant Management, Individual and Public Assistance, and Mitigation. Provided Incident Action Plans, Situation Reports, After-Action Plans, and graphical representations via Geographical Information Systems mapping of events.

Selected Publications

Adrian, Samara A., AmeriCorps Disaster Preparedness Outreach Program Grant Application. Raleigh, North Carolina - grant application - Crime Control & Public Safety & North Carolina Emergency Management, 1997

Department of Housing and Urban Development Community Development Block Grant Supplemental Appropriation Request. Raleigh, North Carolina - grant funds application - Crime Control and Public Safety and North Carolina Emergency Management, 1996

"Contract Negotiations: Legal Terminology and Explanation of Liability Issues., Raleigh, North Carolina, Exide Electronics Corporation, 1992

Committees, Panels, and Advisory Boards

Member of North Carolina Terrorism Consequences Task Force 1998-2002
Member of North Carolina National Guard/Department of Transportation Terrorism Strategies Planning Group 1999-2001
Member of Governor's Terrorism Planning Convention Committee 2000, 2001
Member of North Caroline Division of Public Health Bioterrorism Task Force 1999-2004
Member of Public Health State of Practice Committee
Member of Technical Advisory Committee for the Innovative Strategies RTI Bioterrorism Project 2000
Member of Hospital Hazardous Materials Advisory Committee 2000, 2001

Professional Associations

FULL DAY BIOTERRORISM SINGLE AND MULTI-COUNTY MULTI-MEDIA TABLETOP EXERCISES provided to NC counties.
NATIONAL PHARMACEUTICAL STOCKPILE: LOCAL PLANNING for Joint Office of Emergency Medical Services and NCPH – October 2002
PREPARATION, PLANNING AND RESPONSE TO BIOTERRORISM AND LARGE SCALE INFECTIOUS DISEASE EVENTS: for Mayes Center September 2002
NORTH CAROLINA COMMUNITY COLLEGE TERRORISM RESPONSE CURRICULUM REVIEW – August 2002
THE ROLE OF A PUBLIC HEALTH LEADER IN A DISASTER, Public Health Leadership Program – March 2002
BIOTERRORISM SURVEILLANCE: for Public Health Surveillance Teams, May 2002
INFECTIOUS DISEASE/SYNDROMIC SURVEILLANCE for State Nursing Association – April 2002
HOSPITAL PLANNING AND RESPONSE TO BIOTERRORISM for Marie Parham Hospital October 2001
QUARANTINE SCENARIO for Local Health Directors – October 2001
OVERVIEW OF BIOLOGICAL AND VIRAL DISEASES for County Boards of Health – October 2001

6.13 Robert Hall MS, Exercise Design and Development Lead

Qualifications Summary

Mr. Robert Hall has a wide range of experience in emergency preparedness in both military and civilian settings including exercise design, execution, and evaluation; emergency plans development and evaluation; command and control (C2) research; and command and control management. In the civilian setting, Mr. Hall was the Task Lead for the update and rewrite of the District of Columbia Disaster Response Plan and Homeland Security Strategic Plan in 2005. In 2004, Mr. Hall developed the Delaware Homeland Security Strategic Plan, the Multi-Year Exercise Plan, and the Initial State Implementation Plan for the Emergency Management Agency in Smyrna, DE. In this work he developed a quantitative threat analysis for specific Delaware cities and events. He developed methodologies to train, exercise, and evaluates emergency response capability and detailed them in an evaluation plan.

In the military, Mr. Hall held a key exercise coordination position for the U. S Central Command at the American Embassy in Cairo, Egypt from 2001 to 2003. Mr. Hall was the lead in-country BRIGHT STAR Exercise Planner, the largest military exercise conducted by the U. S. with a $120 million budget and involving forces from the U. S., Egypt, and twelve coalition countries. His prior experience extends into key C2 management positions at Dover AFB as Chief of Command Post and Chief of Plans and Programs; C2 structures of over 50 people. At Scott AFB he was Branch Chief for the Air Mobility Command Fixed C2 office; a C2 structure of over 800 people. He also led concept develop research efforts in C2 training as an Operations Branch C2 Research Scientist at the Air Force Armstrong Laboratory in Dayton OH.

Mr. Hall has specific experience in the management of emergency response operations. As Technical Assistance Coordinator, State Homeland Security, Delaware Emergency Management Agency, he held numerous emergency management controller positions in the Delaware Emergency Management Agency EOC command, operations, and technical assistance center cells. Real world response scenarios were typically weather related incidents including floods, hurricane remnants, and snowstorms. Exercise scenarios included water contamination, hurricanes, and floods. As Operations Officer, J-3 Operations, Joint Task Force Andrew, Miami, Florida, Mr. Hall tracked military mission assignments and progress made towards mission objectives during recovery mission after Hurricane Andrew and briefed senior military and FEMA officials on mission status at daily briefings. As Chief, Wing Plans and Programs, 436th Airlift Wing, Dover AFB, Delaware, he managed physical layout, software and hardware installations, and procedural processes for the Dover Air Force Base Crisis Action Team. Activated the team during three military and numerous local contingencies, and a command readiness inspection and supervised 20-person office that analyzed wing deployment taskings, delineated wing support, and notified headquarters of shortfalls and limitations. Established procedures and processes to manage the implementation of a new deployment concept called Expeditionary Air Force.

AS Chief, Fixed Command and Control (C2) Operations Branch, Headquarters Air Mobility Command (AMC), Scott AFB, Illinois, Mr. Hall was the AMC functional expert for fixed command and control; advised the AMC Director of Operations on fixed C2 capabilities and short-

falls, managed organizational policies, procedures, and regulations governing twelve continental US and eight overseas command posts; C2 system employed over 800 personnel, managed the development of controller procedures and processes to incorporate the KC-135 and its Single Integrated Operational Plan (SIOP) mission into AMC Command Posts. In addition, he oversaw the installation of AMC Command and Control Information Processing System (C2IPS) into command posts and overseas operations centers. Project assignments included action officer and the sole AMC representative for the four-star "Air Force Command and Control Summit" which established and implemented the concept of the Expeditionary Air Force. Operational focal point for the integration, implementation, and evaluation of AMC command and control communications, computer upgrade programs, and initiatives.

As Chief, Wing Command Post, 436th Airlift Wing, Dover AFB, Delaware, Mr. Hall managed the command and control of Dover AFB flight operations; 25 percent of the U.S. military airlift capability, controlled the wing's response to emergency action messages and the execution of airlift and mission support activities and directed and supervised over 70 enlisted aircraft maintenance, air transportation, operations specialists, and 11 duty officers.

Mr. Hall was also engaged in National Capital Region, the Council of Governments activities including Homeland Security Research Specialist, The CNA Corporation. Major project included the District of Columbia Response Plan. Reviewed and updated the District of Columbia, Emergency Management Agency, District Response Plan including the Terrorism, Hazardous Materials Incident, and Worker Safety Annexes. A second major project included the District of Columbia Homeland Security Strategic Plan. Reviewed and updated the District of Columbia Homeland Security Strategic Plan. Updated District goals, objectives, implementation steps, action plans, and performance measures. Aligned the strategy to the Department of Homeland Security (DHS) mission areas and the DHS Preparedness Goal. Provided guidance on how to improve the District homeland security program.

Mr. Hall's exercise experience includes exercise conduct, exercise evaluation and analysis and preparation of After Action Reports. As Homeland Security Research Specialist, The CNA Corporation, Mr. Hall conducted emergency management functional analysis and evaluation and provided emergency management injects into Delaware Department of Health Biological Attack scenario to improve exercise realism. Managed simulation cell during exercise for the Delaware Operation Diamond Shield Exercise.

As Chief, Wing Plans and Programs, 436th Airlift Wing, Dover AFB, Delaware, Mr. Hall developed BATTLEAXE exercise program for ATSO training. Evaluated the capabilities of airman to deploy into hostile environments, their ability to survive and operation (ATSO) when under chemical, biological, and conventional attacks, and their ability to safely conduct flight line operations in hostile territory. Prepared the wing for command readiness inspection. He also managed the 436th Airlift Wing Exercise Evaluation Team (EET) and conducted quarterly wing exercises in accordance with AMC policies. Exercises required the development of a MSEL, coordination with all effected wing agencies, convening of the EET, execution of the exercise, and development of an After Actions Report.

Mr. Hall's knowledge of or experience with Federal weapons of mass destruction policies and programs included in his role as Homeland Security Research Specialist, The CNA Corporation encompasses, Department of Homeland Security, Preparedness Directorate. Target Capability Life-cycle Cost Project. Analyzed the life-cycle cost of National Priority Target Capabilities, the determination of cost-drivers within each capability, and development of life-cycle cost models. The District of Columbia Response Plan. Reviewed and updated the District of Columbia, Emergency Management Agency, District Response Plan including the Terrorism, Hazardous Materials Incident, and Worker Safety Annexes. The District of Columbia Homeland Security Strategic Plan. Reviewed and updated the District of Columbia Homeland Security Strategic Plan. Updated District goals, objectives, implementation steps, action plans, and performance measures. Aligned the strategy to the Department of Homeland Security (DHS) mission areas and the DHS Preparedness Goal. Provided guidance on how to improve the District homeland security program. The Department of Homeland Security Performance Measures. Supported the Performance Metrics and Assessing Levels of Preparedness project for the Department of Homeland Security, Preparedness Directorate, Grants and Training Office. This work involved development of preparedness scenarios, Universal Task List (UTL) and Target Capabilities List (TCL), a UTL/TCL database, and coordination with Federal, State, and local jurisdiction stakeholders.

In addition, as Technical Assistance Coordinator, State Homeland Security, Delaware Emergency Management Agency, Mr. Hall researched, wrote, and coordinated the "Delaware Strategy for Homeland Security." Developed strategy concept to include Delaware homeland security review process, State threat and vulnerability, State goals and objectives, State action plan, and response discipline enhancement evaluation. Coordinated the FY2004 Delaware Homeland Security Grant Program Implementation Plan. Developed presentations for subcommittees, working groups, and the State Advisory Counsel to allocate Federal grant funds totaling over $20 million to ten response disciplines. Provided technical expertise on grant process and allowable expenditures to law enforcement, fire service, medical service, hazardous materials, and other response discipline representatives.

Mr. Hall also has experience in the coordination of senior leadership in multi-jurisdictional exercises or actual emergencies. As Chief, Military Coordination Division, American Embassy, Cairo, Egypt, he served as the Principal in-country military liaison officer for US Central Command's current military operations and exercise planning in Egypt. Awarded Joint Service Commendation Medal for coordination accomplishments during Operation IRAQI FREEDOM. He was the Single in-theater coordinator for $120 million BRIGHT STAR exercise involving 12 coalition countries, joint US and Egypt Naval exercises, and regional conferences and advised US Central Command general officers and headquarters staff on the signing of U.S. and Egyptian agreements supporting U.S. forces during Exercise BRIGHT STAR and Operation IRAQI FREEDOM, and agreements supporting U.S. Air Force operations in Egypt.

Role

Mr. Hall will review exercise objectives from the perspective of NCR Regional and District Response and Homeland Security Strategic Plans. He will assist in the construction of NCR scenarios, MSEL construction from scenario characteristics, and development of exercise injects based on scenarios. Mr. Hall will support exercise execution most probably in the Exercise Simulation Cell.

Education

M.S. -Master of Science in Industrial Engineering, Arizona State University, Tempe, AZ
B.S. -Bachelor of Science, United States Air Force Academy, Colorado Springs, CO

Relevant Experience

The CNA Corporation 2005 – Present
Mr. Hall led projects to assist local and Federal agencies with the development of emergency preparedness strategy and plans. Recent projects include:

- District Response Plan. Reviewed and updated the District of Columbia, Emergency Management Agency, District Response Plan including the Terrorism, Hazardous Materials Incident, and Worker Safety Annexes. The update document captured recent organizational and process changes created by the release of the National Response Plan and National Incident Management System.

- District Homeland Security Strategic Plan. Reviewed and updated the District of Columbia Homeland Security Strategic Plan. Updated District goals, objectives, implementation steps, action plans, and performance measures. Aligned the strategy to the Department of Homeland Security (DHS) mission areas and the DHS Preparedness Goal. Provided guidance on how to improve the District homeland security program.

- Department of Homeland Security Performance Measures. Supported the Performance Metrics and Assessing Levels of Preparedness project for the Department of Homeland Security, State and Local Government Coordination and Preparedness. This work involved development of preparedness scenarios, Universal Task List (UTL) and Target Capabilities List (TCL), a UTL/TCL database, and coordination with Federal, State, and local jurisdiction stakeholders.

Delaware Emergency Management Agency 2004 – 2005
Mr. Hall assisted the State of Delaware with emergency preparedness activities. Projects included:

- Delaware Strategy for Homeland Security. Documented research, provided vulnerability analysis, structured homeland security goals and action plans, and developed an evaluation methodology. Development of the strategy involved a three-month research and analysis effort that reviewed Homeland Security literature to produce quantitative measures for the effects of covert

nuclear, biological, chemical, radiological, high-explosive and cyber attacks on the Delaware homeland.

- Delaware Multi-Year Exercise Plan. Documented an exercise methodology used by the Department of Homeland Security, Office of Domestic Preparedness (DHS/ODP) as it relates to increasing the capability of emergency responders in Delaware. Assisted the development of a four-year schedule for multi-jurisdictional exercise that ties DHS/OPD exercise methodology to an executable exercise plan.

United States Air Force 1978 – 2003
Mr. Hall designed, conducted, and evaluated military exercises; led numerous military Command and Control (C2) agencies; and conducted research into ground operation C2 training systems. Assignments included:

- Chief, Military Coordination Division, American Embassy, Cairo, Egypt.

Lead in-country Exercise Planner for United States Central Command:

o Coordinated all exercise activities: Facilitated the development of U. S., coalition country, and Egyptian agreements on the major components of combined exercises. Major exercise components coordinated were field training, an amphibious assault demonstration, a field-training exercise, and an operational-level computer generated exercise. All exercise details were developed into a master schedule of events and coordination with Egyptian, NATO, and coalition military representatives.

o Coordinated Egyptian exercise conferences: Coordinated U. S. participation in Egyptian conference, site-visits, and distinguished visitor meetings. Egypt conferences included a Concept Development Conference (20 people), Initial-Planning Conference (50 people), Mid-Planning Conference (120 people), and Final-Planning Conference (250 people).

- Chief, Wing Plans and Programs. Dover AFB readiness expert. Advised the Wing Commander on the ability of the wing to deploy on its wartime mission and meet prescribed wartime taskings. Managed the physical layout, software and hardware installations, and procedural processes for the Dover Air Force Base Crisis Action Team. Led the Dover AFB Exercise Evaluation Team in accomplishing quarterly exercises for a period of two years.

- Chief, Fixed C2 Operations Branch. The Air Mobility Command (AMC) functional expert for fixed C2. Advised the AMC Director of Operations on fixed C2 capabilities and shortfalls. Performed duties as the operational focal point for the integration, implementation, and evaluation of AMC command and control communications, computer upgrade programs, and initiatives.

- Chief, Air Operations Systems Integration. Advised the AMC Directors of Operations, and Plan and Programs on the ability of AMC C2 systems to meet the operational needs of field units. Evaluated operational processes and information flows in AMC command and control organizations and information systems. The evaluation results were used to establish requirements to integrate diverse and “stove-piped” military information systems in command centers.

• C2 Investigative Research Program Manager. Supervised research initiatives in developing training technologies for use in Air Force ground command and control operations.

Selected Publications

The District of Columbia Homeland Security Strategic Plan, 2005.
The District Response Plan, 2005.
The Delaware Strategy for Homeland Security, 2004.

Professional Associations

Association for Computing Machinery

7 Appendix B After Action Reports

We have written numerous after action reports (AARs) on both exercises and real world events. Our reports can contain sensitive information on a jurisdiction's preparedness or response capabilities and we treat them as confidential client documents. As we would do for the NCR, we cannot distribute them without permission from the sponsor. We received permission to include the following three examples of recent AARs:

- *Red Carriage After Action Report: Analysis of a Strategic National Stockpile Point of Dispensing Site Test*: This report documents a functional SNS dispensing exercise held in Prince George's County, Maryland.
- *Operation Diamond Shield II: After Action Report*: This AAR provides an analysis of a three-day state-wide, full-scale bioterrorism exercise we designed and implemented for the Delaware Division of Public Health.
- *Tripartite Series: Analysis and Recommendations from Equinox*: This AAR provides an analysis of a three-day multi-jurisdictional functional Foot and Mouth Disease (FMD) exercise we designed and implemented for the U.S. Department of Food and Agriculture in conjunction with Canada, Vermont, Maine, and New Hampshire.

All of these AARs conform to HSEEP requirements and include the following elements:

- Executive Summary
- Overview of the exercise
- Description of the exercise goals and objectives
- A synopsis of the key exercise events
- An analysis of mission outcomes and task performance
- Conclusions and recommendations.

Although we have used the suggested AAR format described in HSEEP Volume II (for example, we used this to write the AAR for TOPOFF 3[1]), we often modify this outline at the request of our clients. We have found that our public health and agriculture clients (who are not as familiar with HSEEP's mission and task format) often prefer to organize the report according to functional areas and issues. This allows personnel to quickly find the section that applies to their roles or responsibilities, identify the key issues that need to be addressed and the associated recommendations, and develop the corrective actions necessary to implement these recommendations. The mission and task analysis is captured within this format in the analysis of issue areas. These example AARs do not include the improvement plans, which were developed directly by the sponsoring agencies.

[1] This AAR can be requested directly from the sponsor listed in the references section.

8 Appendix C Disadvantaged Business Certifications

9 Appendix D Past Performance Summaries

Beginning on the following page, we provide more detailed descriptions of relevant CNAC Team project experience.

Contract Name: DHS National Exercise Program (NEP)			**Period of Performance: March 2004 – present**
COR	James Kish	**Office**	Office of Domestic Preparedness/DHS
Phone	(202) 786-9580	**Email**	James.kish@dhs.gov

Summary of Work Performed: As part of the National Exercise Program (NEP) support team, CNAC was the lead organization for the analysis of the TOPOFF 3 exercise series and the Senior Officials Exercise (SOE) series.

For TOPOFF 3, CNAC was responsible for designing the exercise analysis methodology and producing the quick looks and after action reports. TOPOFF is a biennial counter-terrorism cycle of homeland security preparedness related exercise activities. In addition to a series of seminars and a large-scale game, TOPOFF 3 had two major components: a Command Post Exercise (CPX) which was conducted in May 2004 and the full scale exercise (FSE) which was conducted in April 2005. The T3 CPX was a Master Scenario Event List (MSEL)/Intelligence driven prevention and response-focused exercise involving a large number of Federal government emergency operations/command centers as well as senior department/agency leadership. CNAC's analysis of the exercise focused on information sharing among Federal departments and agencies, senior officials' decision-making, and existing Federal policies and procedures such as the National Response Plan (which was in interim status at the time) and the National Incident Management System (NIMS). The T3 FSE was a MSEL driven prevention and response exercise conducted in multiple venues including: the states of Connecticut and New Jersey, the Federal inter-agency in Washington, DC, as well as Ottawa, Canada and London, UK. CNAC coordinated the efforts of hundreds of data collectors and evaluators across all of these venues. We then reconstructed the exercise, analyzed the key issues, and produced an After Action Report (which is currently under final review by DHS). The AAR focused on National Level plans, policies, and procedures (including the new NRP and the NIMS), coordination of resources, information/intelligence sharing and emergency public information and media.

For the SOE series CNAC is responsible for evaluating the exercises and writing quick-looks and AARs. CNAC also provides some support to the exercise and planning process. SOEs are tabletop exercises, usually conducted at the Assistant Secretary level and occasionally at the Deputy Secretary level. They also include exercises designed and conducted for the Interagency Incident Management Group (IIMG). The scenarios encompass potential homeland security threats and have also been used to prepare principals for participation in the TOPOFF FSE. To date, we have supported SOEs 4-4, 5-1,5-2, 5-3, 5-4 as well as three IIMG tabletops, one intra-DHS tabletop, and two inter-agency public affairs tabletops.

Project Successes:

- CNAC successfully worked with a wide range of government agencies at the Federal, state, and local levels as well as with International governments to design and execute a data collection effort to meet the overall objectives of the T3 CPX and FSE
- CNAC analysts coordinated the efforts of hundreds of data collectors across participating Federal/state/local operations/command centers and incident sites to support the development of a comprehensive analysis of the T3 exercises
- We have provided quick looks and/or AARs for all of the T3 and SOE exercises on a very tight timeline
- We have developed quick look briefings for senior leaders in DHS.

Relevancy to Proposed Project	
Exercise Objectives and Background	CNAC's analysis focused on existing Federal policies and procedures such as the National Response Plan and the National Incident Management System (NIMs).
Exercise Planning	CNAC provides support to the planning and design approach including the development of pre-exercise written materials
Exercise Execution Support	CNAC analysts coordinated the efforts of data collectors across numerous venues to support the development of a comprehensive analysis of T3
Exercise Evaluation	CNAC is responsible for developing the exercise analysis methodology

Scale of Exercise	▪ T3: Multi-day exercises, 1000s of participants ▪ SOEs typically involved 50-70 participants ▪ Engaged senior governmental leadership at Federal, State and local levels
Success of Exercise	▪ CNAC successfully worked with a wide range of government agencies ▪ We delivered all after action reports on time and within budget.
Coordinate Multi-Jurisdictional Exercises Held in Multiple Locations Simultaneously	T3 involved 100s of venues located in multiple states. CNAC coordinated the efforts of analysts and data collectors in all venues.
Engage Senior Leaders in Multi-Jurisdictional Exercises Held in Multiple Locations Simultaneously	Both T3 and the SOEs engaged senior leaders at the highest levels of Federal, state, and local governments.

Contract Name: Full-Scale Bio-Terrorism Field Exercise (Operation Diamond Shield II)			**Period of Performance: March 2005 – August 2005**
COR	Benjamin L. Brown, III	**Office**	Delaware Division of Public Health
Phone	(302) 744-5450	**Email**	Benjamin.Brown@state.de.us

Summary of Work Performed: CNAC designed, implemented, and evaluated a full-scale bioterorrism exercise for the state of Delaware Division of Public Health. The 3-day exercise involved a release of *Francisella Tularensis* that affected residents across the state. More than 400 participants were involved and the venues included 6 hospitals, the State Health Operations Center, the state public health laboratory, 3 field epidemiology teams, and a field hospital. CNAC designed the exercise, including working with the state to develop, the scenario, Master Scenario Events List (MSEL), and exercise injects. To support the hospital and epidemiological play, CNAC had to develop a database of 1,000s of mock victims that included medical histories, symptomology, and epidemiological data. CNAC also trained a cadre of volunteers to act as mock victims. CNAC developed all exercise materials, including a participant exercise guide, and handled exercise logistics, which included providing refreshments to participants. CNAC designed the exercise control plan and evaluation methodology, trained exercise controllers and evaluators, and successfully controlled the 3-day exercise and collected data to support the analysis. The evaluation was documented in an after action report (AAR) designed to support a corrective action program.

Project Successes:

- CNAC worked with members of multiple agencies and private organizations within the State to design an exercise that would meet the selected objectives
- CNAC implemented and controlled a 3-day exercise that was designed to incorporate free play by participants located at multiple venues around the state
- CNAC completed the after action report on time and within budget.

Relevancy to Proposed Project	
Exercise Objectives and Background	Objectives focused on coordination and communication through the SHOC, epidemiological investigation, laboratory support, hospital surge, and public information
Exercise Planning	CNAC established a planning process based on HSEEP that included a kickoff meeting, Initial Planning Conference, Mid-Term Planning Conference, and Final Planning Conference with an exercise planning team that included representatives from all participating organizations and agencies
Exercise Execution Support	CNAC and it's partner, Winbourne and Costas, executed the 3-day exercise, which involved controlling play and providing logistical support
Exercise Evaluation	CNAC designed the exercise evaluation methodology that was compliant with HSEEP and wrote the AAR.
Scale of Exercise	The exercise included more than 400 participants located in 6 hospitals, the State Health Operations Center, the state public health laboratory, 3 field epidemiology teams, and a field hospital
Success of Exercise	All objectives were exercised and the AAR was delivered on time and within budget.
Coordinate Multi-Jurisdictional Exercises Held in Multiple Locations Simultaneously	Participants included members of multiple state, county, and city agencies as well as private organizations located in all three counties of the state.
Engage Senior Leaders in Multi-Jurisdictional Exercises Held in Multiple Locations Simultaneously	The exercise engaged senior public health leadership, including the State Health Officer.

Contract Name: Equinox Exercise			**Period of Performance: March 2004 – September 2005**
COR	Dr. Mark E. Teachman	**Office**	U.S. Department of Agriculture
Phone	301-734-8908	**Email**	mark.e.teachman@aphis.usda.gov

Summary of Work Performed: The focus of this exercise was on operational or "area level" communications during a foot-and-mouth disease (FMD) outbreak and the integration of outbreak data within and between countries. Specific objectives included the activation of state and area-level emergency plans for response to animal disease incidents, working with state and provincial emergency management officials, and testing hierarchical communication between state agencies, area level, regional level, and Federal headquarters.

The overriding goal of the *Tripartite* exercise series is to enhance preparedness for a potential FMD outbreak in the member countries. A team of exercise planners representing USDA, the Canadian Food Inspection Agency (CFIA), and CNAC, in collaboration with state and provincial officials, developed the exercise as a training tool to enable responders to examine their planning and preparation in a realistic and interactive setting. The exercise design emphasized communication and coordination between states, provinces, areas and regions in Canada and the U.S.

The 3-day exercise involved approximately 250 participants at 10 separate emergency operations centers in the New England states, Atlantic provinces, and Federal headquarters for both USDA and CFIA. CNAC was responsible for the design of the scenario and exercise events, control of the exercise, data collection and documentation, and subsequent analysis. The exercise highlighted a number of issues related to communication and notification during the presumptive, and then confirmed, phases of FMD diagnosis and mechanisms for sharing epidemiological information across many locations.

Project Successes:

- CNAC worked with members of Federal and state agriculture agencies and their Canadian counterparts to plan, execute, and evaluate the exercise
- CNAC implemented and controlled a 3-day exercise that was designed to incorporate free play by participants located at multiple venues in the U.S. and Canada
- CNAC completed the after action report on time and within budget.
- The North American Animal Health Committee has since made changes to its protocols and plans for the North American FMD Vaccine Bank based on the analysis and outcomes from the Equinox exercise.

Relevancy to Proposed Project	
Exercise Objectives and Background	Specific objectives included the activation of state and area-level emergency plans for response to animal disease incidents, working with state and provincial emergency management officials, and testing hierarchical communication between state agencies, area level, regional level, and Federal headquarters
Exercise Planning	CNAC worked with USDA, CFIA and state agriculture agencies to plan and design the exercise to achieve the above objectives
Exercise Execution Support	CNAC controlled the 3-day exercise, which included 10 venues located in multiple states and Canadian provinces. CNAC analysts were solely responsible for documenting exercise play.
Exercise Evaluation	CNAC designed the evaluation methodology and wrote the After Action Report (AAR)
Scale of Exercise	More than 250 participants were involved at 10 venues in the U.S. and Canada. These venues included Emergency Operations Centers at the District, State, Provincial, Regional, and Federal levels.
Success of Exercise	All objectives were exercised and the AAR was delivered on time and within budget. Changes in protocols and plans for FMD preparedness have been made at the State, Federal, and International levels as a result of the analysis and outcomes from this exercise.

Coordinate Multi-Jurisdictional Exercises Held in Multiple Locations Simultaneously	The exercise involved the coordination of planning, implementation, and evaluation across multiple U.S. state and Canadian jurisdictions
Engage Senior Leaders in Multi-Jurisdictional Exercises Held in Multiple Locations Simultaneously	The exercise involved senior leadership within USDA, CFIA, state agriculture agencies, and state emergency m anagement agencies. Senior participants included the State Veterinarians of Vermont, New Hampshire, and Maine, Provincial Veterinarians of Quebec and New Brunswick, Area Veterinarian in Charge, Regional Emergency Directors for USDA and CFIA, and the National Emergency Director for CFIA. In addition, members of the CFIA National Emergency Response Team and High Visibility Issues Team participated.

Contract Name: District of Columbia Department of Health Emergency Health Management, Planning and Training Support			**Period of Performance: June 2003 to December 2003**
COR	Dr. Gabriela Gonzalez	**Office**	District of Columbia Department of Health
Phone	(202) 671-0674	**Email**	Gabriela.gonzalez@dc.gov

Summary of Work Performed: The DC DOH awarded CNAC a contract to provide a broad range of emergency management, planning, training and exercises, and quick-turnaround analytical support services. Major tasks completed included updating the DC Bioterrorism Response Plan (an annex of the District Response Plan), further development of the Strategic National Stockpile (SNS) distribution plan, an after action report on the District's emergency response to the mercury contamination incident at Ballou High School (which subsequently spread elsewhere in the city), the design and implementation of a tabletop exercise on medical surge capacity, and the design and implementation of an SNS functional field exercise.

CNAC designed the SNS exercise to test the DOH plan for operating mass dispensing centers during a bioterrorist attack or other emergency. The main goals were to maximize the throughput of the dispensing plan and improve dispensing procedures. These goals are important for quantifying the resources (e.g., numbers and types of staff) necessary to respond to different types and sizes of events, as well as for minimizing the potential for errors or confusion in dispensing medications. The exercise involved setting up and operating a dispensing center according to DOH plans and recruiting hundreds of volunteers to role-play potentially exposed victims.

Project Successes:

- CNAC successfully brought together an internal project team that was supplemented with subcontracted subject matter experts.
- All tasks were completed as scheduled.
- During the SNS field exercise, CNAC collected detailed data on the service times for each step in the dispensing process. Using computer modeling, CNAC recommended changes to the dispensing plan that would enable it to achieve a higher throughput.
- Other recommendations addressed improvements to dispensing plans and procedures. The results of this exercise were published in the July 2005 issue of the Journal of Public Health Management and Practice.

Relevancy to Proposed Project	
Exercise Reference Material	▪ Updated the DC Bioterrorism Response Plan (an annex of the District Response Plan) ▪ Further developed the District Strategic National Stockpile (SNS) distribution plan
Exercise Objectives and Background	▪ Designed and implemented a tabletop exercise on medical surge capacity ▪ Designed and implemented an SNS functional field exercise
Exercise Planning	▪ Designed the SNS exercise ▪ Tested the DOH plan for operating mass dispensing centers during a bioterrorist attack or other emergency ▪ Established objectives to maximize the throughput of the dispensing plan
Exercise Execution Support	▪ Set-up and operated a dispensing center according to DOH plans ▪ Recruited hundreds of volunteers to role-play potentially exposed victims
Exercise Evaluation	▪ Collected data on the service times for each step in the dispensing process ▪ Used computer modeling to recommended changes to the dispensing plan.
Scale of Exercise	▪ Set-up and operated a dispensing center according to DOH plans ▪ Recruited hundreds of volunteers to role-play potentially exposed victims ▪ Provided training to agencies involved in DC's Bioterrorism Response Plan (an annex of the District Response Plan)

Success of Exercise	▪ CNAC successfully brought together an internal project team that was supplemented with subcontracted subject matter experts ▪ All tasks were completed as scheduled ▪ Feedback collected from the participants in the form of evaluation questionnaires was overwhelmingly positive. ▪ Feedback shared with the client to identify ways for improving future exercises.
Engage Senior Leaders	The surge capacity tabletop exercise engaged senior leadership from DOH and District hospitals.

Contract Name: Top Officials Exercise (TOPOFF) 2			**Period of Performance: January 24, 2003 - December 31, 2003**
COR	Magdalena Bajll	**Office**	Office of Domestic Preparedness (ODP), U.S. Department of Homeland Security
Phone	(202) 514-6885	**Email**	magdalena.bajll@dhs.gov

Summary of Work Performed: CNAC was the lead organization for the analysis of the TOPOFF 2 exercise. In this role, CNAC designed the exercise analysis methodology, observed and analyzed the exercise, and documented key findings. TOPOFF 2 examined governmental response at the Federal/state/local levels to simultaneous terrorist attacks at two different locations. The two attacks were a pneumonic plague outbreak in the greater Chicago metropolitan area and the explosion of a radiological dispersion device (RDD) in the city of Seattle. A critical component of the response was the communications and coordinated information flow that facilitated decision-making by responders. Because of the magnitude of the simulated attacks and the scale of the response, communications among first responders in the public safety community, across command and control nodes (i.e., agency emergency operations centers), and within the private sector (e.g., hospitals) were exceptionally heavy. In the biological attack, we analyzed the response to the initial suspected cases, the epidemiological investigations, the request and distribution of the Strategic National Stockpile (SNS), and hospital efforts to cope with the heavy patient load. The findings from the TOPOFF 2 analysis provide valuable insights into operational communications issues facing the public safety community during a large-scale terrorist event.

Project Successes:

- CNAC successfully worked with a wide range of government agencies from the local and state level to the Federal level to design and execute an enormous data collection effort.
- CNAC analysts coordinated the efforts of hundreds of data collectors in three widely separated areas (Seattle, Chicago, and Washington DC) to support the development of a comprehensive analysis of the largest national combating terrorism exercise conducted to date.
- We delivered our after action report on time and within budget.

Relevancy to Proposed Project	
Exercise Evaluation	▪ CNAC had primary responsibility for developing the exercise evaluation methodology that was used to analyze this full-scale exercise. ▪ We coordinated the efforts of hundreds of data collectors in three widely separated areas (Seattle, Chicago, and Washington DC) ▪ CNAC deployed teams of analysts to each of the exercise venues and within the National Capital Region at various Federal agencies to observe exercise play.
Scale of Exercise	This exercise involved: ▪ Hundreds of data collectors in three widely separated areas (Seattle, Chicago, and Washington DC) ▪ We deployed teams of analysts to each of the exercise venues and within the National Capital Region at various Federal agencies to observe exercise play.
Success of Exercise	▪ CNAC successfully worked with Federal and state government agencies to design and execute an enormous data collection effort. ▪ We successfully coordinated the efforts of hundreds of data collectors in three widely separated areas (Seattle, Chicago, and Washington DC) to support the development of a comprehensive analysis of the largest national combating terrorism exercise conducted to date. ▪ We delivered our after action report on time and within budget. ▪ CNAC provided a final report with recommendations for improving WMD response and coordination at the local, state, and Federal levels.
Coordinate Multi-Jurisdictional Exercises Held in Multiple Locations Simultaneously	T2 involved 100s of venues located in multiple states. CNAC coordinated the efforts of analysts and data collectors in all venues.

Engage Senior Leaders in Multi-Jurisdictional Exercises Held in Multiple Locations Simultaneously	T3 engaged senior leaders at the highest levels of Federal, state, and local governments.

Contract Name: National Exercise Program – TOPOFF 3			Period of Performance: B007, B008 and A002 March 2003 – October 2005
COR	Mr. Brady O'Hanlon	**Office**	Department of Homeland Security, Office of Grants and Training
Phone	(202) 786-9593	**Email**	Brady.ohanlon@dhs.gov

Summary of Work Performed: AMTI was prime contractor supporting DHS Office of Grants and Training (formerly Office of State and Local Government Coordination and Preparedness, Office for Domestic Preparedness) in the administration, management, and planning of the design, development, conduct and evaluation of tasks for the National Exercise Program, specifically T3 and Senior Officials Exercises (SOE). This effort involved coordinating up to fifteen subcontractors from project initiation through completion. AMTI NxTeam supported DHS to design, develop, conduct and evaluate 12 exercise events in the T3 series including workshops, seminars, tabletop, command post exercise, advance distance learning, large scale game and a full-scale exercise, as well as facilitating several key planning conferences, and an after action conference. The series engaged more than 20,000 participants from Federal, State, and Local, and private organizations and included international counterparts, United Kingdom and Canada. The work involved technical expertise in emergency management, first responder community, special forces, public health, public affairs, counter-terrorism including weapons of mass destruction (WMD), hazardous materials, bioterrorism, and OPFOR/Red Teaming.

- **Project Successes:**

AMTI successfully introduced and further developed concepts and operations since the previous T2 exercise including implementing a prevention component involving 30 days of pre-exercise intelligence play, developing a concept for the creation of a universal adversary and terrorist dossiers, an expanded virtual news network (VNN) to include an internet based application VNN.com simulating real world media, and managing the international component involving the UK and Canada through liaison with the Department of State.

During the planning and preparation for the exercise events, AMTI:

- developed and produced several exercise documents including Exercise Plans, Control Plans, Evaluation Plans, MSEL, Controller and Data Collector Handbooks, Seminar Handbooks, Player Game Books
- coordinated and facilitated several high-level planning events and conferences
- successfully planned and conducted 12 T3 exercises involving Federal interagency, state and local departments and agencies, non-profit and private sector organizations, and government representatives from UK and Canada
- coordinate private sector involvement for the first time in a national level exercise

AMTI successfully administered the T3 Exercise Series over three separate but related contracts over a 18 month period of performance, integrating the skills and expertise of up to fifteen sub-contractors, and supporting DHS overall management of the exercise series.

Relevancy to Proposed Project	
Exercise Objectives and Background	▪ Supported DHS and DOS in developing national and international objectives, and facilitated development of objectives for state-based venues (New Jersey and Connecticut) ▪ Knowledge of State of New Jersey and State of Connecticut State Emergency Operations Plans ▪ Knowledge of HSPD-5, HSPD-8, Homeland Security National Strategy, and Homeland Security Exercise and Evaluation Program (HSEEP) doctrine, National Response Plan (NRP) and National Incident Management Systems (NIMS) ▪ Supported DHS prepare for U.S.-UK Joint Contact Group Meetings, including white papers documenting homeland security issues relevant to T3 ▪ Developed U.S. Government objectives and documented issues supporting exercise play for senior government officials, including assistant secretaries and above, as well as the Interagency Incident Management Group (IIMG) and the Homeland Security Operations Center (HSOC) ▪ Provided support to Homeland Security Council (HSC) in the development of

	the fifteen Illustrative Planning Scenarios (IPS)
Exercise Planning	▪ Prime contractor for DHS Office of Grants and Training (formerly Office of State and Local Government Coordination and Preparedness, Office for Domestic Preparedness) managing design, development, execution and after action process for the National Exercise Program's T3 Exercise Series and the DOS Office of the Secretary for Counter-terrorism (S/CT) international participation of two foreign governments ▪ Developed and adapted the exercise events in accordance with guiding doctrine to include HSPD-5, HSPD-8, NRP, NIMS, National Strategy for Homeland Security, and Homeland Security Exercise and Evaluation Program (HSEEP) ▪ Provided technical expertise in emergency management and first responder including fire services, law enforcement, public health and medical, public affairs and real world media, and subject matter expertise in preparedness, prevention, deterrence, response and recovery to acts of terrorism including weapons of mass destruction (WMD), hazardous materials, bioterrorism, and OPFOR/Red Team ▪ Applied technical and subject matter expertise in developing the scenario, Universal Adversary (UA), Master Scenario Events List (MSEL), Exercise Plan, Control Plan, and evaluation of exercise events ▪ Utilized a building block approach to exercise design, facilitated multi-level, jurisdictional exercise series including workshops, seminars, advanced distance learning, tabletop, command post, large scale game and full-scale exercises ▪ Incorporated multiple Federal, state, local and international objectives into national-level exercise series ▪ Oversaw development and production of all exercise documentation and materials for each T3 exercise series events, and associated exercise tools to include a MSEL database ▪ Facilitated design, development and execution of National and State-level planning conferences, including Initial Planning, Midterm Planning, and Final Planning Conferences, the Master Scenario Event List (MSEL) development conferences for T3 Full-Scale Exercise (FSE), Advanced Distance Learning Exercise (ADLE), Large Scale Game, and National and State-level Seminars ▪ Implemented HSEEP doctrine within national-level exercises for the first time ▪ Convened several National Working Groups including Scenario, Intelligence, Control and Evaluation, Public Affairs, and Private Sector Working Groups contributing to the design and development of the T3 FSE ▪ Developed concept and populated Universal Adversary database, developed weapons annex and terrorist dossiers, and coordinated prevention component (30 days of pre-exercise intelligence play) of the T3 FSE for the first time ▪ Designed and implemented an extensive virtual news network (VNN Live and the internet-based program VNN.com) nationally and internationally supporting exercise play during the T3 FSE by simulating real world media coverage in all venues ▪ Supported introduction of private sector play into T3 FSE
Exercise Execution Support	▪ Managed logistics for multiple large-scale international and national, multi-jurisdictional events involving between 200 participants at planning meetings to 10,000 participants involved in the FSE

	▪ Managed setup and tear down of exercise sites including a staged rubble pile representing of a WMD chemical explosion ▪ Set up simulation cells at several venues to augment exercise play ▪ Set up and managed four exercise control cells involving advanced technology including servers and a communications network, and personnel for 24/7 hour operation over five days of exercise play ▪ Developed and presented training for control personnel and data collectors ▪ Produced planning and exercise materials for 12 exercise events ▪ Managed NEP Point of Contact Database and administered access to the government-owned Extranet Secure Portal ▪ Developed exercise UA database and tools for exercise management and control ▪ Supported communication and information technology infrastructure for exercise control during FSE play
Exercise Evaluation	▪ Incorporated HSEEP into a national-level exercise for first time ▪ Supported state of New Jersey and Connecticut participating agencies and organizations ▪ Coordinated subcontractor activities for the development of the Evaluation Plan and preparation of the After Action Report ▪ Facilitated development of an evaluation strategy between UK, Canada and U.S. based upon international exercise objectives ▪ Oversaw and coordinated data collection and reporting process at several venues involving hundreds
Scale of Exercise	▪ The T3 Exercise Series engaged 27 Federal, 30 State, and 44 local departments and agencies and 156 private organizations over a 12-month planning process. The T3 events included: o Command Post Exercise involving 27 Federal participating agencies and several state and international observers o Three National-level Seminars – 250 participants, international and national presenters and renowned terrorism experts o Four state-level seminars based on national seminars o Advanced distance learning exercise – web and broadcast exercise available to entire first responder and emergency management community across the 50 states and territories o Full-scale exercise simultaneously conducted in the States of New Jersey and Connecticut, and the Federal interagency within the National Capital Region, the UK and Canada over five days, involving up to 10,000 participants o Large-Scale Game involving 130 representatives of Federal, State and local, and international government, non-profit and private sector agencies and organizations conducted over three days. o 30 days of intelligence play proceeding the simulated bioterrorist and chemical attacks in the FSE o Several national and state-level planning conferences involving up to 250 representatives from player organizations at each event
Success of Exercise	▪ T3 was one of the most ambitious civilian terrorism response exercises ever conducted ▪ The DHS Office of Inspector General review of the TOPOFF 3 Exercise stated the second of three principal issues affecting the overall effectiveness

	of the series: DHS' reliance on contractor expertise and support. Institutional knowledge of great value to SLGCP would be lost if the current contractor was no longer actively engaged. SLGCP officials said they were satisfied with the overall performance of the current contractor and would not have been able to execute the exercise without its support and resources. This highlights the importance of AMTI's involvement in the effectiveness of any follow-on exercise series, and capabilities in exercise management.

Contract Name: Top Officials 2 TOPOFF 2 or T2)			**Period of Performance:** October 2001 – October 2003
COR	Mr. Eldred Jackson	**Office**	Department of Homeland Security
Phone	(202) 514-0696	**Email**	

Summary of Work Performed:
TOPOFF is a series of bi-annual, Congressionally-mandated counterterrorism exercises intended to demonstrate the coordination of Federal, state, and local resources in response to Weapons of Mass Destruction (WMD) events. The events in T2 included a biological agent release, a radiological "dirty" bomb explosion, related bio-chem events in Canada, and the mobilization of the Federal, state, and local emergency operations centers. The exercise included the Virtual News Network, a closed-circuit mock media outlet that broadcasted over 40 hours of realistic coverage of events as they unfolded. AMTI scripted the exercise, designed and developed the master scenario event list, and provided facilitators, controllers, and evaluators in the nation's largest coordinated emergency response exercise to date

Project Successes:
In December, 2002, AMTI was awarded a transition contract, followed by the primary contract, to plan, coordinate, and conduct the remainder of the program. DOJ had so much faith in the program management, leadership, technical expertise, and work ethic of AMTI that it replaced a Fortune 500, 45,000-employee company with AMTI to lead the T2 effort. In just 30 days, AMTI:

- reassigned key personnel
- reassured subcontractors
- hired subject matter experts, financial analysts, and administrative staff
- opened a National Capital Region office.

In addition to the OPFOR activities, AMTI became wholly responsible for all exercise planning, financial management, and conduct, including control, evaluation, and after-action reporting. AMTI also provided its Special Technology Laboratory to document the exercise at all three venues on state-of-the-art video, and provide real-time audio and video communication feeds to the Top Officials and VIP observation center in Washington, D.C

Relevancy to Proposed Project	
Exercise Objectives and Background	▪ Supported DHS develop national and international objectives ▪ Experience with state Emergency Operations Plans ▪ Developed exercise formats, evaluation plans and materials ▪ Experience with the National Response Plan and the application to exercise design
Exercise Planning	▪ Tailored exercise towards national preparedness and response efforts ▪ Incorporated a wide array of agencies into planning including FBI, FEMA, Department of State and DHS. ▪ Designed and implemented an extensive virtual news network nationally supporting exercise play
Exercise Execution Support	AMTI facilitated this multi-city exercise. During the full-scale exercises, AMTI: ▪ Conducted training for personnel serving as evaluators and data collectors ▪ Coordinated evaluation efforts ▪ Observed the exercise ▪ Collected data ▪ Conducted player interviews

Exercise Evaluation	In accordance with established guidelines, AMTI: ▪ Coordinated evaluation efforts ▪ Observed the exercise ▪ Collected data, and ▪ Conducted player interviews ▪ Conducted "hotwashes" ▪ Compiled exercise data ▪ Reconstructed exercise events ▪ Full documentation for Federal agency leads
Scale of Exercise	This series included: ▪ This event was the nation's largest coordinated emergency response exercise to date ▪ Multiple Federal, state and local agency integration ▪ Multiple locations to include Seattle, Chicago and Washington D.C.
Success of Exercise	▪ The full range of services came under budget. ▪ AMTI was cited for completion of a successful preparedness exercise covering multiple sites for national preparedness

Contract Name: Terrorism Prevention Exercise Program (formerly Prevention and Deterrence)			Period of Performance: September 2005 – December 2006
COR	Brady O'Hanlon	**Office**	Department of Homeland Security Preparedness Directorate, Office of Grants and Training (G&T)
Phone	(202) 786-9593	**Email**	Brady.ohanlon@dhs.gov

Summary of Work Performed:
AMTI supported the planning, design, development, conduct, evaluation, and improvement planning of the nation's first Terrorism Prevention Exercise Program pilot in 2005. This intrastate pilot prevention functional exercise with red teams was spanned 23 days and provided a means for the players from across New York State to exercise critical prevention tasks and capabilities. AMTI developed the Universal Adversary (UA) and ground truth documents, including terrorist group provides, dossiers, and scenario timeline, and executed Red Team operations to support these exercises. The AMTI team also supported integration of the UA and Red Teams with other key prevention exercise tools including attack trees, MSEL, and the critical path. The TPEP pilot was designed to deliver peer-evaluated exercises to homeland security partners using field-validated, collaborative HSEEP tools and methodologies. AMTI contributed to the development of the Homeland Security Exercise and Evaluation Program (HSEEP) Volume V, Prevention Exercises to provide this methodology and tools to the homeland security community.

AMTI continues to support national, multi-year Terrorism Prevention Exercise Program (TPEP) exercise and evaluation doctrine and agenda as part of the G&T Prevention Exercise Research and Development Team and the Pilot Exercise Support Team. Building from the lessons learned and best practices from the initial pilot, AMTI is supporting G&T in developing an improved TPEP in the second series of Pilot exercises that will focus on regional collaboration and include a Multi-State Prevention Exercise Pilot. Georgia, South Carolina, and North Carolina have indicated interest in the regional pilot effort, targeted for late 2006, and Tennessee, California, Massachusetts, and Texas are all building individual state exercises for 2006. AMTI also supports prevention methodology and tools development, and updates and provides HSEEP Vol V training to the homeland security community

Project Successes: AMTI supported the program planning, exercise design, development, conduct and execution, and program improvement planning in the nation's first Terrorist Prevention Exercise Program functional exercise with Red Team as well as the development of exercise and evaluation doctrine and agenda.

- Contributed significantly to the planning and design efforts to create an innovative means to exercise and evaluate the prevention capabilities.
- Developed the exercise UA, a scalable, multidimensional adversary that represented current and potential future adversaries in the exercise. The AMTI team applied knowledge of terrorists' motivations, capabilities, and intentions, and created an appropriate terrorist scenario using terrorist doctrine, organization, strategies, operations, targeting, tactics, techniques, procedures, weapons, and equipment. While the UA is scalable and covers the range of known sophistication and capabilities, the adversary designed for the exercise reflected the jurisdictional threat picture and exercise objectives.
- Provided exercise participants a means to test their capabilities in a move counter-move environment through the UA's physical manifestation, Red Teams.
- Supported development of HSEEP Vol .V and drafted the Red Team Manual and Handbook, as well as training modules on the UA and Red Teams in a prevention exercise.

Relevancy to Proposed Project	
Exercise Objectives and Background	▪ For the 2005 pilot, AMTI supported the development of exercise objectives that would provide a means to exercise and evaluate capabilities in the prevention mission area. ▪ AMTI supports G&T in linking participant exercise objectives with a threat-based scenario that facilitates demonstration and/or validation of critical prevention tasks and capabilities.
Exercise Planning	▪ The AMTI team supported an exercise design that provides a near real-time environment to test participant strategies, technologies, plans, policies, and procedures to improve overall national preparedness by creating a realistic, threat-based scenario and developing a MSEL to challenge participants against the adversary. ▪ AMTI designed the UA and Red Teams to provide State and local level practitioners with opportunities to gain knowledge of terrorist motivation, intent, and capability to facilitate a wider and deeper understanding that can expose potential vulnerabilities in their strategies and plans as well as strengthen their capabilities. ▪ AMTI designed and developed Red Team operations and plans that would provide a means to test these capabilities in a real-world environment. ▪ Worked with Control and Evaluation planners to develop a means for players to safely and effectively exercise against the Red Team.

Exercise Execution Support	AMTI supported the 23-day functional exercise: ▪ AMTI provided the Red Team and Red Team liaison and safety controllers ▪ The AMTI Red Team embodied the two UA cell members and acted according to the group's motivations, capabilities, and intent. Red Team operators created opportunities for the players to prevent and deter an attack as the operators planned, prepared, and left signatures. ▪ The AMTI Red Teams conducted six days of operations ranging from reconnaissance and surveillance to attempting to gather the materials required to carry out their planned operations. ▪ AMTI coordinated with G&T and the jurisdiction to develop and enforce strict Rules of Exercise Play that provided the safety and security perimeters.
Exercise Evaluation	In accordance with HSEEP guidelines, AMTI: ▪ Supported evaluation efforts ▪ Observed the exercise from the perspective of the Red Teams ▪ Compiled exercise data in Post Operation Reports ▪ Reconstructed exercise events during Hot Wash telecon with the SIMCELL and Exercise Director ▪ Supported documentation and development of "quick look" and "after action" reports

Scale of Exercise	This exercise included: ▪ A 23 day functional exercise ▪ 6 days of Red Team Operations ▪ Hundreds of players from State and Local agencies ▪ Intelligence buildup that went back a full 365 days prior to the planned terrorist attack The second pilots will be designed and developed to provide additional opportunities for regional collaboration and integration of more Federal and private sector prevention partners.
Success of Exercise	▪ Feedback collected from the participants and jurisdiction was overwhelmingly positive. ▪ Feedback provided by the Exercise Director indicated that the realism of the UA and the Red Teams greatly enhanced the exercise and were extremely valuable tools in evaluating the jurisdictions strategies, policies, plans, and procedures.

Contract Name: North Carolina Department of Health and Human Services, Division of Public Health , Public Health Preparedness and Response – Triple Play			**Period of Performance: August 29, 2003 –January 1,2004**
COR	Dr. Steven J. Cline	**Office**	North Carolina Department of Public Health, Division of Public Health, Communicable Disease Control
Phone	(919) 733-3421	**Email**	steve.cline@ncmail.net

Summary of Work Performed: The North Carolina Department of Health and Human Services (NCDHHS), Division of Public Health's Office of Public Health Preparedness and Response (PHP&R) solicited and acquired the services of AMTI to design, facilitate, and evaluate three bioterrorism field exercises.

The NCDHHS PHP&R contract involved the planning and execution of three separate, limited-scope, but tailored bioterrorism zoonotic-based field exercises designed, coordinated, facilitated, and supervised by AMTI. These exercises involved both public health and the NC Department of Agriculture Veterinary staff as joint responders. The series took a zoonotic attack from surveillance and identification through to request and receipt of the Strategic National Stockpile, multi-site distribution and dispensing and isolation and quarantine of people, animals and livestock. An AMTI-led team that included four subcontractors consulted with NCDHHS and designed challenging but cost-effective and economical exercises that exceeded initial NCDHHS expectations. This exercise provides evidence of AMTI competence and experience in performance of initial planning of exercise functions, ongoing exercise planning, execution, and exercise documentation tasks. AMTI managed the entire exercise process from design to after-action analysis and reporting.

NCDHHS provided only limited guidance for this exercise series, relying on AMTI expertise to design and coordinate a rewarding and educational experience. After meeting with NCDHHS and deriving objectives and expectations, AMTI gained commitment; collected documents; wrote scenarios; developed Master Scenario Event Lists (MSELs) and supporting controller and evaluation plans; and published all documents (Exercise Plan, Scenario, MSEL, Player Handbook, Facilitator/Evaluator Handbook, and After Action Report). AMTI's approach to this medium-scale, state-level exercise was based upon the lessons learned and experiences gleaned from having successfully executed Top Officials 2, a national-level weapons of mass destruction exercise.

Project Successes: This project, like others AMTI has managed, was placed on an accelerated execution schedule by the NCDHHS shortly after project initiation. AMTI responded by adjusting the schedule to complete phase one of the contract (Bioterrorism Attack Exercise) within 60 days, and the remaining three phases within 100 days of contract award, demonstrating AMTI's flexibility and responsiveness to both customer requirements and delivering an exercise series that exceeded expectations.

Project Successes: AMTI met all contract goals identified by the PHP&R exercise planning committee (EPC). During the development, execution, conduct and facilitation, and evaluation and analysis ATMI:

- Planned for, developed all materials and presentations for, and conducted all planning meetings (IPC, MPC & FPC) for the 3 limited-scope exercises each of which was built on the previous one(s).
- Scripted, shot, edited and incorporated 6 video segments for and into each of the first three events of the series
- As appropriate for each event, developed, designed and drafted: exercise materials including: agendas, meeting minutes, feedback forms, sign-in sheets, staff –training presentations and handouts, participant briefings, Quick Look Report presentations, Exercise Handbooks, Control Staff Instructions (COSINS), Master Scenario Events List (MSEL), Exercise Plans (EXPLAN), Evaluation Plans (EVALPLAN), and for the whole series an HSEEP-based and formatted After Action Report that identified strengths and areas of improvement.
- Developed training materials for and trained: data collectors, facilitators, controllers, administrative support staff
- Conducted and lead exercise series
- Provided SIMCELL staff and subject matter experts to staff it and operated SIMCELL during CPX and FSE

Exercise Objectives and Background	▪ This was the first of two consecutive year that AMTI assisted PHP&R and its State and County Emergency Response Teams, local public health offices with training on and for a potential terrorist attack.this series concentrated on zoonotic biological agent identification, release and response. The second year concentrated on chemical (nerve) agent release. ▪ The EPC developed overarching exercise goals and objectives as well as event-specific objectives. Participating agencies developed their own internal goals and objectives to supplement event evaluation. All were centered around each respective agency's roles and responsibilities when jointly responding to a localized release of a contagious zoonotic agent to a broadly-geographically based animal and human population.
Exercise Planning	▪ Integrated overarching and event-specific goals and objectives into each training event's planning ▪ Designed event planning, scenarios, timelines, and MSELs around client and HSEEP-defined goals and objectives ▪ Built each event based on successes and identified areas of improvement from the previous events.
Exercise Execution Support	AMTI provided AMTI-trained support, control, data collection, facilitation, evaluation, and analysis personnel for all events and subject matter experts.
Exercise Evaluation	In accordance with HSEEP guidelines, AMTI: ▪ Planned events based on specific identified goals and objectives ▪ Observed and documented discussion, decisions, taskings, player actions, and consequences as well as the consequences of not doing any of the above relative to expected player actions ▪ Conducted Hot Washes to gather immediate comments ▪ Provided, collected, tabulated and compiled participant and staff feedback forms ▪ Reconstructed events ▪ Analyzed event play relative to established participant and HSEEP goals and objectives ▪ Provided feedback in the form of Quick Look Reports and After Action Report
Scale of Exercise	▪ This series included: ▪ 1 2-day State, Raleigh, and Wake and Durham County command post exercise addressing surveillance and identification of a release of a contagious zoonotic agent and its initial epidemiologic investigation. ▪ 1 2-day State/multi-county field exercise conduct with the CDC of a release of a contagious zootoxic agent Command Post Exercise centered around the justification for, request of , receipt and distribution of the Strategic National Stockpile ▪ 1 4-day Full Field State/multi-county exercise involving mass distribution of SNS assets to local populations.
Success of Exercise	▪ Feedback collected from first three event participants was overwhelmingly positive. ▪ AAR identified large number of strengths as well as extensive, over-all and agency-specific areas of improvement and provided suggestions for approaches in addressing those areas.

Contract Name: Illinois Emergency Management Agency (IEMA)/Illinois Department of Public Health (IDPH)			**Period of Performance: 2/15/05 – 4/30/05**
COR	Justin Short	**Office**	IEMA
Phone	(217) 557-4762	**Email**	jshort@iema.state.il.us

Summary of Work Performed: Illinois Emergency Management Agency and Illinois Department of Public Health joined together to hold and fund a series of exercises across the state, including a large, multi-venue field exercise in Springfield. The majority of these exercises were limited-scope, field exercises of a city or county Strategic National Stockpile (SNS) mass dispensing sites based on a, anthrax attack that infected people across the state. Some counties chose to exercise their law enforcement and hazardous materials team response in chemical attack scenarios. All but one of the exercises was based in a single county; one event had two counties under separate command structures operating simultaneously. The exercise venues included: Dixon, Saline, Chicago, Springfield, Peoria, Jo Davies County, Piatt County, Aurora. In addition to field exercises in all sites table top exercises were held in Springfield and Chicago. All venues' exercises were preceded by, at minimum, an Initial Planning Meeting (IPC) and Final Planning Meeting (FPC).These were supplemented by personal site visits, e-mails, and telephone conferences.

Project Successes:

- All exercise venue reached or exceeded their respective exercise goals.
- Local participation across the state both in planning, support and as participants was exemplary and demonstrated the heights of good citizen involvement.
- Those venues choosing to exercise their SNS plans met national and state performance requirements as part of the national effort to prepare for a potential terrorist event involving biological agents or naturally occurring pandemic.

Local plans integrated successfully into Chicago's state response plans for bioterrorism and WMD.

Relevancy to Proposed Project	
Exercise Objectives and Background	▪ Continue development of state-wide, city and county-based WMD preparedness plans with particular emphasis on SNS dispensing a large-scale biological agent release (tularemia/anthrax) ▪ Participant venues were provided the opportunity, funding, and exercise planning and support necessary to field-test their WMD/SNS response plans ▪ Each venue determined the area of WMD response that was most appropriate to maximize plan and response improvement. ▪ Venues that had conducted chemical agent exercises were positioned to conduct SNS dispensing exercises
Exercise Planning	▪ Initial and Final Planning Conferences (IPCs and FPCs) were held for all venues and were designed and led by AMTI staff. ▪ The Chicago and Springfield venues held Table top exercises as well as field. AMTI develop and conducted separate planning meetings to support those events. ▪ Dixon, IL was the only exercise that held only a table top exercise.
Exercise Execution Support	In accordance with HSEEP and CDC guidelines, AMTI: ▪ Prepared agendas, meeting materials and presentations for all planning meetings and drafted and provided meeting summary notes ▪ Conducted and facilitated planning meetings ▪ Developed all exercise materials including: COSINs, EXPLANs, EVALPLANs, Scenario Backgrounds, Intelligence, Participant and staff feed back forms, sign-in sheets, and meeting signs ▪ Prepared material and presentations and conducted training for support staff, safety officers, and participants ▪ Provided Controllers, Evaluators, Data Collectors, Analysts, and SIMCELL (simulation cell) staff and subject matter experts

	▪ Observed, documented, reconstructed, evaluated, and analyzed exercise events ▪ Held Hot Wash after each event at key venue points ▪ Produced After Action Reports
Exercise Evaluation	▪ Developed participant and staff feedback forms, and evaluator and staff evaluation and tracking forms ▪ Documented exercise conduct relative to client, HSEEP, and CDC objectives and guidelines and expected player actions ▪ Analyzed event notes, tracking forms, feedback forms, hotwash comments, and staff logs to develop After-Action Reports
Scale of Exercise	▪ The scale of the respective exercises ran from a joint staff/volunteers/role players/victims group of less than 200 to over 400, with Chicago's SNS 2-day exercise involving over 500 people on each day.
Success of Exercise	▪ The exercise series successfully captured both areas successfully completed and areas of needed improvement. ▪ Outside of Springfield and Chicago, the response communities are limited in funding and resource. Despite that, their exercise demonstrated broad community support for response planning as well as the cooperative relationships between Illinois counties that provided volunteer staff and role playing victims from multi-county areas. ▪ All venues achieved or exceeded their designated exercise goals.

Contract Name: U.S. Department of the Army, Ft. Bragg/Pope Air Force Base/Federal Bureau of Investigation: Orbit Comet			Period of Performance: 7/21/05 – 8/19/05
COR	Dr. Tony Martin	**Office**	Ft. Bragg Army Base
Phone	(910) 303-4967	**Email**	tony.martin@us.army.mil

Summary of Work Performed: The Orbit Comet exercise was, at the time it was conducted, the largest US-based joint civilian/FBI/military exercise ever conducted. AMTI was brought in on a short burn toward the end of exercise development with the goal of lending HSEEP-based format, producing meeting briefings, and all exercise documents (Exercise Handbook, ProFlow, Pre and ongoing intelligence material, scenario background, Master Scenario Events List (MSEL), exercise plan (EXPLAN), Communications and staffing plans, COSIN, intelligence information to drive play, and SIMCELL support to the FBI and DOE during the exercise. An AMTI team of subject matter experts played in the command center/SIMCELL as simulated role players and to develop intelligence information as it was requested.

- **Project Successes:**
- Rapid development of all exercise materials and briefings and meeting summary notes.
- Development of intelligence information to support exercise

Development of exercise materials

Relevancy to Proposed Project	
Exercise Objectives and Background	The EPC developed overarching exercise goals and objectives as well as event-specific objectives. Participants developed their own internal goals and objectives to supplement event evaluation. Fort Bragg: ▪ Participated in a Joint Operations Center providing Command, Control and Intelligence for a regional, civilian/military, and Federal/State/County response to multi-site terrorist attack. ▪ Established a unified incident command, an area command and applied NIMS and the NRP to this event ▪ Implemented Force Protection Condition levels and individual FPCON measures ▪ Conducted effective response and consequent management in WMD hostage and radiological/IED events Pope Air Force Base: Initiate Incident Operations Command (IOC) activation React and respond to a WMD incident on the base Exercise consequence management capabilities □ FBI Establish lead agency during ongoing terrorism event Set-up and formation of a JOC Minus Test JOC's ability to take on more than one incident Test Intelligence component Exercise terrorism/WMD prevention, response, and mitigation procedures Ensure adequate communications with and between FBI offices JTTF Conduct organizational and strategic analysis of threats Coordinate response with Federal, State and local law enforcement □ Womack Hospital (Ft. Bragg) Validate/test medical center emergency management pland and HEICS Annex Evaluate CBRNE response teams and plans ▪ Evaluate communications

Exercise Planning	▪ Integrated overarching and event-specific goals and objectives into event planning ▪ Designed event planning, scenarios, timelines, MSELs, and intelligence information around pre -defined goals and objectives
Exercise Execution Support	AMTI provided AMTI-trained support, facilitation, and SIMCELL staff/subject matter experts
Exercise Evaluation	AMTI: ▪ Planned events based on specific identified goals and objectives ▪ Provided written feedback to participant planners
Scale of Exercise	▪ The exercise events included: ▪ A terrorist attack on a bus carrying high-profile political figures; hostage taking, hostage negotiations, and terrorist stronghold takedown ▪ Terrorist attack on a Pope Air Force Base gate by a suicide bomber using an IED ▪ A suicide bomber breaking into the base through a gate; targeting a Ft. Bragg objective; exploding an IED with radiological material close to planned target.
Success of Exercise	▪ Feedback collected from event participants was overwhelmingly positive. ▪ Feedback will be used in next biannual Orbit Comet event to plan exercise

Contract Name: Weapons of Mass Destruction Countermeasures Unit, Counterterrorism Division, Federal Bureau of Investigation			**Period of Performance: June 2004 to November 2005**
COR	Special Agent Mitchell Stern	Office	FBI WMD Exercise and Technical Support
Phone	202-324-0618	Email	Mitchell.stern@ic.fbi.gov

Summary of Work Performed: AMTI provided a variety of services to the FBI Weapons of Mass Destruction Countermeasures Unit in support of exercise and training initiatives. Specific examples of this support and successful outcome throughout the duration of the contract include the following:

Leveraging the successful management of Top Officials (TOPOFF) 2 (T2), AMTI was able to strategically design and deliver quality management and organizational services, applying lessons learned and best practices to quickly assist FBI WMDCU, WMDOU, and CIRG, CMU on a real-time basis.

During T3, AMTI was a one-stop shop for Emergency Management, Exercise Design/Development, and Technical/Operational support issues. Responding to emerging government requirements, AMTI's support of Department of Homeland Security (DHS) in several initiatives allowed AMTI to provide the FBI with the latest developments in emergency management and technology integration.

Utilizing our experience in inter-organizational collaboration at the Federal, State, and local levels, AMTI was able to actively support the FBI, forming ad hoc and formal working groups for maximizing FBI coordination with other Federal, State, and local exercise participants.

AMTI's capability to reach back to other government agencies, national laboratories, and academic institutions provided greater depth to specific Radiological, Chemical, and Biological Analysis and Seminar Training services requested by WMDCU. AMTI's core FBI WMDCU project team was augmented throughout the exercise lifecycle with experts in anti- and counter-terrorism, exercise planning and execution, doctrine development, and conference support. AMTI scientists and engineers developed and/or provided input in developing resource and lesson materials to ensure accuracy and currency.

AMTI's added value was not only through our direct participation in the planning phase of NEP, but also through our intimate understanding of current Homeland Security doctrine, such as the National Strategy for Homeland Security (NSHS), Homeland Security Presidential Directives (HSPDs), the NRP, and the Homeland Security Exercise and Evaluation Program (HSEEP).

Through close work with a team of Unit leaders, AMTI developed three tabletop exercise templates for use by all FBI WMD Coordinators in the field.

AMTI provided project and conference support as requested for various FBI CBRNE training and outreach initiatives.

Project Successes: AMTI met all objectives defined by the FBI WMD. Throughout each exercise phase AMTI planned and developed all materials and presentations; provided additional value through trained staff, data collectors, facilitators, controllers, and administrative support; Conducted and lead exercise.

Relevancy to Proposed Project	
Exercise Objectives and Background	AMTI applied FBI methods and mechanisms Contributed significantly to the planning and design efforts for tabletop exercise design and evaluation for FBI field offices
Exercise Planning	Added value demonstrative though essential planning phase Designed exercise planning, scenarios, timelines, and MSEL's around client and HSEEP-defined goals and objectives
Exercise Execution Support	Exercised successful management operations ensuring proper leveraging of Top Officials (TOPOFF) 2 Implemented quality strategic design with efficient delivery of organizational services AMTI scientists and engineers developed and/or provided input in developing resource and lesson materials to ensure accuracy and currency
Exercise Evaluation	Performed with the utmost capabilities toward government agencies Delivered high-caliber expertise through performance feed-backs

Scale of Exercise	Tabletop exercise development for use by field offices.
Success of Exercise	Feedback collected from client was overwhelmingly positive Template developed for all WMD Coordinators in the field

Contract Name: ***Bioterrorism – National Pharmaceutical Stockpile Distribution Exercise (*****Deadly Rat*****)***			**Period of Performance: Fall 2002/Spring 2003**
COR	Battalion Chief James Resnick, BA, NREMT-P, Program Manager	**Office**	Montgomery County Fire and Rescue Service (MCF&RS), Office of Emergency Management (OEM)
Phone	(240) 777-2300	**Email**	James.Resnick@montgomerycountymd.gov

Summary of Work Performed: Ivan Walks and Associates, LLC (IWA), in conjunction with EGH & Associates, undertook in 2002/2003 a project with Montgomery County, MD, a National Capital Region (NCR) jurisdiction, to provide Emergency Exercise Evaluation and Reporting assistance to the Office of Emergency Management (OEM) within the Montgomery County Fire and Rescue Service (MCF&RS) for the Bioterrorism – Strategic National Stockpile (SNS) Distribution Exercise known as ***Deadly Rat***. IWA worked with the Exercise Design Team Chair and County officials to plan the Emergency Operations Center (EOC) activation and "hotwash" activities, identify training opportunities, define the exercise evaluation criteria, and develop and submit an "after-action" report of the exercise's overall effectiveness.

Project Successes: IWA conducted the evaluation of this complex exercise series, and facilitated the tabletop exercise. During the planning stages of the exercise series, IWA:

- Contributed significantly to the planning and design efforts to ensure that successful evaluation would be possible.
- Prepared the exercise evaluation plan
- Developed evaluation materials for the player handbook
- Conducted training for personnel serving as evaluators and data collectors.

During the full-scale exercises, IWA coordinated evaluation efforts, which included:

- Observing the exercise
- Collecting data
- Conducting player interviews

After the exercises, IWA:

- Conducted "hotwashes" to gain immediate feedback and insight directly from the players.
- Compiled exercise data
- Reconstructed exercise events
- Documented the exercises in a series of "after action" reports. The final after action report provided recommendations for improving EOC emergency response plans and procedures.

Relevancy to Proposed Project	
Exercise Objectives and Background	▪ Developed evaluation plans and materials ▪ Experience with Montgomery County, MD's emergency operations plan (EOP) and its impact on the National Capital Region (NCR).
Exercise Planning	▪ Integrated tabletop exercise objectives into the field exercise ▪ Tailored exercise to public health preparedness and response efforts ▪ Used a build-test-build approach for this exercise series
Exercise Execution Support	IWA facilitated the tabletop exercise. During the full-scale exercises, IWA: ▪ Conducted training for personnel serving as evaluators and data collectors ▪ Coordinated evaluation efforts ▪ Observed the exercise ▪ Collected data ▪ Conducted player interviews

Exercise Evaluation	In accordance with HSEEP guidelines, IWA: ▪ Coordinated evaluation efforts ▪ Observed the exercise ▪ Collected data, and ▪ Conducted player interviews ▪ Conducted "hotwashes" ▪ Compiled exercise data ▪ Reconstructed exercise events ▪ Documented the exercises in a series of " "after action" reports
Scale of Exercise	This series included: ▪ Players from County agencies and First Responders. ▪ Focused on receiving, staging, transporting, and distributing the CDC's Strategic National Stockpile (SNS) Test, Evaluation, and Demonstration (TED) package
Success of Exercise	▪ Feedback collected from the participants in the form of evaluation questionnaires was overwhelmingly positive. ▪ Feedback shared with the client to identify ways for improving future exercises.

Contract Name: ***Bioterrorism – National Pharmaceutical Stockpile Distribution Exercise (*****Deadly Rat*****)***			**Period of Performance: Fall 2002/Spring 2003**
COR	Battalion Chief James Resnick, BA, NREMT-P, Program Manager	**Office**	Montgomery County Fire and Rescue Service (MCF&RS), Office of Emergency Management (OEM)
Phone	(240) 777-2300	**Email**	James.Resnick@montgomerycountymd.gov

Summary of Work Performed: Ivan Walks and Associates, LLC (IWA), in conjunction with EGH & Associates, undertook in 2002/2003 a project with Montgomery County, MD, a National Capital Region (NCR) jurisdiction, to provide Emergency Exercise Evaluation and Reporting assistance to the Office of Emergency Management (OEM) within the Montgomery County Fire and Rescue Service (MCF&RS) for the Bioterrorism – Strategic National Stockpile (SNS) Distribution Exercise known as ***Deadly Rat***. IWA worked with the Exercise Design Team Chair and County officials to plan the Emergency Operations Center (EOC) activation and "hotwash" activities, identify training opportunities, define the exercise evaluation criteria, and develop and submit an "after-action" report of the exercise's overall effectiveness.

Project Successes: IWA conducted the evaluation of this complex exercise series, and facilitated the tabletop exercise. During the planning stages of the exercise series, IWA:

- Contributed significantly to the planning and design efforts to ensure that successful evaluation would be possible.
- Prepared the exercise evaluation plan
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After the exercises, IWA:

- Conducted "hotwashes" to gain immediate feedback and insight directly from the players.
- Compiled exercise data
- Reconstructed exercise events
- Documented the exercises in a series of "after action" reports. The final after action report provided recommendations for improving EOC emergency response plans and procedures.

Relevancy to Proposed Project	
Exercise Objectives and Background	▪ Developed evaluation plans and materials ▪ Experience with Montgomery County, MD's emergency operations plan (EOP) and its impact on the National Capital Region (NCR).
Exercise Planning	▪ Integrated tabletop exercise objectives into the field exercise ▪ Tailored exercise to public health preparedness and response efforts ▪ Used a build-test-build approach for this exercise series
Exercise Execution Support	IWA facilitated the tabletop exercise. During the full-scale exercises, IWA: ▪ Conducted training for personnel serving as evaluators and data collectors ▪ Coordinated evaluation efforts ▪ Observed the exercise ▪ Collected data ▪ Conducted player interviews

Exercise Evaluation	In accordance with HSEEP guidelines, IWA: ▪ Coordinated evaluation efforts ▪ Observed the exercise ▪ Collected data, and ▪ Conducted player interviews ▪ Conducted "hotwashes" ▪ Compiled exercise data ▪ Reconstructed exercise events ▪ Documented the exercises in a series of " "after action" reports
Scale of Exercise	This series included: ▪ Players from County agencies and First Responders. ▪ Focused on receiving, staging, transporting, and distributing the CDC's Strategic National Stockpile (SNS) Test, Evaluation, and Demonstration (TED) package
Success of Exercise	▪ Feedback collected from the participants in the form of evaluation questionnaires was overwhelmingly positive. ▪ Feedback shared with the client to identify ways for improving future exercises.

Contract Name: MD Technical Consulting Contract			**Period of Performance: December 2005 - Present**
COR	Donna Sampson, Program Manager	**Office**	Ivy Planning Group, LLC
Phone	(301) 963-1669	**Email**	dsampson@ivygroupllc.com

Summary of Work Performed:
As a subcontractor to the Ivy Planning Group, LLC, IWA is presently working with the Maryland Department of Mental Hygiene (DHMH) to provide subject matter support focused on the State's Pandemic Flu preparedness efforts. Among tasks completed or in progress, IWA has:

- Performed an analysis of the gap(s) between the Maryland's current state of preparedness and the Federal guidance for Pandemic Flu planning;
- Developed recommendations for compliance with the Federal mandates;
- Coordinated the logistics for Maryland's Pandemic Flu Summit featuring U.S. Department of Health and Human Services (DHHS) Secretary Michael Leavitt;
- Started the process to draft an updated Maryland Pandemic Flu Plan; and,
- Created a preparedness work plan encompassing comprehensive exercise design, evaluation, and corrective action(s).

Previously, IWA was tasked by DHMH with revision of the Maryland Strategic National Stockpile (SNS) Plan to ensure its currency and conformance with Federal requirements. That work included:

- Analysis of the gap(s) between the Maryland's current state of preparedness and the Federal guidance for SNS planning;
- Development of recommendations for statewide compliance with the Federal mandates.

Project Successes: IWA performed a high level business impact analysis (BIA) as part of the overarching assessment to identify and respond to gaps in Maryland's current and "to be" states of Pandemic Flu preparedness. That effort focused on:

- Determining challenges to, and opportunities for, statewide versus agency-centric preparedness.
- Prepared a comprehensive work plan encompassing support for the anticipated exercise design, execution, and evaluations.

Relevancy to Proposed Project	
Exercise Objectives and Background	▪ Input to the development of forthcoming PanFlu exercise evaluation plans and materials. ▪ Experience with Maryland's emergency operations plans (EOPs) and their impact on the National Capital Region (NCR).

Contract Name: ***Bioterrorism Strategic Planning Support***			**Period of Performance: February 2005**
COR	Paula Rae Sherman, Project Manager	**Office**	The CNA Corporation
Phone	(703) 824-2655	**Email**	shermap@cna.org

Summary of Work Performed:

As a subcontractor to the CNA Corporation, IWA provided input on the development of a Bioterrorism Strategic Plan for Greater Southeast Community Hospital (GSCH), Washington, DC, under a grant from the Health Resources and Services Administration (HRSA) to the District of Columbia Department of Health (DOH). We were principally responsible for recommendations in such areas as visibility between hospital management and the District government regarding crisis surge capacity, access to the city's National Pharmaceutical Stockpile stores and patient triage and treatment, community awareness and communications, internal training and exercise drill design, and liaison with the neighboring Prince Georges County (MD) government regarding additional aid and support in the event of a large scale bioterror event.

Project Successes: IWA performed a high level business impact analysis (BIA) as part of the overarching strategic planning activity with a focus on:

- Improved public-private sector communications and collaboration in the event of a large-scale bioterror incident.
- Bioterror Exercise Drill Design and internal training of hospital staff.

Relevancy to Proposed Project	
Exercise Objectives and Background	▪ Input to the development of GSCH Bioterrorism Strategic Plan. ▪ Experience with the District's emergency operations plans (EOPs) and their impact on the National Capital Region (NCR).

Contract Name: Weapons of Mass Destruction Response Programs, Army National Guard Bureau			Period of Performance: September 2003 – September 2006
COR	MAJ Karen Smith	**Office**	Army National Guard Bureau
Phone	(703) 607-1127	**Email**	Karen.smith@sgb.ang.af.mil

Summary of Work Performed: EMS/LE provides Development, Training and Evaluation of National Guard Chemical, Biological, Radiological, Nuclear and Explosive (CBRNE) Enhanced Response Task Forces (NG CERTF), Support Equipment, and Operational Requirements. EMS/LE specialists also deliver Combat Development Subject Matter Expertise in Doctrine, Organization, Training, Material, Leadership and Education, Personnel and Facilities (DOTMLPF) domains for the National Guard.

WMD Response Program Support includes:

- Evaluating National Guard Weapons of Mass Destruction Civil Support Teams (WMD-CST)
- Planning, Coordinating and Conducting WMD Exercises for NG CERTF with participating Local, State and Federal agency Emergency Response stakeholders
- Providing Education and Training in Incident Management for all hazards consistent with the National Incident Management Systems (NIMS) that encompasses the Incident Command System (ICS) and the Multi-Agency Coordination Systems (MACS)
- Developing Educational and Training products that support Homeland Defense
- Assisting with Homeland Security Grant Research and Preparation
- Assisting Liaison and Coordination with Emergency Management Organizations at the Local, State and Federal agency level
- Providing Analytical, Administrative and Technical Support

Project Successes: During this contract, EMS/LE personnel were immersed in Combat and Training Development requirements of the U.S. Army National Guard Civil Support Teams. Our Law Enforcement and Security Expertise made an immediate impact on the Development of Training for the newly developed Incident Command System.

Contract Name: Security & Law Enforcement Contract, Kwajalein, Marshall Islands			Period of Performance: October 2005 – September 2010
COR	Dianne Trimble	**Office**	U.S. Army Space and Missile Defense Command
Phone	(256) 995-4056	**Email**	Dianne.trimble@smdc.army.mil

Summary of Work Performed: Alutiiq EMS/LE provides Law Enforcement, Security and Program Management Services in support of the U.S. Army Kwajalein Atoll/Ronald Reagan Ballistic Missile Defense Test Site.

Law Enforcement Services include:

- Police Operations
- Criminal Investigations
- Traffic Control and Enforcement
- Control of Evidence
- Marine Police Operations
- Special Operations (SWAT)

Security Services include:

- Entry/Exit Control
- Personnel Identification and Database Management
- Lock and Key Control Systems
- Alarm and Breach Response
- Special Periodic Classified Mission Security Support
- Physical Security Inspection Program

Management Services include:

- Program Management
- Human Resources
- Quality Control
- Occupational Safety and Health
- Industrial Security
- Energy Conservation & Environmental
- Financial Resources Management
- Emergency Operations and Civil Disturbance
- Police Records and Contract Data

Project Successes: EMS/LE personnel, using state of the art drug detection equipment, detected and seized a small quantity of cocaine in the baggage of a US civilian entering the installation. Follow-up investigation by EMS/LE Officers and Detectives resulted in the seizure of over 20 Kilos of Cocaine and the arrest of 18 US and Marshallese suspects.

During another recent operation, EMS/LE Officers intercepted a suspected terrorist attempting to enter the US Air Passenger System at the Kwajalein International Airport. The individual was apprehended and a number of box cutters and knives were seized. The suspect carried two passports, one of which documented a number of trips to Middle Eastern countries associated with terrorism.

(IPR) 11472/August 2005

Tripartite Series: Analysis and Recommendations from Equinox 2005

Rosemary Speers • Matthew R. Grund
Joseph Mickiewicz • Monica Giovachino
Elizabeth Myrus

A Non-Profit Research and Analysis Corporation

4825 Mark Center Drive • Alexandria, Virginia 22311-1850 • (703) 824-2000 • (703) 824-2942 FAX

Approved for distribution: August 2005

Dr. Jeffrey B. Miers
Director, Combat Systems Team
Operations Evaluation Group

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Contents

Summary

Equinox 2005, the third event in the 2003-05 Tripartite exercise series, examined cross-border interactions between the United States and Canada during a notional outbreak of Foot and Mouth Disease (FMD). The focus of the Equinox exercise was on operational or area-level communications and the integration of outbreak data within and between countries. Co-hosts and sponsors of Equinox 2005 included the U.S. Department of Agriculture (USDA) and the Canadian Food Inspection Agency (CFIA).

The Emergency Management Working Group (EMWG) of the North American Animal Health Committee asked The CNA Corporation (CNAC) to design and analyze an exercise that incorporated:

- international communication during an FMD outbreak,
- sharing of technical information between the two countries,
- early notification protocols, and
- planning and logistical requirements for use of FMD vaccine.

Equinox 2005 was held on March 21-23, 2005, and involved approximately 300 personnel from state/provincial and federal agencies in the United States and Canada. It provided an opportunity to integrate lessons learned from previous Tripartite exercises and to further examine protocols for the North American Foot and Mouth Disease Vaccine Bank (NAFMDVB).

CNAC's analysis supplements other Equinox 2005 after-action reports by viewing the exercise from a cross-border and international perspective. We intentionally concentrated on events and activities related to the overall Tripartite objectives for the exercise. In doing

so, we examined several outcomes of Equinox 2005 through a framework of decision-cycle analysis, including the decisions related to:

- border closures to deny imports from FMD-infected areas
- establishment of movement restrictions, and
- sharing of information between the two countries.

Planning materials, information management systems, and incident command structures are some of the "tools" that help response managers make decisions during a crisis. Our analysis suggests that some of these tools, such as plans for initial notification regarding an FMD outbreak and subsequent border closures, work reasonably well. Other guidelines, such as those for control areas and movement restrictions, need further refinement or require responders to be given orientation and training. Procedures to share outbreak information between the countries were not well-specified prior to the exercise, but the creation of an epidemiology group to share outbreak data was the type of cross-border interaction that the EMWG had anticipated might develop during Equinox 2005.

Through the course of our analysis, it became clear that a primary difference between the response management efforts of U.S. participants and those of Canadian participants has its roots in the respective political systems of those two countries. In Canada, the immediate responsibility for foreign animal disease response lies with a central federal authority, CFIA. CFIA Area and Region offices have a hierarchical relationship with headquarters in Ottawa. This contrasts with the more decentralized U.S. political system, in which the initial response to a foreign animal disease outbreak begins locally. U.S. states have a great deal more latitude for independent action than CFIA Areas or Canadian provinces have.

Differences in the Canadian and U.S. political systems result in different national approaches to FMD outbreak response management. These approaches can have practical consequences with respect to each country's ability to respond quickly and effectively to an FMD outbreak. Analysis of outcomes from Equinox 2005 also illustrated how national response management structure affects decision cycles.

In this report, we highlight the points where interactions for communication and coordination took place, or where they might have taken place, during Equinox 2005. We describe how the exercise objectives were met and discuss some of the different decisions, plans, and strategies that evolved. We also identify issues affecting FMD response planning, and reconstruct exercise events that point to new areas for enhancing preparedness. Our recommendations for communication and coordination during foreign animal disease outbreaks include the following:

- Develop a memorandum of understanding between the Tripartite countries to share and safeguard epidemiological data during an outbreak.
- Become more familiar with the *NAFMDVB Program*, CFIA's *FMD Strategy*, USDA's *National Animal Health Emergency Response Plan*, and other protocols for FMD response planning.
- Develop a mission statement for the Emergency Management Response System and train to that defined mission.
- Enhance the means of communication during response operations by, for example,
  - identifying a manager for conference calls, and
  - using a common glossary for outbreak response terms and control measures.
- Define a mechanism and procedures for communicating laboratory test results, and then clarify the relationship between those results and follow-on actions.

Overall, exercise players were enthusiastic about Equinox 2005. The eventual participation grew to include 10 venues, with participants representing at least 25 different agencies and organizations. Many viewed it as a rare opportunity to interact with agencies and people with whom they would expect to work during a foreign animal disease outbreak but with whom they otherwise didn't routinely interact. Participant feedback was nearly unanimous in finding the exercise experience beneficial and in expressing the desire to participate in future exercises.

Introduction

Equinox 2005, the third event in the 2003-05 Tripartite exercise series, examined cross-border interactions between the United States and Canada during a notional outbreak of Foot and Mouth Disease (FMD). The overriding goal of the Tripartite exercise series is to enhance preparedness for a potential FMD outbreak in North America. The focus of the Equinox exercise was on operational or area-level communications and the integration of outbreak data within and between countries. Co-hosts and sponsors of Equinox 2005 include the U.S. Department of Agriculture (USDA), and the Canadian Food Inspection Agency (CFIA).[1]

Objectives of Equinox 2005

A team of exercise planners representing USDA and CFIA identified the following primary objectives for Equinox 2005:

- Activate state and CFIA-Area level emergency plans for response to foreign animal diseases.
- Work with state and provincial emergency management officials.
- Test hierarchical communication between state agencies, area offices, regional offices, and federal headquarters.
- Activate selected emergency response teams.
- Incorporate traceability systems for livestock, where available.
- Examine distribution processes for FMD vaccine.

1. The Mexican Secretariat of Agriculture, Livestock, Rural Development, Fisheries and Food (SAGARPA) also contributes to the 2003-05 Tripartite series, though its NAAHC representatives did not directly participate in the Equinox exercise.

Although the design of Equinox 2005 centered on international objectives, federal and state/provincial officials at many of the venues used the exercise to satisfy additional local training needs.

Tasking and approach

The Emergency Management Working Group (EMWG) of the North American Animal Health Committee (NAAHC) asked The CNA Corporation (CNAC) to design an exercise that focused on the above-mentioned objectives, and also incorporated:

- International communication during an FMD outbreak,
- Sharing of technical information between the two countries,
- Early notification protocols, and
- Planning for use of vaccine and logistical requirements.

Equinox 2005 provided an opportunity to integrate lessons learned from previous Tripartite exercises. The first exercise in this series was the Amistad exercise (May 2003) which focused on cross-border interactions between the United States and Mexico [1]. The second exercise was the MayDay simulation game (March 2004) which focused on vaccine decision-making and allocation among the NAAHC members [2]. Certain issues arising from the Amistad exercise, such as surveillance zones that extended across international borders, were carried over into the design of Equinox 2005. Likewise, Equinox 2005 incorporated some issues that emerged or were unresolved during the MayDay simulation, such as sharing of vaccine among the countries and subsequent allocation of vaccine to individual states.

Equinox 2005 also examined protocols for the North American Foot and Mouth Disease Vaccine Bank (NAFMDVB), which is a resource shared by the United States, Canada, and Mexico. The NAFMDVB includes antigens for different FMD virus serotypes that can be used to manufacture vaccine in the event of an outbreak. All three countries contribute financially to the vaccine bank, and participate regularly in policy and technical discussions regarding its use. The *NAFMDVB Program* contains agreed-upon procedures for the three countries to use in notifying each other of an FMD outbreak [3].

These procedures provided the basis for international coordination during Equinox 2005.

The exercise was preceded by two planning meetings with selected CFIA participants, and several conference calls involving U.S. participants. (These planning discussions were summarized in previous CNAC reports [4, 5].) Separate review meetings for the U.S. and Canadian participants were held one week after the exercise. There were no joint (combined U.S. and Canadian) exercise planning or review meetings.

CNAC analysts integrated Tripartite requirements from the different venues into the exercise design, which emphasized problem-solving and communication across multiple command posts. Equinox 2005 continued the international objectives of the Tripartite exercise series. As much as possible, the exercise also provided an opportunity for state and provincial participants to meet their own training goals.

Overview of the exercise

The Equinox exercise was held on March 21-23, 2005, and involved approximately 300 personnel from state/provincial and federal agencies in the United States and Canada. CNAC has already provided a highlight report focusing on communication and coordination during the exercise [6]. We found that, overall, CFIA and USDA successfully demonstrated many of their respective animal health emergency response capabilities during Equinox 2005.

Participants and locations

Exercise participants included representatives from the federal agriculture agencies of the United States and Canada, state/provincial agriculture agencies, state/provincial emergency management agencies, and other federal departments. A list of participating agencies is provided in the appendix. Players were organized at separate venues in different states and provinces—most often within an emergency operations center (EOC) (see table 1).

Table 1. Exercise venues during Equinox 2005

Command Post	Location
State EOC	Augusta, Maine
	Concord, New Hampshire
	Montpelier, Vermont
USDA Eastern Region EOC	Raleigh, North Carolina
CFIA Region EOC	Fredericton, New Brunswick
	St. Hyacinthe, Quebec
CFIA Area EOC	Moncton, New Brunswick
	Montreal, Quebec
CFIA National EOC	Ottawa, Ontario
NAFMDVB	Plum Island, New York

At the start of the exercise, similar orientation briefings were provided to all players and observers. These briefings covered the Tripartite exercise objectives, a description of the venues that were participating, and general guidelines for exercise play.

Scenario

The notional outbreak scenario for Equinox 2005 was not revealed directly to the participants. Instead, it was presented through the use of "injects," or simulated reports that were provided to players at various times during the exercise. In order to see the "big picture" and understand what was happening in other states and provinces, players needed to exchange information and form sub-groups that discussed specific concerns. In this way, the Equinox exercise was different from a standard tabletop or command post exercise: it required a higher level of interaction to determine the situation at hand and develop coordinated response strategies.

The exercise took place over the course of three days. Each day roughly represented a phase in which to examine certain response activities and decisions. On day 1, the scenario involved a presumptive diagnosis for FMD, which first occurred within Maine, and then also in Quebec. On day 2, these cases were confirmed and new cases emerged in other locations. The scenario then jumped ahead in time by several days so that actions related to receiving and transporting FMD vaccine could be played out on day 3.

In the Equinox 2005 scenario, FMD virus was introduced accidentally through the process of garbage feeding to livestock. The first cases appeared at a dairy operation in Maine. Notional trace-out revealed that this dairy had exported veal calves to Quebec and sent milk to a large dairy cooperative in Vermont. Additional animals had been exposed along the truck route through New Hampshire. Meanwhile, swine that were exposed to FMD virus in Maine had been exported to New Brunswick. By day 3 of the exercise, more cases had been identified, including several premises located near the international border. Table 2 summarizes key events in the scenario for Equinox 2005.

Table 2. Summary of simulated scenario events during Equinox 2005

Exercise day	Scenario events
Day 1 (March 21, 2005)	Presumptive positive diagnosis for FMD is reported at a dairy operation in Kennebec County, Maine
	U.S. Chief Veterinary Officer (CVO) notifies Canadian CVO of the presumptive diagnosis
	CFIA Inspector reports suspicious clinical signs at a veal operation in Quebec and sends samples to the National Centre for Foreign Animal Diseases (NCFAD).
	Trace-out reveals that the dairy in Kennebec County is part of a large dairy cooperative and has sent milk to Vermont
Day 2 (March 22, 2005)	FMD virus Type O is confirmed in the sample from Maine
	FMD virus Type O is confirmed in the sample from Quebec
	NAFMDVB is activated for emergency preparation of FMD vaccine
	Media inquiries and other alerts are received
	CFIA Inspector reports suspicious clinical signs at a swine quarantine farm in New Brunswick and sends samples to NCFAD
	CFIA Inspector reports suspicious clinical signs at a second location in Quebec and sends samples to NCFAD
	Foreign Animal Disease Diagnostician reports suspicious clinical signs at a dairy operation in New Hampshire and sends samples to FADDL
	USDA Declaration of Extraordinary Emergency is issued
	U.S. Department of Homeland Security announces a "High" Security Advisory for agriculture industry in New England
	U.S. CVO and Canadian CVO agree to split the first shipment of vaccine for its potential use in eradicating the FMD outbreak

Table 2. Summary of simulated scenario events during Equinox 2005

Exercise day	Scenario events
Day 3[a] (March 23, 2005)	Additional locations have positive FMD cases, including a farm that is on the Vermont-Quebec border
	Other organizations, such as zoos, request FMD vaccine to protect susceptible animals
	First shipment of FMD vaccine arrives at JFK Airport and is transported from there to Montreal, QC, and Bangor, ME

a. For day 3 of the exercise, the scenario jumped ahead in time by a period of 3 days in order to incorporate issues related to the delivery of FMD vaccine.

Highlights of exercise events

During exercise play, notifications and discussions between personnel in different venues required phone calls or other mechanisms for communication. Below, we highlight some of the cross-border communication that took place during Equinox 2005. Highlights of exercise play at specific venues may also be described in their own after-action reports. We focus here on events related to international and interagency coordination, such as the following:

- Multi-state coordination

  Lead officials from state agriculture agencies and USDA personnel who work in those states were in frequent contact during the exercise. Multi-state communication was mostly accomplished by conference calls, and supplemented by use of the electronic Emergency Management Response System (EMRS). An Area Command was established in order to coordinate the response planning and operations of the different states and to provide a location for other federal agencies to send liaison personnel.

- Pan-Canadian coordination

  Conference calls were the primary means by which the affected Areas and federal headquarters built a shared picture of outbreak details and discussed the consequent policy steps. Frequent email and fax communication supplemented scheduled phone conferences between CFIA's National Emergency

Response Team (NERT) and Area operations centers. Area officials then communicated with responders located at CFIA Region EOCs.

- Sharing of technical information between countries

  On day 2 of the exercise, participants established communication links to use for sharing technical information between the two countries. These links, between epidemiologists at the CFIA Area and state EOCs, were explicitly for the sharing of outbreak data only, and not for policy or strategy discussions. Participants were concerned about safeguarding the data due to privacy concerns, but also needed to know the exact locations of infected premises in order to put together the combined operating picture. The countries also shared technical information during phone calls; epidemiologists within each country then entered new information into their respective electronic tracking systems.

- Planning for vaccine distribution

  On day 3 of the exercise, participants felt they were not yet at the critical point to include FMD vaccine in their response strategies, but admitted they were unsure of when or how that critical point would be identified. In the meantime, they made plans to store vaccine at locations in Bangor, Maine, and in Montreal, Quebec, in the event that it would be used. Both countries tapped into the expertise of emergency management agencies to handle and transport these supplies.

The remainder of this report provides our observations and analysis of decision-making, response management, and technical issues that both facilitated and challenged the players' ability to respond to the scenario. We use our analysis of exercise events to recommend improvements in FMD response planning and communication. Recommendations for exercise planning and potential topics for follow-on exercises are also included.

Decision-making

Timely decision-making plays a critical role in effective crisis management. In decision cycle analysis, organizational crisis management is characterized as a series of decision-making steps. If an organization can effectively perform these steps more quickly than its competition, it has a competitive advantage. The decision-cycle framework we'll apply to the Equinox exercise has its roots in military strategy, but can be adapted to FAD response. In the case of FMD outbreaks, USDA and CFIA compete with a virus that has an incubation period rather than a conscious decision cycle.

Animal health responders speak of "getting in front of the disease, " which generally means trying to identify and isolate infected or potentially infected animals, and then reducing the level of virus in the environment through depopulation or vaccination efforts. These actions should be accomplished as soon as possible because the virus cannot spread if it cannot incubate. The faster a response effort is able to contain the outbreak, the lower the potential economic and societal impacts and the lower the cost and complexity of the response effort. FMD preparedness measures, such as response plans and procedures, can effectively shorten decision cycles.

Following Equinox 2005, we examined five exercise developments through the lens of decision-cycle analysis:

- CFIA's closure of the international border
- Vermont's closure of its state border to imports from Maine
- Sharing of information between the two countries.
- Establishment of CFIA Control Areas, and
- Movement restrictions within the U.S.

We reconstructed these decision cycles from our exercise observations, making note of the amount of time it took to make the decisions, the plans that were available and consulted by participants, and the information that was needed by decision-makers to take action. Below, we step through each of these examples, and discuss where the decision cycles proceeded smoothly, or might have been impeded by unavailable plans or information.

We believe these cases also illustrate how national response management structure affects decision cycles. Differences in the Canadian and U.S. political systems result in different national approaches to FMD outbreak response management. These approaches can have practical consequences with respect to each country's ability to respond quickly and effectively to an FMD outbreak.

How differences in political systems impact decision cycles

Through the course of our analysis, it became clear that a primary difference between the response management efforts of U.S. participants and those of Canadian participants has its roots in their respective political systems. In Canada, the immediate responsibility for foreign animal disease response lies with a central federal authority, CFIA. CFIA Area and Region offices have a hierarchical relationship with headquarters in Ottawa. In theory, the Regions and Areas pass information and outbreak data upward to headquarters and execute operational decisions made by headquarters.

This contrasts with the more decentralized U.S. political system, in which the initial response to a foreign animal disease outbreak begins locally. At the outset, a great deal of strategic and operational decision-making authority resides with the affected state or states. U.S. states have a great deal more latitude for independent action than do CFIA Areas or Canadian provinces.

Canada's more hierarchical system centralizes subject matter strategy and policy expertise with national response operations. Several of Canada's most experienced experts in national FMD strategy and policy reside at CFIA in Ottawa and would be immediately involved in a response to an FMD outbreak in Canada. The more decentralized

U.S. system relies on State Veterinarians and USDA Area Veterinarians for initial strategic and operational decision-making. These actors typically don't have the intimate knowledge of the national response-planning materials for outbreaks of foreign animal disease or of the *NAFMDVB Program* that comes from negotiating and drafting them.

These different political systems have practical consequences regarding the responders' ability to act decisively in the event of an FMD outbreak. Decision-cycle analysis, such as that presented below, provides a consistent methodology to show how the different systems interact with the decision-making process and ultimately affect the response operations.

The "OODA loop"

Military thinkers often characterize operational decision cycles in terms of an "OODA loop." OODA stands for observe, orient, decide and act. In a military conflict, one source of competitive advantage is the ability to complete this cycle more quickly than the opponent. The opponent then has to continually observe and orient to new circumstances, and loses the ability to decide and act effectively. [2]

Figure 1 illustrates the steps in an OODA loop. The first step is that observations and information are gained in the field, and are sent to emergency response managers. They rely on these observations to orient themselves to the scope and scale of the outbreak. Then they must decide what steps to take in response and, finally, transmit those decisions in a form that allows for decisive action. The loop begins anew as responders observe and evaluate the effect of their actions.

A key point to bear in mind is that effective decision-making implies a capacity to perform each step in the cycle effectively and quickly. If observation and orientation are fast but don't provide an appropriate synthesis of information to support an actionable decision, the resulting action probably won't achieve the desired effect and the loop will start over again.

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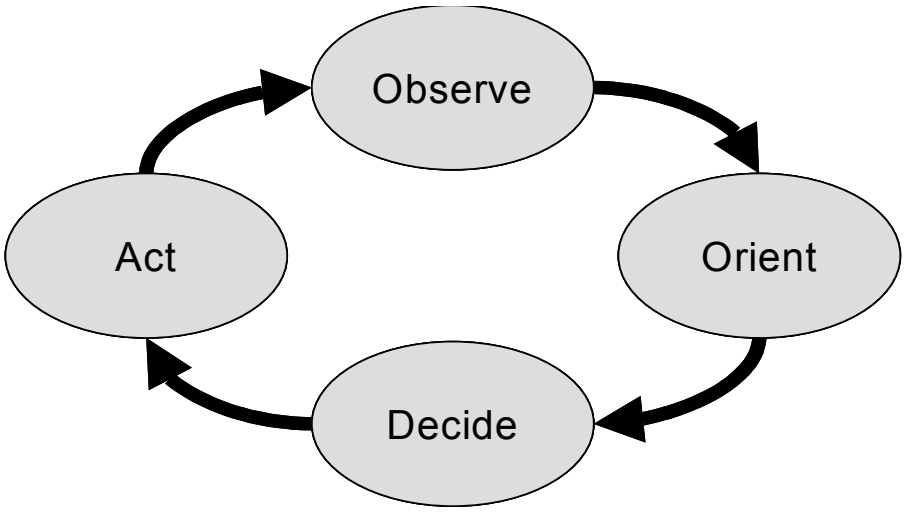
2. OODA was conceived by former USAF fighter pilot John Boyd. His biographer explains the original concept. (*Coram, Robert, Boyd: The Fighter Pilot Who Changed the Art of War*, 2002)

Figure 1. The OODA loop



A second point is that the OODA concept is a general organizational, rather than literal, framework. The events we describe below may have consisted of a series of nested decision loops, though we focus on the overall decision cycle.

A recurring theme in our analysis is that many policy decisions and the technical information necessary to make those decisions are predictable. FMD response exercises such as Equinox 2005 reveal policies and decisions that can be made in advance of an outbreak. When planning and procedures effectively identify the appropriate decision-making authority and response managers know how to apply them to systematically collect, synthesize, and present the information for decision-making, the decision cycle turns rapidly. When planning and procedures are unclear, response managers are unfamiliar with them, or are unsure about the appropriate decision-making authority, the decision cycle turns slowly.

Decision cycles during Equinox 2005

First we examine two separate border closure decisions—CFIA's decision to close Canada's international border with the United States and Vermont's decision to close its border to shipments from Maine—which demonstrate contrasting, but similarly rapid, decision-

making approaches. CFIA officials methodically referred to the *NAFMDVB Program* and corresponding policy steps in the *FMD Strategy* to guide their decision-making procedure. Vermont officials relied less overtly on planning documents and more on the professional intuition and experience of the State Veterinarian and Veterinary Medical Officer (VMO).

Next, we step through the development of a process to share epidemiology data during the Equinox exercise. The desire for exchanging technical information internationally, and the requirements to do so, are not explicitly addressed in the *NAFMDVB Program*. In this case, the decision to exchange information proceeded relatively smoothly. The act of sharing information did not, which set the cycle in motion again.

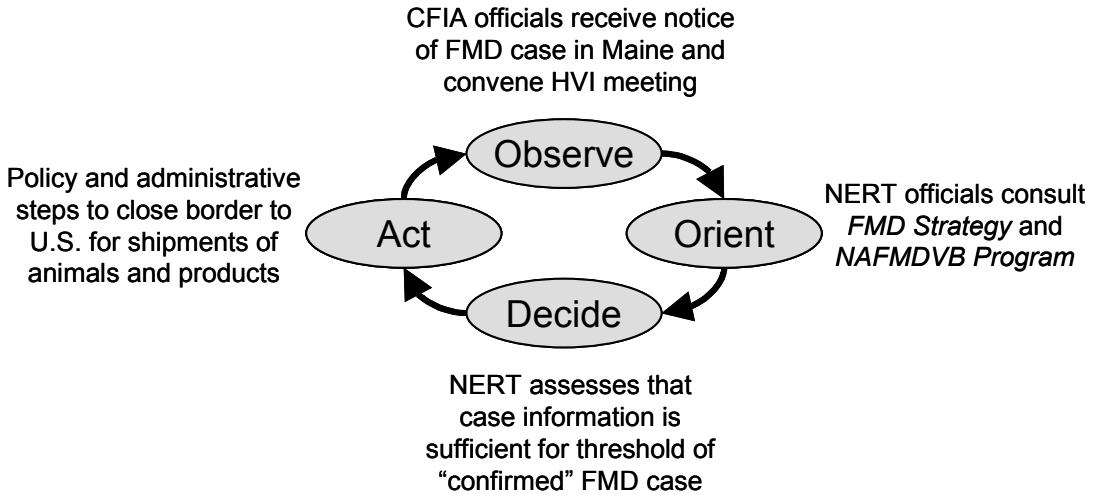
Unlike the circumstances of border closure or information sharing, the planning and decision-making procedures for imposing movement restrictions were less well specified. As well, the definitions of control areas, control zones and other restrictions were often unclear or inconsistent at different exercise venues.[3] Consequently, the decision cycles turned slowly and less smoothly in these cases. We use the OODA loop framework to examine the establishment of CFIA control areas. We also discuss movement restrictions that were put in place by state officials, even though the methodical steps of orient, observe, decide, and act were not as clearly discernable.

CFIA's decision to close the international border

Canada's decision to close its border to U.S. export of live animals and animal products transpired rapidly on the first afternoon of the Equinox exercise. We feel that this decision was an especially salient example of how the decision cycle can be accelerated by emergency preparations that anticipate predictable policy decisions, establish clear procedures to facilitate them, and include personnel who are well versed in the procedures. The OODA loop for this decision is illustrated in figure 2.

3. In this report, we use the term "control area" to designate the result of a specific Canadian action to restrict the movement of animals within a defined geographic region. Our use of the more general term "control zone" includes several types of movement restrictions that were established by U.S. participants, including infected zones, buffer zones, surveillance zones, and quarantine orders.

Figure 2. Decision cycle for CFIA National Emergency Response Team (NERT) to recommend closing the international border



Observe

Exercise play at CFIA headquarters began at roughly 1300 on 21 March with an exercise inject summarizing a simulated phone call from the U.S. Chief Veterinary Officer (CVO) to the Canadian CVO. The message described a "presumptive positive" FMD case. According to the inject, samples had been collected from clinically suspicious animals in Maine and sent to FADDL. The laboratory now reported a positive result on polymerase chain reaction (PCR) analysis for the presence of FMD virus. This communication was in accordance with the definitions and notifications described in chapter 12 ("Tripartite Outbreak Communications") of the *NAFMDVB Program* [3].

CFIA headquarters began the exercise with a pre-arranged High-Visibility Issue (HVI) meeting. (This slight exercise artificiality allowed Canadian players to begin play immediately, rather than waiting an hour or two while an HVI meeting was arranged.) A CFIA HVI meeting convenes in response to news of an emergent food safety, plant health or animal health situation. It is a venue for representatives from CFIA headquarters and CFIA Area Emergency Response Directors to determine whether the situation calls for the declaration

of a CFIA emergency and activation of the National Emergency Response Team (NERT), the National Emergency Operations Center (NEOC) and the appropriate CFIA Area Emergency Response Teams (AERTs).

The HVI meeting resulted in an emergency declaration at approximately 1400, and the HVI committee became the NERT. The NERT's responsibility was to implement the appropriate functional response plan and organize itself to draw on CFIA specialty offices (e.g., Legal Services, International Affairs, Public Affairs) to draft additional policy and procedures as needed. The NERT's structure, roles and responsibilities, are delineated in the CFIA *Emergency Book* [7].

Orient

The orientation step of CFIA's decision to close the border, and the NERT's initial response to the news of a presumptive FMD case in the United States, was to review the policy and administrative steps described in the CFIA *FMD Strategy* and the *NAFMDVB Program*. Scientifically, the NERT believed that the reliability of PCR testing dictated more decisive action than that implied by the "presumptive positive" language used in the exercise inject. The concern was that a delay for more definitive testing, such as virus isolation, as the basis for a border closure policy would increase the opportunity for the virus to enter Canada.

Decide

While the rest of the NERT focused on other aspects of the response, representatives from CFIA Programs and the CVO's office quickly reviewed the *NAFMDVB Program* and determined that a positive PCR test result from a national laboratory constituted a "confirmed" case under the agreement. By approximately 1445, the NERT decided that the information they had about the U.S. case met the threshold for a confirmed case and that the CFIA *FMD Strategy* indicated border closure as the appropriate response.

The Canadian CVO (played by another participant in the exercise) called the U.S. CVO (played by the exercise controller) to say that the Canadian border would be closed to all shipments of live animals and products that had not been treated. A border alert would be sent out

and all trucks would be checked. CFIA asked USDA to stop all export to Canada and to trace back all animals that had been sent to Canada over the past 21 days. This border closure was communicated to the U.S. participants shortly thereafter via a notional call from the U.S. CVO to all State Veterinarians.

Act

Upon determining that the case definition threshold for border closure had been met, the NERT stepped through the policy and administrative actions required to execute the decision. For example:

- The Canadian CVO needed to brief the CFIA President and the Minister of Agriculture and Agri-Food on the *FMD Strategy* and recommendation for border closure.
- The NERT needed to communicate the decision to CFIA District offices, contact the Canadian Border Services Agency (CBSA) to implement the decision, advise the U.S. CVO of border closure and request that the U.S. suspend export certification.

These steps had been notionally taken and the border closed prior to the NERT's 1530 phone conference with the Atlantic and Quebec Area emergency directors. In less than two hours of exercise play, CFIA went through the first three steps of the OODA loop to make the decision to close the border. The final step of the decision cycle took nearly another two hours as the NERT developed specific instructions for CBSA.

Further observations and conclusions

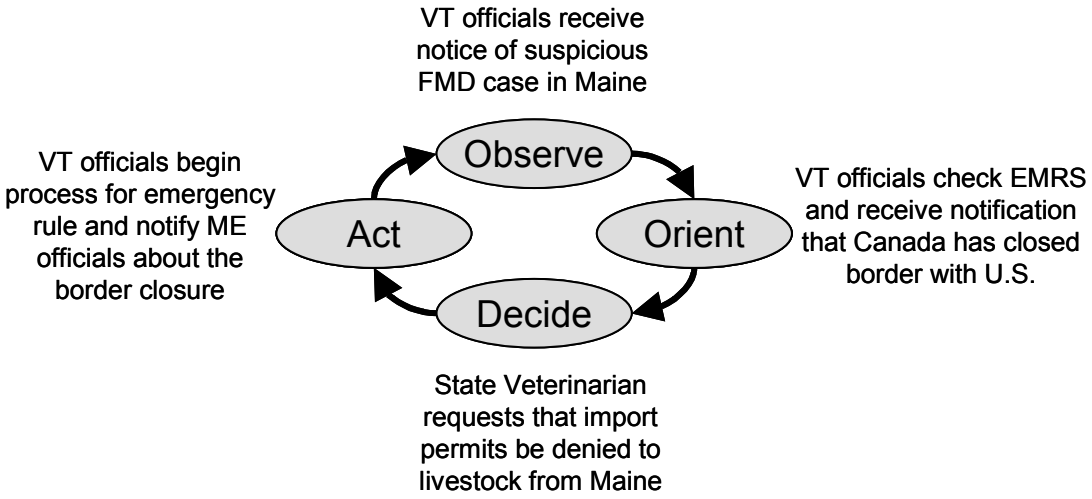
Canada's decision to close the border during Equinox 2005 illustrates how planning and the organization of the response management team can combine to speed the decision cycle. The Canadian *FMD Strategy* and the *NAFMDVB Program* outline a relatively clear decision making path for border closure. These documents speeded decision-making by having considered the policy steps prior to an actual outbreak. Such protocols are valuable only if response managers are familiar with them and know how to apply them. If the CFIA NERT hadn't included scientific policy experts with intimate knowledge of the *FMD Strategy* and the *NAFMDVB Program*, the decision cycle would certainly not have turned so rapidly and smoothly.

Vermont officials' decision to close state borders

The United States closed its border to shipments from Canada on day 2 of the exercise, after the Canadian CVO reported a confirmed case of FMD in Quebec. Because this decision was simulated by the exercise controller, based on the *NAFMDVB Program* and pre-exercise discussions with USDA Emergency Programs staff, this action won't be examined through the OODA loop framework.

U.S. participants focused on animal movement across inter-state borders. The OODA loop shown in figure 3 describes the steps that Vermont officials took to close their state border to shipments of animals and products from Maine. While similar steps likely would have been taken in other states as well, this example demonstrates a particularly clear and rapid OODA loop.

Figure 3. Decision cycle for Vermont officials to deny imports of livestock from Maine



Observe

At 1340 on day 1 of the exercise, a USDA VMO working in Vermont informed the State Veterinarian that he had received an email mentioning a case of suspected FMD in Maine. The VMO and State

Veterinarian felt they coudn't take action without further information. They checked the EMRS database for details about the investigation. Within 30 minutes, they found a record describing the location, but no information on laboratory testing.

Orient

The Vermont State Veterinarian asked the VMO to inquire whether USDA had any laboratory test results for the affected dairy farm in Maine. The State Veterinarian seemed to assess that a positive test result would be the final threshold for closing Vermont's border to imports from Maine. At 1450, the State Veterinarian received notification that Canada had closed the international border for all shipments of livestock and products. While a few exercise participants in Vermont checked EMRS again for information on test results, the Vermont State Veterinarian unsuccessfully tried to call the Maine State Veterinarian. About 10 minutes later, participants did find new information in EMRS reporting a positive PCR test result for the farm.

Decide

At 1510, the State Veterinarian advised the Vermont Deputy Secretary for Agriculture that she should close the border to shipments of animals and animal products from Maine. They decided to deny import permits to any domestic livestock originating from that state. This chain of decision-making is similar to that used for routine animal disease outbreaks and thus could be executed quickly.

Act

The State Veterinarian and Deputy Secretary started the process for an emergency rule. The Vermont State Veterinarian then notified the State Veterinarian of Maine about the border closure, and also asked a Public Information Officer to draft a press release about it. The entire elapsed time for this decision cycle was approximately 2 hours.

Further observations and conclusions

In Vermont, the State Veterinarian and VMO had a combination of FAD experience and knowledge of the legal process that allowed state oficials to move quickly for border closure. Their decision to close the border to imports from Maine was similar to Canada's decision to

close its international border with the United States in one critical way— it was made quickly once the laboratory testing information was available. The point at which these particular decision cycles could have been delayed was between the steps "orient" and "decide." If information had not been available to orient the decision-makers, the decision to close the border would not have been made so quickly.

Interestingly, notice of Canada's response to the positive PCR test result arrived in Vermont shortly before the Vermont EOC could view the laboratory results in EMRS. While the use of EMRS was not an explicit objective of Equinox 2005, the exercise players frequently attempted to use the system to gain situational awareness. Other mechanisms by which the Vermont State Veterinarian could have been informed about the status of the case in Maine will be discussed later.

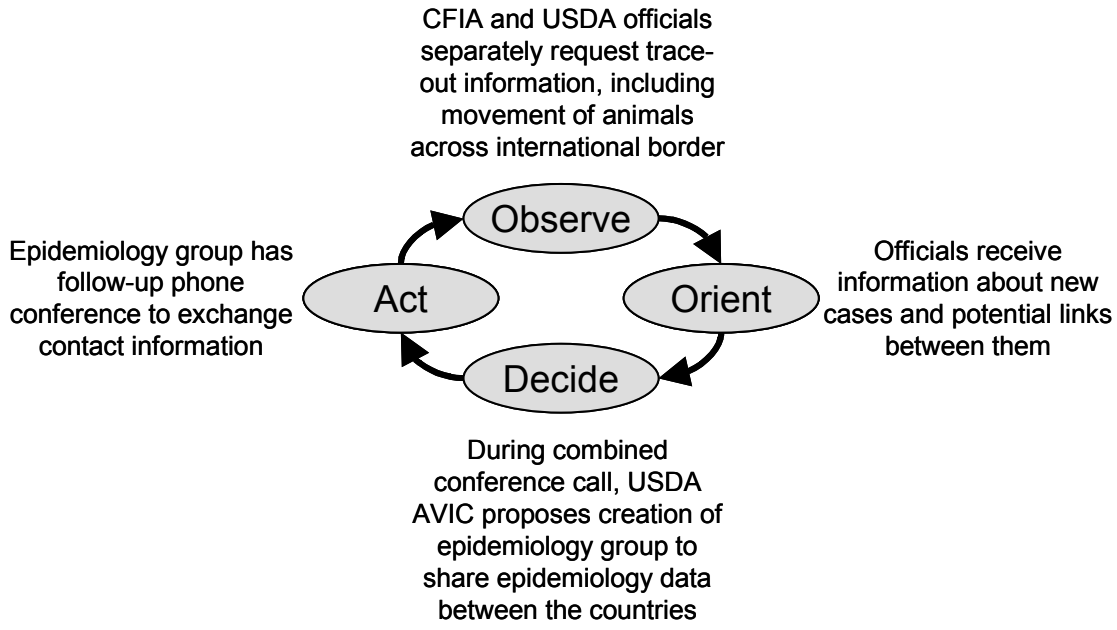
Sharing of information between the U.S. and Canada

On day 2 of the exercise, participants established a communication forum to share technical information between the two countries. This link between epidemiologists at the CFIA Area and state EOCs was explicitly for the sharing of outbreak data only, and not for policy or strategy discussions. Participants were concerned about safeguarding the data due to privacy concerns, but also needed to know the exact locations of infected premises in order to put together a combined operating picture. The two countries shared technical information during phone calls; then epidemiologists within each country entered new information into their own data systems. The OODA loop decision-cycle analysis below (and illustrated in figure 4) traces, from the CFIA headquarters' perspective and a general U.S. perspective, the genesis of epidemiological information sharing during Equinox 2005.

Observe

During the initial CFIA HVI meeting that resulted in NERT activation, the team took steps to facilitate surveillance and potential epidemiological trace-back to Maine. The NERT requested that the Atlantic and Quebec Areas provide data on veal, swine and sheep imports from the U.S. for the last 21 days.

Figure 4. Decision cycle for sharing of epidemiological information during Equinox 2005



The NERT quickly recognized that the *NAFMDVB Program* communications planning chapters did not cover the sort of epidemiology and trade information they wanted in order to support disease surveillance. CFIA legal counsel recommended that they consider a memorandum of understanding (MOU) with USDA to share more detailed epidemiology data, including potentially confidential information.

On the afternoon of day 1, the USDA Area Veterinarian in Charge (AVIC) requested trace-out information from the farm in Maine. Later that day, participants in other U.S. venues initiated trace-backs of animals that had been sent to Canada during the past 21 days. This information was eventually intended to be sent to CFIA.

Orient

The Atlantic and Quebec areas produced import information relatively quickly. By the late afternoon phone conference between CFIA headquarters and the Atlantic and Quebec Areas on day 1, New Brunswick participants were prepared to deliver data on animal and meat

imports and Quebec responders reported they were investigating 10 shipments of animals or products. During the course of the phone conference, Quebec Area officials reported a "suspected" case in Saint Hyacinthe and said that samples had been sent to the National Centre for Foreign Animal Diseases (NCFAD) in Winnipeg. By the end of the conference call, a general map of Kennebec County, Maine, was displayed on a NEOC television monitor. The NEOC duty officer said he was awaiting geographical coordinates for the Maine and Saint Hyacinthe cases in order to display more detailed maps. He asked the NERT whether any Saint Hyacinthe case information could be sent to the United States or if he needed to wait on an MOU.

On the morning of day 2, the Canadian CVO notified the U.S. CVO of a case in Quebec that was presumptive positive based on clinical signs, but did not yet have an epidemiological link. The Canadian CVO also reported a presumptive positive case in New Brunswick that was linked to swine from Maine. The controller playing the role of U.S. CVO relayed this information to the AVIC and State Veterinarians.

Decide

On the afternoon of day 1, the NERT discussed sharing epidemiology data with the United States. On day 2 during an afternoon international conference call between CFIA HQ, CFIA Areas and the affected states, the AVIC proposed creating an epidemiology group composed of individuals from each exercise venue who were authorized to share trace-out information only. He explicitly stated that the group should not discuss policy concerns. Due to the lack of a phone conference facilitator and the poor sound quality, it was difficult for participants to follow who was talking and to pass such basic information as names and phone numbers. This group did establish itself later that day.

Act

The epidemiology group held its first phone conference on the morning of day 3. For the purposes of the exercise, it was assumed that concurrence during a conference call was sufficient for participants to take action. In actuality, a follow-on OODA process would likely be initiated, in order for actors to assess what types of agreements were needed, orient to the pertinent legal issues, decide how

those documents would be drafted, and then sign the agreements. However, this "nested" OODA loop could potentially be accomplished prior to an outbreak, in order to hasten the decision cycle for sharing technical information during an incident.

Further Observations and Conclusions

The creation of an international epidemiology group to share basic outbreak data was an ad hoc development, but it was just the sort of cross-border interaction that the EMWG anticipated might take place during the exercise. With no prior arrangements, the group attempted to conduct business via phone conference. The phone conferences proved cumbersome and ineffective for sharing all but the most rudimentary information. Participants also attempted to create an email address list for sharing data. Had the exercise run for another day or two, the joint epidemiology group would have probably been able to develop standardized means to accurately share data across venues and borders.

After the exercise, CFIA headquarters participants noted that the creation of a joint epidemiology group to share outbreak data was a proactive and positive step [8]. It has since been proposed that sharing of epidemiology data in the event of an outbreak should be formalized in an MOU among the Tripartite countries. The suggestion was made that formal information-sharing clauses be prepared, in consultation with legal experts, and that the clauses be incorporated into existing protocols. This would facilitate the disclosure of information with other government bodies in the event of an emergency.

Had an MOU been available prior to Equinox 2005, participants still would have encountered difficulties with standardization and transmission of data. Thus, we recommend that in addition to drafting an MOU for the exchange of epidemiology data during an FMD event, the Tripartite countries should go a step further and explore a standard format and transmission mechanism for this information. Existing OIE arrangements and the *NAFMDVB Program* may offer vehicles that can be adapted for this purpose.

Movement restrictions within Canada

Prior to the establishment of a control area in Canada, which requires a declaration by the Federal Minister of Agriculture (and thus laboratory confirmation of diagnosis), a CFIA Inspector can declare that he or she suspects that a foreign animal disease is present on a specific farm. This declaration can be used to control the movement of animals and related items on a specific premises, without a formal laboratory diagnosis. The radius of control is 5-km around the initial "suspect "premises and can be put in place before the control area is established. Each premises within the 5-km zone must be individually served with a notice regarding Declaration of an Infected Place. Delivery of this notice includes an explanation of movement restrictions and biosecurity precautions required of the premises owner.

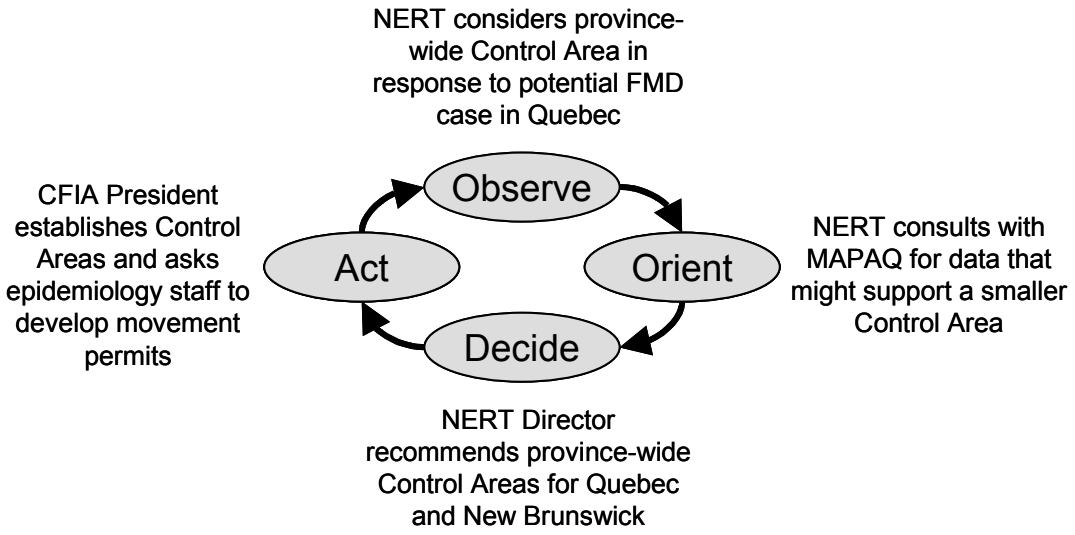
Later, the declaration of a federal control area defines all infected places and zones; and it restricts movement to and from, as well as within, the controlled area. It is an essential administrative step in combatting a foreign animal disease outbreak [9, 10]. Larger control areas are easier to identify politically and geographically, but smaller areas are more manageable for enforcement and less disruptive to commerce. The OODA loop for this decision is illustrated in figure 5.

Observe

The NERT began discussing recommendations for the size of federal control areas early on the first day of the exercise, even before there was an indication that FMD might have entered Canada. The NERT was preparing for the possibility that import data collected from the CFIA Areas might show a link to the initial case in Maine. The team's initial reaction was to consider entire provinces to be control areas. Then they immediately began searching for analytical justification to reduce the areas' sizes.

News that the Saint Hyacinthe district had reported a potential FMD case arrived during a late phone conference between the NERT and Area response managers on day 1. The NERT did not discuss control areas any further that day. Meanwhile in Saint Hyacinthe, exercise participants were awaiting news of a CFIA emergency declaration as well as guidance on control areas and infected zone movement restrictions.

Figure 5. Decision cycle for establishment of Canadian control areas



Orient

NERT representatives and the Atlantic and Quebec Area response team directors next discussed control areas in a phone conference at 1000 on day 2. NERT representatives stated that animal movement had not yet been stopped because a control area was not yet established. The essential challenge was deciding the size of the control area. The NERT representatives sought recommendations from Area officials that might allow the control areas to be smaller than the entire provinces of New Brunswick and Quebec or, alternatively, for information on animal movement that might warrant the extension of control areas beyond these provinces. Atlantic Area officials recommended that the entire province of New Brunswick be its initial control area. Participants in Quebec wanted to further confer with the provincial agriculture agency, MAPAQ, concerning its recommendations. MAPAQ employed its ATQ (Agri-Tracabilite Quebec) electronic animal-tracing system during the exercise. Quebec Area officials wanted to find out whether MAPAQ had sufficient confidence in ATQ's ability to trace animal movement to support a control area smaller than all of Quebec.

The full NERT phone conference at 1100 on day 2 featured further discussion on size of control areas. The Quebec Area reported that the ATQ system had been rapidly producing cattle and sheep movement data during the exercise, but was not fully operational for swine movement data. Because of this uncertainty regarding swine movements, they recommended a province-wide control area for Quebec.

Later, the NERT discussed other sources of animal movement data, especially import documentation from the United States, that might have the potential to support smaller control areas. The CBSA data system tracked customs data on country of origin but, at least in this stage of the exercise, couldn't produce geographically precise information on the ultimate destination of imports. At this point, CFIA officials had also requested export data from the United States but had not yet received anything. As the full NERT phone conference concluded, it became apparent that the NERT probably would not soon have sufficient data to analyze and recommend control zones smaller than the provinces of New Brunswick of Quebec.

Decide

By the next full NERT meeting and phone conference which took place at 1530, the NERT had decided to recommend province-sized control areas for New Brunswick and Quebec. The NERT senior staff veterinarian was ambivalent about the recommendation; he felt that a control area declaration was overdue, but he had little field data to support the recommendation for province-wide areas. As the phone conference began, personnel from both areas referenced movement controls and the CVO reminded them that there could be no mandatory restrictions on movement without a federal declaration of control area. At approximately 1545, the NERT director said that a decision would come within the hour.

Act

At approximately 1610 the NERT director announced that the CFIA President had authorized control areas for the full provinces of Quebec and New Brunswick. The NERT Director also tasked the NERT to work with epidemiologists from the CFIA Areas to develop movement permits.

Further observations and conclusions

The elapsed time from the NERT's initial discussion of control areas to the federal declaration was roughly 24 hours. Aside from waiting for laboratory results for suspected cases, our observations suggest that the limiting factors to generating a Canadian declaration of control area more quickly were the availability and transmission of field data to CFIA headquarters. The NERT wanted to use these data to confidently recommend a smaller than province-wide control area.

During the exercise, the NERT found it difficult to collect import and animal movement data from various sources, including the United States. These data might have supported more manageable control areas. Some of this analysis can be completed as part of "peacetime" preparations: the likelihood that these sources would provide sufficiently geographically specific data, and the legal, administrative and technical arrangements to quickly transmit this information to CFIA's NEOC during an emergency.

Deliberations in the Saint Hyacinthe region highlighted a different perspective on the control area decision making process. The Saint Hyacinthe venue had little information about exercise events in New Brunswick or the United States, but was poised and anxious to act on a control area declaration. Prior to that declaration, these participants had little insight into the status of the control area decision and expressed concern that it had been made but not yet communicated. Post-exercise comments suggested that exercise players at several Canadian venues had difficulty following the status of the control area decision or didn't realize that the NERT was expecting data from their locations to support the decision.

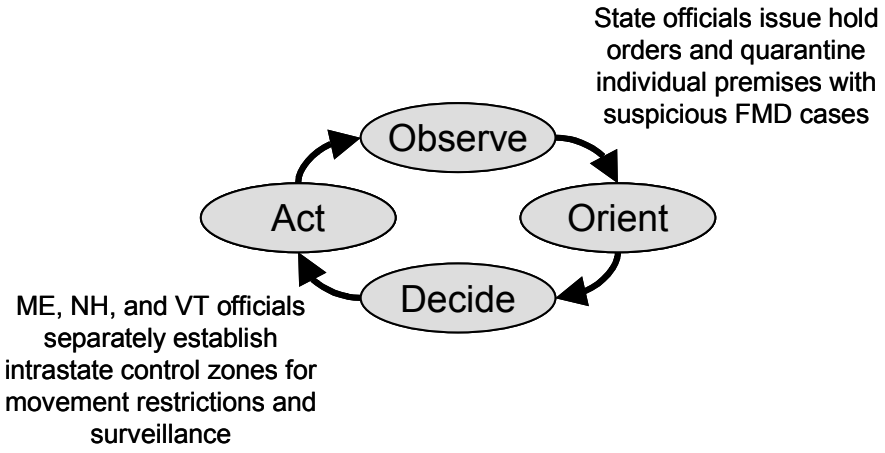
Movement restrictions within the U.S.

Within the United States, state officials can set their own movement restrictions, and the resulting control zones might all be slightly different. However, U.S. control zones can also be established more quickly and require less deliberation over the appropriate zone size.

U.S. control zones can also be more idiosyncratic. The zones established during Equinox 2005 varied by state and by the stage of FMD

response. These decisions do not lend themselves to the OODA loop analysis technique as easily as the Canadian control area declaration. Instead, as we have observed during both the Equinox exercise and the 2003 Amistad exercise, state officials may rely upon a combination of federal guidelines and intuition about what resources are available in order to establish control zones. During Equinox 2005, state officials could observe and orient to the battle against FMD after initial movement restrictions were in place. Then they could decide and act on larger control zones. The OODA loop for these actions is illustrated in figure 6.

Figure 6. Decision cycle for U.S. control zones and movement restrictions



Observe and orient

During Equinox 2005, state agriculture officials notionally placed a hold order or some other form of movement restriction on individual premises. This process was initiated for all locations with suspected FMD cases. Thus, the hold order allowed state officials to observe potential cases of infection on that farm, and orient their next steps accordingly.

The capability to apply hold orders was enhanced by a change to the case definition for new infected premises within Maine. Specifically,

after the first case was confirmed by virus isolation, the AVIC requested that the case definition for new infected premises be changed to include both clinical signs and a positive PCR test result. This would allow responders to potentially act faster at those locations, rather than waiting the additional 24 hours or more for full virus isolation. Presumably, virus isolation would still have to be conducted on those samples, but requirements for the "orient" step would be greatly shortened, enabling quicker action to quarantine and even to depopulate.

Decide and act

During the exercise, U.S. control zones were established by the individual states without federal coordination. In each of these cases, the State Veterinarian made the decision about zone sizes. For example:

- In Maine, participants designated an infected zone of 6.2 miles around infected premises, and a buffer zone of 6.2 miles around the infected zone. The combination of the infected zone and the buffer zone was called the control zone.
- In New Hampshire, officials quarantined all premises within a 6-mile radius of the suspicious farm. Surveillance would be conducted while these farms were quarantined. All garbage feeding facilities would be examined, whether they were inside or outside of this 6-mile radius.
- Vermont officials used 3-km and 10-km rings, with the 10-km ring being for surveillance. They discussed notifying Quebec officials about the rings that extended past the U.S. border, but Vermont officials needed more information about the involved premises before doing so.

The U.S. Secretary of Agriculture has the legal authority to restrict interstate movement of animals during a disease outbreak. Furthermore, the Secretary may declare an Extrodinary Emergency and restrict the movement within a state, if, upon review with the Governor, the Secretary determines state measures are insufficient to control the disease outbreak. The USDA declarations used as Equinox exercise injects only restricted interstate movement to and from states with

confirmed FMD cases. These declarations essentially mirrored the border closure actions that state officials made during the exercise.

Further Observations and Conclusions

The variations in zone sizes may reflect the uncertainty of each state's officials about how long the disease had been present there. For example, Maine had the initial FMD case in the exercise scenario, and officials considered it likely that other FMD cases were already incubating and would be discovered soon. Meanwhile, officials in New Hampshire were tracking only cases that had direct links to Maine, and thus the timeline for the virus to be present within New Hampshire borders was potentially shorter by at least one incubation period. As well, officials in Vermont were initially tracking only deliveries of infected milk from Maine, and assumed that FMD cases in Vermont might *yet* develop from exposure to that milk. Accordingly, we noted that Maine had the largest control zones, Vermont had the smallest, and New Hampshire's response was in between.

U.S. officials expressed more concern about using consistent terminology than about using identical distance measurements from the center of each infected premises. They offered plausible reasons for the variance in zone diameter. Participants noted that effectively whole-state quarantines were also in place because all of the borders around each state were closed by neighboring states or by Canada.

Decision-cycle analysis provides a simple method to break exercise decision-making processes into concrete steps. Reconstruction of these steps can be used to identify specific situations where responders can make "peacetime" policy and procedure adjustments in order to facilitate faster and more effective decision-making in future events. The next two sections of this paper focus on such policy and procedure "tools" that were used during Equinox 2005.

Response management

Equinox 2005 provided an opportunity to activate state- and CFIA Area-level emergency plans for response to foreign animal diseases. Players also referenced national response plans, such as CFIA's *FMD Strategy* and USDA's *National Animal Health Emergency Response Plan* [11, 12]. We think of these planning materials, information management systems, and associated response management schemes as some of the tools that help response managers make the sorts of decisions described in the previous section of this report. Outcomes of Equinox 2005 suggest that some of these tools, such as plans for initial notification, work reasonably well, while others need further refinement or require responders to be given orientation and training.

Initial notification

Efficacy of the initial notification about FMD cases is one test of hierarchical communication between state agencies, area offices, regional offices, and federal headquarters. During Equinox 2005, information about each case of FMD needed to be communicated to other venues. As in a real-world event, responders needed to exchange information in order to have a sense of the overall scenario. Below, we examine the use of communication lines to notify other agencies of the first FMD case, and the use of electronic systems to track that case and others.

Lines of communication

Following a presumptive diagnosis, the *NAFMDVB Program* anticipates the following sequence of events [3]:

- The CVO will initiate communication with domestic government officials according to a national communication plan.

- The CVO of the infected country will notify CVOs of the other two countries and provide relevant information about movement of animals as it becomes available.
- There would be no communication with the OIE or the public.

During Equinox 2005, this sequence was simulated by exercise injects. Reports of the positive PCR test result from the first case in Maine were delivered as injects to the Maine State Veterinarian and to the AVIC. Nearly simultaneously, the same information was provided to CFIA headquarters, simulating the communication from one CVO to another. We then observed how this information was relayed to responders in the various states and provinces. This process, for the U.S. and Canadian notification chains, is illustrated in figures 7 and 8, respectively, and then described below.

Figure 7. Lines of communication regarding notification about first presumptive FMD case in Equinox 2005, for U.S. participants

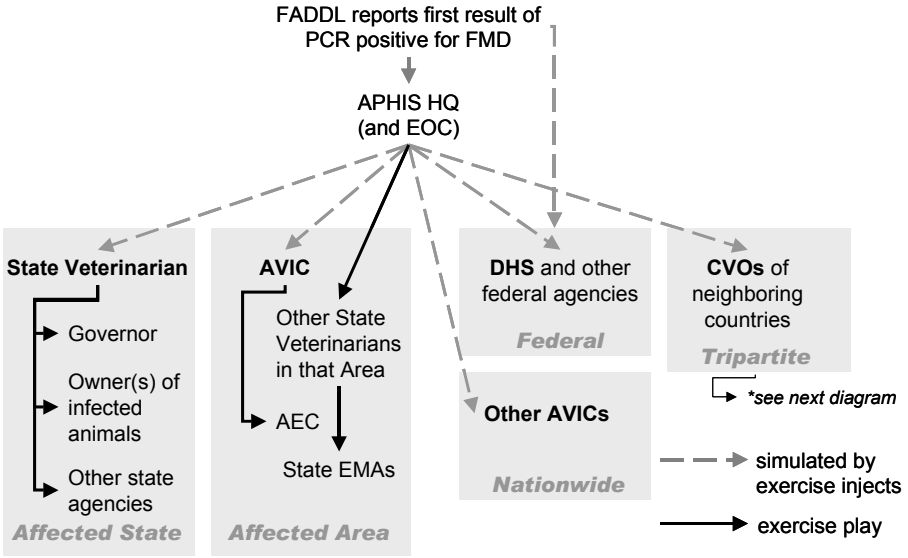
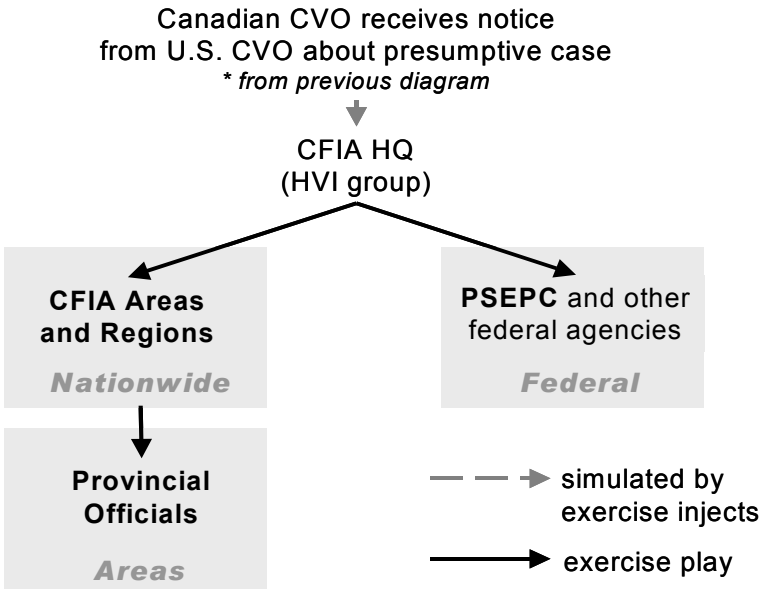


Figure 8. Lines of communication regarding first presumptive FMD case during Equinox 2005, for Canadian participants



Within the United States, this information initially remained within the Maine EOC. As mentioned earlier, a VMO in Vermont had received an email about a probable case of FMD in Maine, but nothing further. Approximately an hour later, the exercise controller (simulating USDA Emergency Programs staff) held a conference call with State Veterinarians of other states. The State Veterinarians then notified other agencies within their state. However, animal disease response plans for Maine and Vermont say that notification of neighboring states should be conducted by the AVIC [13, 14]. The above diagrams also point out the larger interagency notification requirements that exist in the Unitd States, particularly with the Department of Homeland Security and state emergency management agencies.

Within Canada, an HVI process was quickly initiated. This resulted in formation of the NERT, which included the Area Emergency Directors. Canadian officials were notified about the initial U.S. FMD case through group meetings and conference calls. Presumably, an Intergovernmental Affairs Officer and/or Industry Liaison Officer would

then provide information to provincial and local authorities as well as to producers' associations and farming organizations [7].

Phone conferences

Within Canada, the initial communication occurred rather quickly—though without attendee lists for conference calls, there could be uncertainties as to who exactly was notified. As well, some of the confusion and inconsistency in terminology and decision-making appeared due to many of the requests for information taking place during conference calls. Phone conferences served as a sort of default vehicle for information sharing when no prior coordination existed. This reduced the value of the calls for actual decision-making.

Many of the calls had no formal agenda and no facilitator. They also lacked a common means of tracking content, the status of decisions, and tasking that emerged from them. On day 2 of the exercise, some members of the NERT participated in conference calls scheduled for 1000, 1130, 1400, and 1500. Lead U.S. officials also had at least four conference calls that day. The sheer number of conference calls made it difficult for players to complete one call before having to leave for another.

EMRS and CEMRS

Participants in both countries used their Emergency Management Response System (called EMRS in the United States and CEMRS in Canada), which is an electronic system for reporting, identifying, and tracking disease cases. At the initial Equinox 2005 planning meeting, Canadian participants chose not to include CEMRS in their objectives for the exercise. U.S. players decided to incorporate EMRS into their exercise play, but didn't explicitly relate its intended use to the exercise objectives. Still, the Equinox exercise highlighted several important concerns for the use of CEMRS or EMRS during an FMD outbreak.

When a positive PCR result was reported for the first FMD case in Maine, EMRS users discussed how to classify it within the tracking system. Three options were readily available, but none seemed entirely appropriate.

For example:

- Since the case was still presumptive, it couldn't yet be designated as an "infected premises (IP)."
- Since it was the only case that was known, it wasn't a "dangerous contact (DC)."
- Since testing was still pending, it couldn't be classified as "negative (N)."

Also, a "positive (P)" case definition was not yet available in this training version of EMRS. The EMRS team and other personnel discussed the option of simply not classifying the case at this point, since an appropriate category wasn't available. In the end, it was entered into EMRS but with the classification field defaulting to "undetermined."

Details about the "undetermined" case still proved useful for responders in other states. Later that afternoon, after being tipped off by exercise controllers, Vermont officials looked into EMRS to get information on the first case. They looked for links between that case and locations in Vermont, but didn't find any evidence in EMRS yet. Later that day, a link from the farm in Maine to a dairy cooperative in Vermont was entered into EMRS, and Vermont officials were able to pull this information from the system.

This highlights a potential challenge for using CEMRS, EMRS, or similar systems, in the very early stages of an outbreak. If the information is entered, can it then be considered "official"? If a case has positive test results but doesn't yet meet the established case definition, should it be called "positive"? If not, an appropriate designation for a presumptive case should be established and used. EMRS does store the record of when a status is changed, so this evolution of the first case would be stored within the system.

During exercise play in Canada, parts of the CEMRS system were used. However, participants noted that the system still requires validation, training for users, and procedures for handling the data [8]. As in the United States, not all jurisdictions provided the necessary data.

These events from Equinox 2005 raise the question, "What is EMRS or CEMRS intended to provide to response managers during an FMD outbreak?" Specifically, is it

- a database that provides a record of case investigations, but with a lag that effectively makes it a less desirable choice than other forms of recording and sharing epidemiological information, and/or
- a source of up-to-date case information and a verifiable means to aggregate and communicate data between response venues so that response managers can make data-driven and timely decisions from a common pool of information?

The application and procedures for employing CEMRS and EMRS as a decision support tool appear to be implicit rather than an explicit component of planning for FAD response operations in both the United States and Canada. During Equinox 2005, response managers tended to transmit case data using less sophisticated, less efficient, and more error-prone means such as phone conferences and emails, rather than EMRS or CEMRS.

CEMRS and EMRS did provide a record of some case investigations, but didn't offer lead officials the timely information needed to make decisions and take action. During the exercise, it didn't take the place of phone calls for gaining situational awareness. It is not apparent whether the reasons for this are primarily technological or organizational and procedural.

Command post roles

All U.S. government agencies need to have response structures that comply with the new National Incident Management System (NIMS)[15]. Further, USDA has committed to supporting the National Response Plan (NRP) concepts and processes [16].[4]

4. It was a mostly a matter of timing that NIMS and the NRP did not figure in the Equinox 2005 concept and design. Future exercises and responses that involve multiple state and federal agencies will be subject to the U.S. National Response Plan guidelines.

The Incident Command System (ICS) is a tool to help do that. However, the conventional ICS approach flows from the idea that an event is local first. In contrast, the United States (and Canada) is obligated by treaty to report FAD outbreak and response status to OIE and several allies, which means that local events have international consequences. Also, since agriculture agencies are not likely to have all the workforce and resources needed to respond to an FAD outbreak, they must collaborate with other agencies to respond effectively.

Because the U.S. government needs to consistently use ICS and Canada does not, national, area, and state/provincial EOC positions may not have direct analogs between the two countries. A Canadian NERT member with knowledge of ICS would know only the generic philosophical framework that U.S. responders were using to organize themselves. The basic qualities that make ICS appealing as a response management framework can be so generic that they make it difficult to predict what specific response management structure will evolve for a particular emergency. For example, some FAD responses or exercises have placed disease surveillance in the Planning Section, while others put it in the Operations Section. Public affairs and legal counsel are sometimes appended directly to Incident Command and at other times are in the lower sections [17]. Canada's federally centralized approach to FAD response provides a response management framework that is more consistent from event to event. Below we describe some of the different response management structures that emerged during Equinox 2005.

Emergency management at federal EOCs

The NERT is not built around an ICS structure—rather, it's a team of people drawn from divisions that have strategic and/or operational duties during the response. The NERT has membership from different divisions of CFIA, each of whom facilitates the activities of their division during the emergency. Other staff were on duty in the EOC to provide administrative and technical support, such as with mapping or CEMRS. A Duty Officer, NERT manager (separate from the NERT leader) and NEOC manager all had distinct responsibilities. The NEOC was populated with personnel from other divisions who needed to have a consistent presence there.

Canadian officials commented that exercise participants were generally aware of their roles and responsibilities prior to the start of exercise play. However, players were sometimes confused as to whether their regular roles and responsibilities were mirrored in their NEOC duties. This confusion may be clarified with the standard operating procedures (SOPs) that are currently under development for the NEOC [8]. Overall, the response structure was relatively transparent because it followed the framework described in the CFIA *Emergency Book*. In some ways, this framework seems better adapted to an FAD response because it was conceived specifically for responding to disease outbreaks, rather than following the "all hazards" philosophy of NIMS and ICS.

We can't fully describe the U.S. federal response structure during Equinox 2005 because many portions of this structure did not participate in the exercise. However, several personnel at the USDA Animal and Plant Health Inspection Service (APHIS) EOC did receive calls for assistance on technical and scientific issues that developed. This role of providing subject matter expertise was consistent with part of the APHIS EOC responsibilities during previous exercises and real-world operations. Scientific personnel at FADDL also received exercise-related questions about vaccine and FMD testing protocols.

Who is the local Incident Commander?

FAD response can be quite different from a hazardous disaster response. In the latter, intuition, habit, doctrine, and culture dictate that the local first responder is the Incident Commander. As seen in Equinox, as well as in a number of previous FAD exercises and real-world operations, jurisdictions may take different approaches to unified command and the use of ICS to address the response operations.

At Canadian exercise venues, the lead officials were the Area Emergency Director and the District Director. The CFIA Emergency Directors do not have the latitude for independent action that a U.S. Incident Commander would have. Thus, while their position in the response management hierarchy may be similar to positions in U.S. venue, the scope of their command authority is not. Almost all of the staff members in the EOC were from CFIA, so the requirements for interagency response coordination were reduced.

For each of the states participating in Equinox, different arrangements were made for incident command. For example:

- In Maine, the State Veterinarian and AVIC assumed the roles of co-Incident Commanders.
- In New Hampshire, the State Veterinarian was identified as the Incident Commander.
- In Vermont, the designated Incident Commander was an official from the state EMA, and the State Veterinarian was in a supporting role. The Deputy Secretary for Agriculture was also called the Incident Commander on day 1, before the state EOC was activated.

Agriculture officials in Maine were aware that the first FMD case in the exercise scenario would occur in Kennebec County. This exercise artificiality provided an opportunity for the AVIC to travel to Maine before the start of Equinox 2005. As the scenario unfolded, he assumed a role of co-Incident Commander, working with the State Veterinarian. This arrangement combined the assets of agriculture agencies at the federal and state levels.

The duties of co-Incident Commander were thus added to the duties of the AVIC and the State Veterinarian. It was more difficult for them to fulfill both sets of responsibilities, and the arrangement may have actually degraded interstate and interagency communications. For example, agriculture officials in neighboring states assumed that the AVIC would notify them of the FMD outbreak. However, he didn't do this initially because the Incident Commander would not be responsible for this notification. As well, the State Veterinarian pointed out that he would have needed to notify the governor and be available to meet with other state officials, but that also would not necessarily be the role of the Incident Commander.

As a potential remedy for handling these combined duties, the AVIC delegated his authorities to the Deputy AVIC who remained at the Area offices. However, as the outbreak grew, and particularly as the need to work with other federal agencies expanded, the combined duties of AVIC and Deputy AVIC were also considered too much for one person. Indeed, the Area office would need a small staff

dedicated just to the outbreak response. The Area Emergency Coordinator might have also helped to fulfill some of these responsibilities, particularly the liaison roles with other agencies, but this position received little tasking during the Equinox exercise.

Another remedy was to designate a "Chief of Staff" or "Deputy Incident Commander" who worked directly with the State Veterinarian. This arrangement received positive reviews afterwards, because the Chief of Staff fielded many of the administrative questions that were posed to the co-Incident Commanders. An individual who had experience at the state Department of Agriculture and was familiar with the state EOC filled this position.

At the end of the exercise, participants assessed that the AVIC would most likely need to remain at Area offices—where he could better communicate and coordinate among the various jurisdictions and could provide an intersection point for other federal agencies that would be contributing to response efforts. This is similar to the role of an "agency administrator" during wildland fire response. At most, the AVIC could assist state responders in the very early stages of an emerging event, but should then move back to the Area office once additional local leadership is available.

However, having an Incident Commander who is not familiar with the *NAFMDVB Program* could complicate coordination with federal officials and cross-border communications. Use of FMD vaccine and the functions of the Vaccine Bank are particularly nuanced issues that may not be easily understood by those in the general emergency response community. Thus, if an official from another agency were designated the Incident Commander, it would be critical for federal agriculture officials to remain intimately involved with the response coordination.

Technical issues

In addition to communication, coordination, and response management during an FMD outbreak, the Equinox exercise examined a number of technical issues. Activation of the NAFMDVB has been included in all Tripartite exercises to date, and has provided opportunities to explore strategic, operational, and tactical concerns related to vaccine use and distribution. Also, since dairy operations are a prominent industry in the participating states and provinces, concerns related to milk disposal and the inactivation of virus in raw milk were also discussed. We describe these issues below.

Using FMD vaccine

A few selected issues regarding distribution of FMD vaccine were played out on day 3 of Equinox 2005. Exercise injects provided information to players that the shipment would be received at JFK Airport in New York, where it would be met by scientists from FADDL who would remove several vials for testing. At that point, the shipment would be split, and half of the available vaccine doses would be sent on to the airport near Montreal, Quebec. The decision to split the first vaccine shipment in half had been made by exercise planning team members beforehand, and was thus simulated during exercise play.

Vaccine storage

At this point in the exercise, the individual states and provinces identified how they would store FMD vaccine. As stated earlier, neither U.S. nor Canadian participants felt they were ready to use vaccine in outbreak control, but they agreed that it should be available in case they reached that turning point. To that end, the shipments of vaccine were further transported to warehouse facilities in the United States and Canada.

U.S. players were asked to identify one or more locations in New England where the shipment could be sent from JFK Airport. They decided to use plans that were already in place for storing and distributing the Strategic National Stockpile (SNS). The link for this decision was emergency management officials who were familiar with state Department of Health plans for the SNS. These plans identified a warehouse in Bangor, Maine, that had sufficient space, cold-storage capabilities, and security controls. Accordingly, the FMD vaccine was notionally transported to Bangor and would be stored in the warehouse until the time at which U.S. officials decided to use it.

Who can vaccinate?

The concern of finding enough people to vaccinate livestock also arose on day 3 of the exercise. Lead officials from all three states felt they didn't have enough personnel on hand to complete this task. Further, the issue led to the question of who could vaccinate. Did it need to be done by veterinarians with state licenses, or could others be brought in to complete this task?

For example, existing statutes in Vermont support bringing in veterinary expertise from other states in extraordinary circumstances. Reportedly, this mechanism has been used to acquire expert assistance for surgeries on high-value animals. An FMD outbreak would be another type of extraordinary circumstance. Other state officials were less certain about their capabilities to bring in outside veterinarians, and were not sure whether animal health technicians could be included in this task. This is another issue that might cause delays in decision cycles, because it would take time to find the right statutes and paperwork. If plans for bringing in additional licensed veterinarians can be made ahead of time, it could notably shorten the time needed to enact these plans during an outbreak.

Coordination of vaccine strategies

State officials could each decide to use vaccine in different ways, which might complicate overall outbreak control strategies in a multistate Area such as New England. For example, one state might use its available doses to protect high-value herds, while another might

decide on a geographic distribution. State officials could request certain numbers of vaccine doses based on these strategies, which could lead to perceived allocation disparities.

During the exercise, officials from Vermont requested half of the vaccine doses currently available to New England. Their justification was that, of the three states that had FMD infections, Vermont had approximately half of the susceptible livestock. However, officials from other, yet uninfected, states (such as New York and Massachusetts) were also playing in the exercise and they hesitated to split the vaccine entirely among states with diagnosed cases. They suggested it might better be used to "protect" uninfected states. Within Maine, officials established a 25-km vaccination zone, which included mostly dairy farms, one deer farm, and a number of susceptible wildlife. Questions then arose concerning how to include animals that were not directly part of production agriculture but could yet spread the disease.

At the end of the exercise, several questions arose about whether the individual state strategies could, or should, be coordinated, and, if so, by whom. Participants felt that the AVIC could serve this role. This provided another example of why the AVIC might not be an appropriate person to be Incident Commander: to coordinate state strategies, he/she would need to be focused on all jurisdictions within the USDA Area, not just one infected premises or county.

Within CFIA, decisions regarding the use of FMD vaccine would be made at the federal level. These were played out during Equinox 2005 only to the extent that the shipment of vaccine would remain at a warehouse in Montreal until Canadian officials were ready to use it. Since whether or not to use vaccine is a NERT recommendation, personnel at Area and district offices did not discuss this issue in much detail.

Milk disposal

For the first two days of the exercise scenario, the state of Vermont had no cases of FMD-infected animals but did have at least one large dairy cooperative holding infected milk. Accordingly, responders in Vermont spent a considerable amount of time researching how to

disinfect milk. They found little information available. Responders in Maine had notionally used citric acid, and USDA Emergency Programs staff referred to an Australian FMD plan which stated that 0.2 percent citric acid would inactivate the virus. However, a chemist had advised Vermont officials that this would likely not work and participants also cited an Army study that said citric acid was ineffective against FMD. In addition, it would curdle the milk in the tanks, making the resultant product even harder to dispose of.

Participants then considered using lye (sodium hydroxide) to raise the pH level above 11 and pouring the mixture onto a compost pile. However, they decided that this method would be expensive and might be considered hazardous waste according to EPA regulations. A third option was to use glacial acetic acid, but the participants were uncertain of its chemistry and availability.

Few response plans appeared to incorporate instructions for disinfection and/or disposal of milk. For regions with large dairy operations, this could be a considerable problem during an outbreak. Guidance and formulas are needed so that responders don't have to research the options during the course of an incident.

Conclusion and recommendations

In this report, we highlighted points where the intersections for communication and coordination took place, or where they might have taken place, during Equinox 2005. We described how the objectives for this exercise were met and discussed some of the different decisions, plans, and strategies that evolved. We also identified issues affecting FMD response planning and highlighted exercise events that point to new areas for enhancing preparedness.

Canadian Equinox participants tended to view international coordination and communication of technical information as a national-level problem. In contrast, their U.S. counterparts tended to view technical coordination as a sub-federal "area"-level problem analogous to horizontal state-to-state communication and coordination. For strategic decision-making, the managers of a multi-jurisdiction outbreak response must have shared situational awareness. This requires the integration of data from multiple local sources. Canada's relatively centralized FMD response program makes this primarily a vertical, hierarchical information management challenge. The relatively decentralized U.S. FMD response program makes developing a nationally unified operating picture a horizontal information management challenge. The shared situational awareness that was envisioned as a Tripartite exercise objective involves the intersection of these vertical and horizontal information management approaches.

Advanced preparation for decision making, response management, and technical issues has, and will continue to, enable the Tripartite partners to make rapid and effective decisions. These preparations can involve administrative steps for anticipated policy issues and/or guidelines for resolving technical concerns— and will give responders a competitive advantage to get ahead of the virus. While our analysis of this exercise focused on response to an unintentional FMD outbreak, such preparations can also support an intentional outbreak

response, should it be needed. However, additional planning and response capabilities may be required in order to stay ahead of a thinking enemy.

CNAC's analysis supplements other Equinox 2005 after-action reports from a cross-border and international perspective. Our perspective intentionally concentrates on events and activities related to the overall Tripartite objectives for the exercise. In the sections below, we provide recommendations for communications and coordination during FAD outbreaks. We also list recommendations from CNAC analysts and exercise participants regarding response management and technical issues. Finally, we discuss recommendations for the development of future exercises.

Recommendations for communication and coordination

Because Equinox 2005 was designed to let the scenario unfold over the course of time, participants needed to share information in order to gain the full picture of what was happening. We include here several recommendations to assist the very basis for this communication, and others for the means and mechanisms for information sharing.

Recommendations for the foundations of communications and coordination include the following:

- Develop an MOU between the Tripartite countries to share and safeguard epidemiological data during an outbreak.

  This should include information-sharing clauses that are prepared in consultation with legal experts and incorporated into existing protocols. Developing this MOU during "peacetime" could more quickly enable this communication during a crisis. Responders should then also be trained to the concept of operations for this information sharing.

- Increase familiarity with the *NAFMDVB Program*, CFIA *FMD Strategy*, NAHEMS guidelines, and other protocols available for FMD response planning.

  Particularly with a de-centralized response program (e.g., in the U.S.) it is critical that the responders making the first decisions be familiar with the strategic issues. This can be accomplished

through orientation sessions, seminars at conferences, or even tabletop exercises designed to elicit discussion of the various factors and tradeoffs associated with FMD response. Most of all, the documents should be readily available to the decision-makers so that their use is transparent during an incident.

- Develop a mission statement for EMRS or CEMRS (and other electronic systems for case tracking).

  For different missions, different resources might be put into the system during both "peacetime" and response operations. For example, should decision-makers at multiple locations be able to rely on EMRS for the most current knowledge about disease spread? Should EMRS provide the basis for international information sharing? These may be competing objectives, where up-to-the-minute information is necessarily less refined than what might be shared with neighboring countries. Articulating a mission and training to that defined mission will enhance of use of EMRS during exercises and real-world operations.

Recommendations to enhance the mechanisms of communication include the following:

- Identify a "manager" for conference calls who can make sure that the equipment is appropriate, set the agenda, and identify the decisions made and tasks assigned during the call.

  During Equinox 2005, conference calls served as a default vehicle for information sharing. After conference calls, we frequently observed participants deliberating over what, if anything, had been decided. Often, the official with the highest "rank" was assumed to be leading the call, even though this person might also have had the greatest need to receive information from others. A manager could facilitate the calls and track the status of decisions and tasking that emerged from them.

- Pre-establish a secure Tripartite web chat room for exercises and real-world operations.

  This would provide an additional means for communication, and a back-up for conference calls. Both preparatory materials and outcomes from conference calls could be posted on the

web. Glossaries, maps, flow charts, and other tools could be made available to a wide variety of responders through this mechanism. Password protection could appropriately limit access to those with a direct need to know.

- Use a common glossary for outbreak response terms and control measures, such as "infected zone" and "buffer zone."

  A list of definitions related to the Vaccine Bank is already included in the *NAFMDVB Program* and has been approved by the NAAHC. Equinox exercise participants felt it more important to have a common understanding of the actions being taken in each of these zones than to necessarily have the same size of zones at every affected location. Consistent use of terminology would also facilitate case reporting between venues and to the OIE.

- Develop a separate designation for presumptive cases in EMRS.

  For example, a classification category of “event” or “undetermined case” could be later changed to a status of N, IP, or DC. These terms are neutral, but signify that something noteworthy has occurred. The Equinox exercise provided one example of difficulties with classifying an initial disease case. In a recent real-world example from New Zealand, hoax investigations might have presented a similar challenge: a status of N, IP, or DC would not have been suitable while testing was pending.

- Define a mechanism and procedures for communicating laboratory test results, and then clarify the relationship between those results and follow-on actions.

  During the exercise, state officials were awaiting laboratory results to make response decisions, but also appeared to be following their own intuition as to what that response should be. Each jurisdiction should incorporate into its FMD response plan the definitive actions, (e.g., border closure, international or interstate notifications) that would take place once they receive official laboratory results for positive FMD cases. EMRS or CEMRS could be the vehicle for communicating this information. Reliance on informal professional networks can distract high-level counterparts in the affected jurisdictions and information exchanged this way is unverifiable.

Recommendations for response management

We developed response management recommendations based on our Equinox exercise analysis and CNAC's overall experience with military and civilian response management exercises and operations. In addition to our analysis, we solicited comments from exercise participants through feedback forms, review meetings, and general conversation about the exercise. A number of valuable insights emerged from those discussions and this report provides a useful medium for presenting them along with our own recommendations.

Recommendations regarding overall response management include the following:

- Explore command structures that enhance commonality in EOC staffing, so that personnel can be "plugged into" the ongoing operation more easily. Communicating station-to-station (e.g., Quebec EOC PIO to New Brunswick EOC PIO) rather than person-to-person (e.g., Mr. Smith to Ms. Jones) helps maintain continuity during turnover of personnel.
- Increase recruiting pools of available animal health responders to be called upon during an emergency, such as the U.S. National Animal Health Emergency Response Corps (NAHERC).
- Identify personnel requirements as early as possible so that requests can be submitted quickly and travel time can be incorporated into response planning.
- Determine whether the State Veterinarian has authority to restrict movement of people to/from infected premises, and incorporate those requirements into the state response plan.
- Consider having area and district representatives participate in early conference calls on a "listen only" basis. This would help them know how to prepare for later, more extenstive, phone conferences.
- Ensure that all daily reports distributed by CFIA are available in both French and English, and that information on the CFIA website is consistent with that contained in the *FMD Strategy* .

- Identify a technical spokesperson who can work with public information officers to answer questions and prepare releases.
- Build depth by adding deputy commander and section chief positions. This would require fewer personnel than staffing a separate team, and allow for smooth turnover of personnel.
- Consider which ICS positions require scientific expertise and which can be filled by personnel with other backgrounds.
- Reach out to other agencies and personnel who have experience running an EOC. They can help establish the operational rhythm, situation reports, action plans, standing watches, and other mechanisms to facilitate overall situational awareness.
- In a multi-state USDA Area such as New England, each state should send a representative to the AVIC's office once an FMD case occurs in a neighboring state. This would assist interstate coordination by having liaison officials located directly with the agency administrator.
- Examine state FAD response plans to see how they coordinate with federal plans. Difference in authority of some state officials may affect the "links" between state and federal plans.
- Clarify the criteria to declare a Control Area, such as trade patterns, livestock movement traceability, and industry support.
- Pre-identify who can carry-out vaccination in each jurisdiction (technicians, or only veterinarians) and what justifications are needed to bring in people from other areas.
- Develop guidelines for the inactivation of virus in raw milk and subsequent disposal—responders shouldn't need to do the chemistry calculations during an outbreak.
- Be able to identify resources that the agriculture agency already has available, in order to assist logistics and procurement efforts during an incident.
- Establish a working group of veterinarians working along each each state/province border and corresponding ports-of-entry to collect and analyze cross-border animal movement (including

poultry) and trade patterns. Such information can be collected from manifests and health certificates well in advance of an FAD outbreak. A working group that meets periodically could facilitate data collection to support follow-on epidemiological analysis and foster smoother cross-border coordination in the event of an outbreak.

Recommendations for exercise planning and future exercises

Overall, exercise players were enthusiastic about Equinox 2005. Many viewed it as a rare opportunity to interact with agencies and people with whom they would expect to work during a foreign animal disease outbreak but with whom they otherwise didn't routinely interact. Feedback from participants indicates that nearly all found the experience to be beneficial and expressed a desire to participate in future exercises.

However, the Equinox exercise lacked the type of planning and coordination structure that has been used for previous Tripartite exercises. For example, the 2003 Amistad exercise had a planning committee of officials from both participating countries and included multiple pre-exercise meetings during which the various objectives were reconciled. For the 2004 MayDay simulation game, a joint planning meeting was held to develop exercise objectives and identify sources of information for scenario design. For an event as large as Equinox 2005, an oversight group that can adjust the scope of the exercise and prioritize exercise objectives to simultaneously meet both Tripartite and local objectives is needed.

Our recommendations for planning and coordination of future exercises include the following:

- Hold planning conferences with at least one representative from each participating venue or agency.

  For exercises on a large scale and with a wide scope such as Equinox, we suggest having at least one initial planning conference and one mid-planning conference. The representatives should be able to speak for the key players at each venue, and anticipate their requirements for the exercise.

- Arrange for additional funding so that at least one representative from each venue or agency can attend both pre-exercise planning meetings and post-exercise review meetings.

  Shared awareness of the Equinox 2005 objectives was hampered by a disjointed planning process. As a result, participants were unaware of the intent of other stakeholders in the exercise. A combined post-exercise review meeting (or "hot wash") could also have helped participants better understand the challenges faced by their counterparts in other agencies and countries.

- Identify a joint committee or oversight body that has "ownership" of the exercise.

  For a smaller-scale event, this role could be filled by a single exercise director, who would serve as the primary point of contact with the host agency before, during, and after the exercise. Someone in this position could also help ensure the safety of participants by making certain that all exercise operations are running smoothly, and issuing a "stop exercise" order if they are not. For larger exercises, a group of personnel representing various stakeholders in the exercise—such as a steering committee—should fill this role. The group could receive regular updates from the exercise planners, reconcile disparate objectives, and assess who should participate in the event. The exercise director or steering committee should not need to take on the work of planning, designing, and facilitating the exercise; those responsibilities can be handled by support personnel and contractors with specialty expertise.

- For large-scale exercises, consider holding preparatory exercises such as tabletop or seminar discussions so that key players can identify the requirements and responsibilities that may be placed on them during the main exercise.

  Topics that players may be unfamiliar with, such as activation of the NAFMDVB, could be introduced prior to the large-scale exercise. This would allow players to better understand and

address the operations or decision making surrounding the protocols. Preparatory exercises can also help to even out the level of experience among various players and agencies. As well, follow-on exercises can focus on the specific concerns of a smaller group of participants, or on longer term consequences of the scenario.

Recommendations from Equinox exercise participants regarding future exercises include the following:

- Do a joint USDA-DHS exercise to look at integration and overlap when an FAD outbreak rises to be an Incident of National Significance.
- Conduct a separate exercise to focus on FMD vaccine issues, such as coordination of distribution plans, and how vaccine would be delivered.
- Conduct additional exercises to focus on field operations related to:
  - depopulation, disposal, vaccination, etc.—including identification of the critical resources (tools, structures, personnel, etc.) needed in order to make these operations efficient,
  - sample collection and laboratory testing,
  - biosecurity at the infected premises,
  - coordination of law enforcement efforts along with state and federal response agencies,
  - public relations and the hierarchy for release of information to stakeholders, and
  - development of procedures for restricting/permitting movement within the control and surveillance zones.
- Involve zoonosis scenarios that would bring the public health community into an animal health emergency.

- Decide on hours of operation for the exercise beforehand, especially for exercises that extend across multiple time zones.
- Provide more group training to agriculture officials about FAD response, so that they can get more benefit out of the interactions during an exercise.

As described earlier in this document, some issues that emerged during the Equinox 2005 exercise will be carried over to other exercises in the Tripartite series, and beyond. As well, additional exercises may be called for, in order to address specific procedural or operational concerns. The final exercise in the 2003-05 Tripartite series will examine regionalization and how the countries might be "zoned" to permit trade with regions that remain unaffected by FMD. The schedule for this exercise is yet to be determined.

Appendix: List of participating agencies

Table 3 lists the agencies and organizations that participated in the Equinox 2005 exercise.

Table 3. Agencies that participated in Equinox 2005

	Agency or organization
From Canada	Canadian Food Inspection Agency
	Public Safety and Emergency Preparedness Canada
	National Centre for Foreign Animal Diseases
	Ministere de l'Agriculture, des Pecheries et de l'Alimentation du Quebec
	New Brunswick Ministry of Agriculture, Food, and Rural Resources
From the U.S.	USDA, Animal and Plant Health Inspections Service - Division of Veterinary Services - Plant Protection and Quarantine - Wildlife Services - National Veterinary Services Laboratory - Office of the Inspector General
	USDA, Farm Service Agencies (in VT and NH)
	Department of Homeland Security - National Disaster Medical System - Federal Emergency Management Agency - Customs and Border Protection
	Department of Health and Human Services
	Environmental Protection Agency
	Maine Dept. of Agriculture, Food, and Rural Resources
	Maine Dept. of Defense, Veterans, and Emergency Management
	Maine Forest Service
	New Hampshire Dept. of Agriculture, Markets, and Food
	New Hampshire Dept. of Safety
	Vermont Agency of Agriculture, Food, & Markets
	Vermont Dept. of Public Safety

Table 3. Agencies that participated in Equinox 2005

	Agency or organization
From the U.S.	Massachusetts Dept. of Agricultural Resources
	Massachusetts Emergency Management Agency
	California Dept. of Food and Agriculture
	New York Dept. of Agriculture and Markets
International	International Food Information Council

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Operation Diamond Shield II: After Action Report

Monica Giovachino • Eric Trabert • Dawn Nebelkopf
Tammy Felix • Richard Poole • Lauren Byrne

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Paul E. Speer
Director, Domestic Safety Program
Institute for Public Research

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Contents

Executive summary

On 23-25 June 2005, the Public Health Preparedness Section (PHPS) of the Delaware Division of Public Health (DPH) held a bioterrorism full-scale exercise (FSE) called Operation Diamond Shield II. The exercise scenario involved a covert release of *Francisella tularensis*, the bacteria that causes tularemia. Venues included the State Health Operations Center (SHOC) in Dover, the Division of Public Health Laboratory (DPHL) in Smyrna, and six hospitals. DPH also deployed three Investigative Response Teams (IRTs) to conduct the field epidemiological investigation.

One of the primary goals of the FSE was to validate strengths and identify improvements to emergency response plans. It focused on six areas: coordination and communication, epidemiological investigation, public information, laboratory response, hospitals and the medical response, and the Acute Care Center (ACC). Key strengths validated during the exercise include the following:

- **Communication and coordination**: The SHOC was operational within an hour of the initial DPH conference call and staff successfully coordinated response activities, including coordinating with hospitals and establishing facilities to provide assistance and care to the exposed population.
- **Epidemiological investigation**: Epidemiologists identified the source of the outbreak and tested IRT field procedures for the first time.
- **Public information**: Public Affairs Officers responded to numerous media inquiries and quickly released informative public messages.
- **Laboratory response**: Technicians successfully identified the agent and made a presumptive diagnosis within three hours of initiating testing.
- **Hospital/medical response**: Hospitals successfully responded to the influx of patients and implemented a variety of measures to increase surge capacity.

- **ACC**: Personnel from three hospitals and the Medical Reserve Corps worked together for the first time to set up and operate a joint medical facility. More than 50 patients were successfully admitted and treated.

Key issues and recommendations include the following:

- **Communication and coordination**: DPH personnel in the SHOC and in the field lacked a common situational awareness. SHOC plans should include detailed information management procedures that include the collection, analysis, and dissemination of all incident-related information to personnel working in the SHOC and in the field.
- **Epidemiological investigation**: The initial deployment of IRTs was delayed and the teams lacked overall situational awareness. Technical and other issues should be addressed, and the IRTs should receive comprehensive training.
- **Public information**: Some public messages contained minor errors or lacked detailed information. A public information strategy should be prepared to support Neighborhood Emergency Help Center (NEHC) and ACC plans and ensure that the unexposed, exposed, and sick seek help at appropriate facilities.
- **Laboratory response**: Sample collection and transport to the lab were not successfully completed during the exercise. Plans should clarify Chain of Custody (CoC) procedures and designate an individual to coordinate this activity from the SHOC.
- **Hospital/medical response**: Players were unfamiliar with the application of the Emergency Medical Treatment and Labor Act and Investigational New Drug regulations in this bioterrorism scenario. These requirements should be incorporated into plans and procedures, particularly those that deal with NEHCs and ACCs.
- **ACC**: The lack of a clear command structure left staff wondering whom they should notify when questions or issues arose. A command structure for the ACC should be established and all staff should be trained to work and communicate within it.

This report provides a detailed discussion of these and other issues along with recommendations for improving plans and procedures. The final section provides recommendations for future exercises.

Introduction

The PHPS of the Delaware Division of Public Health (DPH) is the lead agency responsible for bioterrorism preparedness in Delaware. In June 2005, it sponsored Operation Diamond Shield II, an FSE designed to test the DPH's emergency response plans. The goals for this exercise included the following:

- Test state bioterrorism response capabilities
- Strengthen working relationships between the public health community, emergency management, various local, state, and federal agencies, civilian medical facilities, and private and volunteer organizations involved in response to a public health emergency
- Validate strengths and identify improvements to procedures, plans, staffing, equipment, organizations, and interagency coordination.

This section provides an introduction and overview of the exercise design.

Objectives

The CNA Corporation (CNAC) and the DPH exercise planning team developed the following objectives for the exercise:

- Surveillance and epidemiology
  - — Activate epidemiology Investigative Response Teams (IRTs)
  - — Exercise investigative procedures in the field
  - — Test electronic data collection tools and report data to the State Health Operations Center (SHOC)

- — Compile and analyze epidemiological data to identify the source of the outbreak and support leadership decision-making
- — Exercise coordination with law enforcement

- Coordination and communication
  - — Activate the SHOC and test Standard Operating Procedures (SOPs)
    - – Use the Delaware Emergency Notification System (DENS) for staff notification
  - — Perform a shift change
  - — Exercise interagency coordination and decisionmaking

- Hospitals
  - — Exercise hospital emergency plans and procedures
    - – Focus on command post play
    - – Use a small number of role-players for emergency department (ED) play
  - — Activate, set up, and demonstrate an ACC; perform a shift-change in the ACC
  - — Test communications, coordination, and information sharing among the hospitals, ACC, and the SHOC

- Laboratory
  - — Demonstrate sample collection and transport procedures
  - — Perform Polymerase Chain Reaction (PCR) testing and Laboratory Response Network (LRN) notification
  - — Exercise communications and information sharing with the SHOC and hospitals
  - — Exercise Chain of Custody procedures and sample transport

- Public information and risk communication

— Test use of the Delaware Health Alert Network (DHAN) during an emergency

— Activate risk communication plan

— Exercise the coordination of message development and dissemination to the hospitals and local news media.

Although planned for, two of the above objectives were not achieved during the exercise. The first, exercise coordination with law enforcement, was an epidemiology objective. Exercise planners had hoped to have law enforcement agencies participate in this portion of the exercise, but this did not occur. One exercise inject dealt with this issue; however, exercise controllers chose not to use it because the IRTs were already fully taxed by the exercise scenario. The second objective involved performing a shift change in the ACC. On day 3 of the exercise, hospital players decided not to perform the shift change.

Tasking and approach

DPH asked CNAC to design, implement, and analyze a full-scale bioterrorism exercise that focused on the above objectives. The exercise planning process was based on *Homeland Security Exercise and Evaluation Program (HSEEP) Volume III: Exercise Program Management and Exercise Planning Process* [1], and a series of formal meetings and conferences were held with DPH to guide the exercise design process.

The main focus of the planning group was to assist in the development of the Exercise Plan [2] and the Scenario and Master Scenario Events List (MSEL) [3]. These documents were used to guide the implementation of the exercise by exercise controllers.

The exercise evaluation methodology [2] used in this After Action Report (AAR) is based on the approach outlined in *HSEEP Volume II: Exercise Evaluation and Improvement* [4]. It uses observation, reconstruction, and analysis to determine what happened in the exercise and why. The purpose of the analysis is to provide participants with the information necessary to improve their policies and procedures

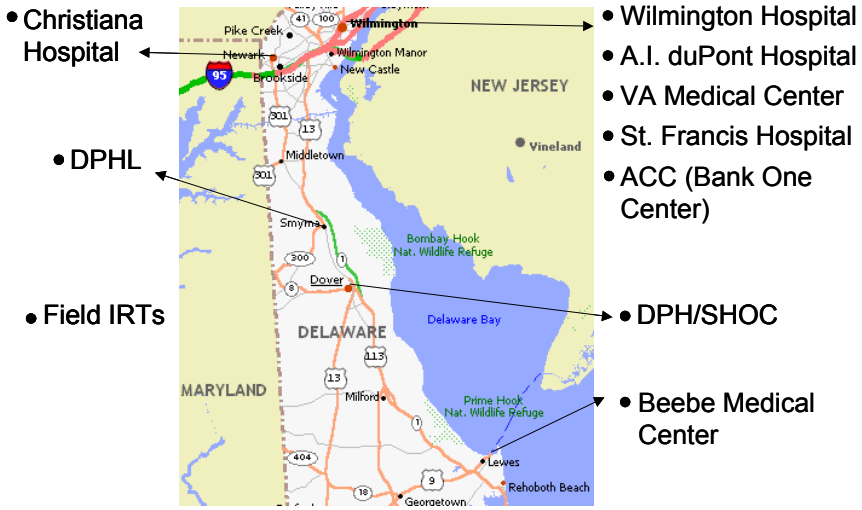
for responding to major public health events, whether terrorist-related or naturally occurring.

The intent of this methodology is not to "evaluate" individual player performance. Rather, its purpose is to deliver knowledge to players so that their agencies can improve or create policies and procedures based on lessons learned from the exercise.

Concept and scope

As described in the objectives, this exercise focused on six areas: communication and coordination, epidemiological investigation, public information and risk communication, the public health laboratory, hospitals, and the ACC. Players were located in many venues, shown in figure 1.

Figure 1. Exercise venues



The MSEL [3] contained injects and expected player actions that were used to stimulate and guide play. A simulation cell (SIMCELL) was set up near the SHOC to inject information from simulated organizations (such as federal agencies). Exercise controllers at the venues injected other information, such as:

- Actors, who "role-played" some of the victims of the attack
- Patient cards, which provided information on other victims

- Phone calls and memos.

The exercise emphasized free play, which means that most of the decisions and actions taken in response to the attack were unscripted. Players determined what to do and when.

The exercise ran from Thursday, June 23, through Saturday, June 25. The schedule of venue play is shown in table 1.

Table 1. Exercise schedule

Day	Venues	Hours	Activities
Thu. June 23	DPH/SHOC DPHL	8:00am-5:00pm	8:00am Player orientation 8:30am Exercise begins
	A.I. duPont Hospital Christiana Hospital Wilmington Hospital	8:00am-5:00pm	8:00am Player orientation 8:30am Exercise begins 8:30am-12:00pm ED role play
Fri. June 24	DPH/SHOC DPHL A.I. duPont Hospital Christiana Hospital Wilmington Hospital	8:00am-5:00pm	8:00am Player update/ exercise begins 4:00pm Hot Wash
	Beebe Med Center St. Francis Hospital VA Med Center	8:00am-5:00pm	8:00am Player orientation 8:30am Exercise begins 4:00pm Hot Wash
	ACC	12:00pm-5:00pm	12:00pm ACC Set-up 4:00pm IRT Hot Wash
Sat. June 25	DPH/SHOC	8:00am-2:00pm	8:00am Exercise begins
	ACC	8:00am-2:00pm	8:00am Player orientation 8:30am Exercise begins 1:00pm Hot Wash

Scenario

The exercise scenario [3] involved a covert bioterrorist attack by a terrorist cell with *F. tularensis*, the bacteria that causes tularemia. The terrorists released aerosolized *F. tularensis* at a high school football all-star game held at a fictional Delaware college football stadium.

Tularemia is a severe, influenza-like illness caused by bacteria found in animals, particularly rodents, rabbits, and hares. Human cases are typically caused by insect bites, handling infected animal carcasses, or eating or drinking contaminated food or water. The case-fatality rate is low and has been documented to be less than 2 percent in recent years. Naturally occurring human cases are most common in the western states. In 2003, there were 129 human cases of tularemia. Three of those were in the state of Delaware. [5]

Victims of the attack were infected by inhaling the aerosolized bacteria and began presenting to hospitals with symptoms of disease the next day. They included adults and children from across the state of Delaware.

Organization of this report

The next section provides a summary of the exercise play. The following sections address six exercise focus areas:

- Communication and coordination
- Epidemiological investigation
- Public information and risk communication
- Public health laboratory response
- Hospital and medical response
- ACC.

Each of these sections provides a discussion of key issues and offers recommendations for addressing these issues. The final section provides recommendations for future exercises.

Background and exercise summary

This section describes how the SHOC and hospitals were organized during the exercise and provides a brief summary of the exercise (see appendix A for a detailed timeline of key events). It also provides a discussion of exercise artificialities.

SHOC organization and operational cycle

The SHOC provides command and control for all public health response and recovery functions in an emergency or disaster. As such, it was the focal point for coordinating the response to the exercise scenario. The SHOC is organized according to Incident Command System (ICS) principles into the following five sections:

- Incident Command
- Finance and Administration
- Planning
- Operations
- Logistics.

With the exception of Finance and Administration, all sections were stood up for the exercise and most of the positions were staffed for the majority of the exercise. The most noticeable absence was the position of Laboratory Unit Leader in the Planning Section. Although this position is identified in the SHOC plan, DPHL personnel were not asked to fill it for the exercise.

A formal schedule was not used and an informal operational cycle emerged during the exercise. Work revolved around two sets of meetings:

- "Leads meetings" attended by the Command Section and other Section Chiefs

- Hospital conference calls hosted by the Operations Section.

Table 2 shows the times these meetings occurred.

Table 2. SHOC operational cycle

Thursday		Friday	
Time	**Meeting**	**Time**	**Meeting**
11:30am	Leads mtng (Cooper bldg)	8:30am	Leads mtng
12:30pm	SHOC set up	9:00am	Hospital conference call
1:00pm	Leads mtng	10:15am	Hospital conference call
3:00pm	Leads mtng	10:45am	Leads mtng
3:30pm	Hospital conference call	11:30am	Hospital conference call
		12:30pm	Shift change
		2:00pm	Leads mtng
		2:30pm	Hospital conference call
		3:00pm	Leads mtng

Hospital organization

Each of the hospitals that participated in the exercise has disaster plans that specify the conditions under which it will activate its command center. This activation is typically referred to as "Code Delta." Like the SHOC, hospital command centers are generally organized according to ICS procedures. Five of the six participating hospitals activated their command centers during the exercise. Wilmington Hospital did not and coordinated through Christiana Hospital (both Christiana and Wilmington Hospitals are part of the Christiana Care Health System).

Summary of exercise events

Exercise play began in hospital EDs as medical personnel triaged the victims. Some were played by volunteer actors and others were "paper patients" represented by a piece of paper with information about the victim. By mid-morning, the hospitals became aware of an unusually large number of persons being admitted with severe respiratory symptoms. Physicians at Alfred I. duPont Hospital for Children were the first to be alarmed by the sudden onset of illness in previously healthy children. By mid-morning, DPH epidemiologists

were alerted about a possible outbreak and they began consulting with hospital personnel on the nature of the illness and epidemiological questions. Just before mid-day, DPH decided to activate the SHOC to Level I and convened an in-house conference call to discuss the situation.

In this conference call, DPH decided to raise the SHOC activation to Level II due to the potential for statewide impact. Just after noon, staff assembled at the SHOC and set up operations. Later that day, epidemiologists made a tentative link to the "Green and Black" football game and DPH made a presumptive diagnosis of tularemia based on the clinical presentation and a negative Gram stain test result. DPH then dispatched IRTs to hospitals, activated plans for dispensing prophylactic medications to those potentially exposed, raised the SHOC activation to Level III, and advised the public on who was at risk and how to seek treatment or prophylaxis. Samples were notionally collected and transported to the DPHL for PCR testing.[1] To prepare for the potential need for additional pharmaceutical supplies, DPH recommended that the governor request the Strategic National Stockpile (SNS).

DPHL reported a positive PCR result for *F. tularensis* the following morning. Victims continued to present to hospital EDs throughout the next day and the hospitals initiated a variety of measures to create surge capacity. Several hospitals became concerned about their ability to continue to admit patients and recommended that the SHOC activate the ACC plan. Just before 10:00 a.m., the SHOC gave the order to open the ACC and transported the equipment to the Bank One Center. Within an hour of its arrival, hospital personnel completed setup of the ACC.

The ACC opened on the morning of 25 June and was staffed by personnel from A.I. duPont Hospital for Children, Christiana Hospital, and Wilmington Hospital, as well as Medical Reserve Corps (MRC) volunteers. Fifty-seven mock victims, both adult and pediatric, were admitted and treated.

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1. The testing was actually conducted out of sequence during the day so that lab personnel did not have to work overnight, and because of delays in transporting samples to the lab.

Artificialities

Because exercise participation was limited to DPH, DPHL, and six hospitals, exercise controllers had to generate a number of artificial events to advance play. These included communications with the following:

- Non-participating hospitals
- Federal agencies, such as the Centers for Disease Control and Prevention (CDC) and the Federal Bureau of Investigation (FBI)
- State and local agencies, such as the Delaware Emergency Management Agency (DEMA) and the Department of Natural Resources and Environmental Control (DNREC)
- The news media.

The exercise ran only during normal working hours (8:00 a.m. to 5:00 p.m.), and players did not work overnight as would be expected in a real emergency. The laboratory was allowed to begin the PCR tests (exercise controllers provided the material to be tested) before the samples were transported from the hospitals to the lab so that they could complete these activities during the normal workday. In effect, they were allowed to move forward in time. The communication of these results was delayed by exercise controllers to coincide with real time in the exercise.

Epidemiological data from non-participating hospitals were preloaded into the Delaware Electronic Reporting and Surveillance System (DERSS) that was available to staff in the SHOC to simulate the collection and reporting of these data by epidemiologists and IRTs. Data from the three hospitals that participated on day 1, however, were not included. This was an intentional design of the exercise. As discussed in the player handbook and in player orientation, players were intended to get this information from the hospitals through the plans and procedures they normally would use in an emergency. However, many of the players were not aware that they had to do this, which caused some delay in their response to the exercise scenario.

Due to the limitations of the exercise, some player actions were simulated. In this report, we refer to these as "notional" actions, which means that players said they occurred, but did not physically execute them. For example, the SNS was not actually received and distributed, and NEHCs were not actually set up.

Communication and coordination through the SHOC

The SHOC is the focal point for communication and coordination during a public health emergency in Delaware. The exercise stressed coordination with DPHL and hospitals and, for many players, it was the first time they had interacted in this type of large-scale scenario. Table 3 summarizes both the successes and the key issues that we discuss in this section.

Table 3. Communication and coordination successes and issues

Objective	Success
Activate SHOC	Set up within 1 hour of initial conference call; activated to level III
Use DENS for staff notification	Personnel notified via DENS at 11:45 am to report to SHOC
Perform a shift change	Performed at 12:00 pm on Friday
Exercise coordination and decisionmaking	SHOC coordinated with hospitals and simulated state and federal agencies to make key decisions

Issue	Recommendation
SHOC personnel lacked a common situational awareness at times	Write a detailed information management procedure for the Planning Section
SHOC lacked detailed procedures for managing operations	Update job action sheets, improve communications plan, standardize forms
The configuration of the SHOC made it difficult to work	Consider changes to floor plan, relocate Planning Section
Minor communications problems	Use fax only as backup, create procedure for verifiable communications
Hospital conference calls lacked laboratory and medical expertise	Run hospital calls from Planning Section, include all relevant personnel
The IRTs and DPHL were out of the loop	Conduct regular conference calls with IRTs and lab

Internal SHOC operations

The SHOC was set up in DPH spaces located in the Blue Hen Corporate Center (BHCC) in Dover. The Command and Operations Sections were set up in the main training center, which is a large room that was separated by a divider. The Planning Section set up in a small computer training room nearby and the Logistics Section was located farther away in another area of the building. A Finance and Administration Section was not staffed for the exercise.

After the SHOC was activated, the staff quickly convened at the SHOC and set up their spaces. Logistics staff members provided communications and information technology support, and the SHOC was operational within an hour of the decision to activate to Level I. Personnel in the SHOC worked to provide decisionmakers with the information to make key decisions, such as:

- Activating NEHCs to deliver prophylaxis to those potentially exposed. Three notional NEHCs, one in each county, began distributing antibiotics at 8:00 a.m. on day 2.
- Recommending that the governor request the SNS (the SNS was requested overnight and notionally arrived on the morning of day 2 of the exercise).
- Recommending that the governor declare an emergency and request assistance under the Stafford Act.
- Setting up an ACC to treat victims who became ill.

Next we address several key issues that affected internal SHOC operations and made it difficult for staff to work and share information.

Situational awareness

SHOC personnel lacked a common situational awareness at times. Information was segregated within SHOC sections. The Planning Section and Operations Section kept separate incident logs and there was different information posted in different rooms. While some important information was displayed (such as case counts), other key information (such as the location of IRTs) was not readily

available. Although the Planning Section began development of an Incident Action Plan (IAP) and routinely discussed plan goals, this plan was never formally documented and distributed to SHOC staff members. No one was directed to consolidate information from all sections and disseminate it to all personnel.

Although the sections conducted shift changes, briefings, and updates individually, there were no formal briefings for all SHOC staff members to update them on the status of the response. The limited space available to convene the entire SHOC staff for a unified briefing probably contributed to this. However, the divider between the Command and Operations Sections could have been opened to create a larger area.

Because personnel lacked a common situational awareness, some activities within the SHOC were not well coordinated. For example, both the Operations and Planning Sections communicated independently with hospitals to collect similar information. The Planning Section called Infection Control Practitioners and EDs for information on cases and to collect case counts. The Operations Section called and faxed hospital command centers for case counts and resource inventories. The Command Section also made calls to hospitals to consult on case presentations and discuss diagnoses. This created multiple lines of communications between hospitals and the SHOC and multiple sources within the SHOC for similar data. One hospital reported difficulty in tracking communications with the SHOC because the SHOC was contacting so many different people, such as Infection Control Practitioners and hospital executives, when the hospital expected all communications to flow through its command center.

There were also some problems maintaining situational awareness through the shift change. For example, the CDC Liaison (simulated during part of the exercise) raised the issue of Investigational New Drug (IND) procedures on Friday morning. DPH needed to disseminate IND forms to the hospitals and the ACC for use in administering non-approved drugs obtained from the SNS (we discuss this issue at length later in the report). It took some time for the Operations Section to understand this issue. It then assigned the task of obtaining and disseminating this form to the Logistics Section. After the noon shift change, when a Logistics Section staff member re-

ported in a Leads meeting on the status of the IND form, none of the personnel present understood what this form was for, and the staff member could not explain it either.

Recommendations

The SHOC plan states that the Planning Section will oversee all incident-related data gathering and analysis regarding incident operations and assigned resources. Large-scale disease outbreaks are particularly information-intensive because they involve the collection of case counts, hospital monitoring, and epidemiological investigations. DPH plans should include detailed procedures for information management, including the following:

- The preparation and distribution of an IAP for each operational period
- The maintenance of a unified incident log
- The single source for the collection of all incident-related information, such as case counts and resource inventories
- The preparation and conduct of routine staff briefings (typically conducted at shift change or the beginning of an operational cycle)
- The dissemination of information to all SHOC members (such as briefing summaries and the IAP)
- The management of unified visual displays to ensure that key event information is readily available and that everyone has the same information.

This is a complex undertaking, and DPH should explore ways to organize the Planning Section efficiently. Branch Directors could be used to manage multiple units and reduce the burden on the Planning Chief. The information requirements of large-scale disease outbreaks should be thought out in advance, so that the categories and types of information needed and how they will be collected, analyzed, and disseminated are documented in SHOC procedures.

Incident management software could be used to help staff maintain combined incident logs, track decisions and taskings, communicate, and share information. To be effective, DPH should carefully define

the requirements for the system to ensure that it meets the needs of the SHOC. It should also invest in staff training on how to use the system. In addition, all SHOC staff members would need computers that are linked to the system.

Finally, incident command system training for SHOC personnel should familiarize them with these procedures and help staff members prepare to carry out their responsibilities in an emergency situation.

Standard operating procedures

The SHOC lacked detailed procedures for communicating and managing operations. Some SHOC personnel were not familiar with their positions in the SHOC, which are often different from their day-to-day jobs. The limited information available in the SHOC plan and job action sheets was not always sufficient to help them understand their roles and responsibilities.

There were several different ways for staff members in different sections to communicate (e.g., email, phone, face-to-face), and not all of them had access to every method. Staff chose the method that best suited their own needs, which caused a few problems. For example, one Section Chief reported difficulty locating staff members at times when they were talking to personnel in other areas of the SHOC. As discussed earlier, there were also multiple lines of communications to outside agencies and organizations.

There was no mechanism for tracking staff members as they arrived for duty and departed their shifts. On a few occasions a staffer who was looking for a particular person had no way to determine whether he was still in the building. The ability to track personnel is also important for ensuring personnel safety.

A few ICS forms were used to document requests for information and resources from other sections, but not all staff used the forms, and many were unfamiliar with their purpose.

Recommendations

The SHOC sections should revisit their job action sheets in light of this exercise and determine which revisions and additions are necessary. Specific job action sheets for shift changes could also identify the actions that staff should take at the start and end of their shifts.

DPH should review the support procedures to the ESF 8 plan and include additional detail. For example, The *Health Communications Standard Operating Guidelines* provides information on how to use different types of communications. This plan should also designate the lines of communication between SHOC sections and with outside agencies and organizations. To reduce duplication, a single point of contact should be designated both within the SHOC and with each outside agency. Runners could be used to carry information between sections and reduce the need for critical staff members to be away from their desks. Radios or walkie-talkies could also help staff communicate within the SHOC.

A unified sign-in sheet or log should be maintained to identify the staff who are present and on duty. This responsibility should be incorporated into supporting procedures and job action sheets.

DPH should review the standard ICS forms and select and customize specific forms for use during SHOC operations. These forms should be included along with instructions in a supporting procedure, and staff should receive training on their purpose and how to use them.

SHOC configuration

The configuration of the SHOC made it difficult for some sections to work and share information. Early in the exercise, the Planning Section reported difficulty working within the space it was given. Although it has a similar number of positions as the Command and Operations Sections, it was given a smaller room that had little space to maneuver, and only a single telephone. Initially, this section spent much of its time calling hospitals for information, and Planning Section personnel had to use their cell phones to communicate. The separation of SHOC sections into different rooms

also contributed to the lack of situational awareness discussed earlier.

Recommendations

Consider changes to the SHOC floor plan,[2] such as:

- Removing the divider between the Command and Operations Sections to create an open floor plan with multiple sections working in the same area. An open floor plan will raise the noise level and make the conduct of conference calls difficult. Perhaps conference calls could be held in a nearby office.
- Relocating the Planning Section to the main room with the Command and Operations Sections so that it is readily available to decisionmakers, or
  - — Locating some of the Planning Section analysis staff to a separate room or in their normal workspaces, leaving fewer personnel in the SHOC.

SHOC coordination with outside entities

The exercise emphasized communication with hospitals since they were the first responders to receive victims and to notice that an unusual outbreak was occurring. They were also the source of patient data and information necessary to conduct the epidemiological investigation. The SHOC communicated with the hospitals through a variety of methods, including ad hoc phone calls, the Facility Resource Emergency Database (FRED), email, fax, radio, and regular conference calls.

There were fewer means of communications with the IRTs, who were operating in the field, and with DPHL. The primary means of communications with the IRTs were 800 MHz radios; cell phones were used as a backup. The SHOC communicated with DPHL mainly by phone.

2. DPH is building a new, permanent SHOC that will likely alleviate some of the problems observed in using the current temporary facility.

For the most part, the SHOC was able to communicate and coordinate with outside entities like the hospitals, IRTs, and DPHL to manage the response. However, several issues were observed that should be addressed in plans and procedures.

Communications

There were minor communications problems. As discussed earlier, phone calls from the SHOC were made by several sections to many different people in the hospitals. The multiple lines of communications made it difficult for a few hospitals to track communications with the SHOC. DPHL also experienced problems communicating with the SHOC when it reached voicemail on several occasions.

The SHOC used FRED for the first time during the exercise to send alerts. One problem encountered by hospital personnel was that messages received on pagers with 90-character limits were truncated. Because the system is very new, some hospitals did not know what to do when they got a FRED alert.

The use of fax machines to transmit and receive information was problematic. On numerous occasions, the wrong fax numbers were used, fax machines were broken, and faxes had to be sent multiple times before they were received. For example, the SHOC requested that hospitals fax their bed counts on an hourly basis. However, SHOC fax machines were often busy, and hospital personnel devoted a considerable amount of time to trying to fax information.

There was no procedure in place to ensure that faxes and emails were received. Several times, material was transmitted in advance of a conference call, but the participants did not receive the information in time for the call.

Recommendations

As discussed earlier, SHOC plans should designate single points of contact for the SHOC to communicate with outside entities. Other recommendations include the following:

- FRED messages should be limited to 90 characters to ensure that they can be read on pagers. Additional training should be

provided to those who need to use the system during an emergency.

- Fax machines are not an effective means for transmitting information and should be used only for backup purposes. FRED, email, and other electronic methods should be the primary methods used. Fax numbers should be checked on a regular basis to ensure machines are operational and numbers are correct.
- Verifiable communications is important during an emergency to ensure that those who need it receive critical information. SHOC plans should include procedures for sending and receiving information that include verification that the information was received.

Coordination with hospitals

Hospital conference calls lacked DPH laboratory and medical expertise. The regular hospital conference calls were important for sharing information and discussing issues that needed to be addressed. The Operations Section, which had responsibility for managing medical resource needs and addressing tactical issues, ran these calls. However, the hospitals often had questions or issues that required medical and laboratory expertise. The Operations Section was not always prepared to discuss such issues and had to document them and pass them on to other sections. This delayed several aspects of the response.

For example, on the 10:15 a.m. conference call on Friday, the hospitals asked if the SHOC had written a case definition. Operations Section personnel were not familiar with case definitions or why they are needed. Nevertheless, they noted the request and passed it on, and a case definition was later written and distributed to hospitals. However, it came much later in the exercise than the hospitals expected and did not provide the level of detail that they had anticipated.

DPHL was not initially invited to participate in these calls. It called the SHOC and hospitals individually to check on the status of sample collection and transport, which was time consuming. After DPHL learned that hospital conference calls were occurring, it

asked to participate. As a result, the lab was able to discuss sample collection and transport during the 9:00 a.m. call on day 2. The hospitals raised the need for an order to redraw samples, and the SHOC later prepared and faxed this order.

Recommendations

It may be more appropriate for the Planning Section to take responsibility for hospital conference calls since it has overall responsibility for information collection. However, key personnel from all sections should be invited to participate.

Coordination with the IRTs and DPHL

The IRTs and DPHL were out of the loop. They were not part of regularly scheduled conference calls and had far less access to information about the outbreak and the ongoing response activities.

The first IRT was not deployed until after noon on day 1, and one team was not deployed at all that day. Several IRT members reported that they spent most of the day wondering what was going on and received little or no information on the response. The main line of communication between the IRTs and the SHOC was through the IRT Unit Leader by radio. Although useful for transmitting directions and orders, it is not conducive to providing situational awareness to IRT members.

Similarly, the DPHL spent much of the first day of the exercise waiting for samples to arrive from hospitals and trying to find information about the epidemiological investigation and whether or not samples were being collected for transport to the lab. It was not a regularly invited participant, but it did participate in some of the hospital conference calls on day 2. When it happened to be in on the calls it raised sample collection and transport issues. The lab also tried calling hospitals directly to coordinate sample collection and transport, but had little success.

Recommendations

Regular SHOC briefings should be conducted and should include DPH staff members in other locations by phone or video telecon-

ference. A designated individual should run the briefings from a set agenda. The briefing should be short, concise, and give participants the chance to raise issues. These briefings should also be documented and the information disseminated to all staff.

Several IRTs had problems with cell phone reception while working in the hospitals, which would make conference call participation difficult. Perhaps the hospitals could provide a small space with a landline for use by IRTs when they are working in the hospital. DPH should coordinate with the hospitals on this issue.

Ensuring that the Laboratory Unit Leader position in the SHOC is staffed (it was not filled during the exercise) would help the SHOC coordinate with DPHL.

Epidemiological investigation

A key objective of Operation Diamond Shield II was to examine epidemiological investigative procedures, including the deployment of IRTs. Table 4 summarizes both the successes and the key issues that we discuss in this section.

Table 4. Epidemiological investigation successes and issues

Objective	Success
Activate IRTs	IRTs activated between 12:30 pm and 1:45 pm on Thursday
Exercise investigative procedures in the field	IRTs interviewed patients in hospitals and at homes
Test electronic data collection tools and report data to the SHOC	Interview data were entered into DERSS on laptop computers and uploaded to the SHOC via wireless internet connections
Compile and analyze data to identify the source of the outbreak and support leadership decisionmaking	Successfully identified Green and Black football game as the most probable source of outbreak and provided information on other possible locations

Issue	Recommendation
There were problems notifying and deploying the IRTs	Use separate DENS messages to alert IRTs; conduct an "in-brief" prior to deployment
Only minimal epidemiological data were available early in the response	Address initial data collection and analysis in Planning Section procedures
The IRTs lacked a common situational awareness	Conduct routine briefings with IRTs
Data collection tools were not consistent and electronic reporting was hampered by technical problems	Standardize basic data collection forms, address technical issues, document backup data collection procedures
There was little coordination between DPH and the hospitals when deploying the IRTs	Determine appropriate hospital contacts for IRT operations, coordinate IRT deployment with hospitals

Epidemiological activities at the SHOC

At 10:05 a.m. on 23 June, the infection control coordinator at A.I. duPont Hospital for Children notified DPH epidemiology staff that two patients had presented to the ED with sudden onset of flu-like illness. Over the next 60 to 90 minutes, DPH received additional reports from hospitals about clusters of patients with similar symptoms. DPH epidemiology staff began polling state hospitals to identify similar patient clusters and to gather pertinent information. When DPH activated the SHOC, epidemiology staff relocated there to continue their investigation.

DPH epidemiology staff, including the IRT Unit Leader, operated from the Planning Section of the SHOC. The IRT Unit Leader was charged with oversight of the IRTs, including their composition and deployment in support of SHOC operations. Additional epidemiology staff collected and analyzed data on the outbreak to assist senior-level decisionmakers.

After some initial delays, epidemiologists at the SHOC were able to track case counts by hospital and county to gauge the magnitude and geographical distribution of the outbreak. They used clinical data and preliminary laboratory findings to focus in on *F. tularensis* as the causative biological agent and successfully identified a common source of exposure for victims. Moreover, they thoroughly examined the possibility of concurrent or secondary attacks in their attempts to accurately define the population at risk rather than hastily focusing on one explanation. This adherence to the basic principles of epidemiological investigation is commendable, particularly given the simulated stress of emergency response.

However, there were several areas where exercise data suggest the epidemiological response in the SHOC could be improved. We look first at the activation and deployment of the IRTs because this appeared to be a stumbling block in the response. We then discuss data acquisition and analysis in the SHOC, focusing primarily on the first hours of the incident response.

Notification and activation of the IRTs

There were problems notifying and deploying the IRTs. Shortly after noon on 23 June, IRT discipline leads received an alert via the DENS instructing them to report to the "emergency location." This alert was sent after the SHOC had been activated and was intended for DPH personnel who staffed positions in the SHOC. However, because IRT discipline leads are pre-loaded in the DENS distribution list, they also received the alert. According to current plans, IRT discipline leads notified via DENS are to "stand-by" and provide a list of available staff from their respective disciplines to the IRT Unit Leader. However, in this case, the DENS alert instructed recipients to report directly to the "emergency location," which most people interpreted as being the SHOC at the BHCC. Because it was inconsistent with current protocol, some discipline leads contacted their teams and reported to the BHCC whereas others disregarded the message or reported instead to their predetermined equipment and supply cache location.

During the exercise, the status and location of the IRTs was unclear to many players. For example, exercise observers report that the IRTs were deployed as early as 12:30 p.m. and as late as 1:45 p.m., but it is unclear whether they were en route to the hospitals or to pickup equipment and supplies at those times. When hospitals requested updates for the expected arrival of epidemiological support, the SHOC was not able to give complete or accurate information. Although the IRTs eventually made it to Wilmington, A.I. duPont, and Christiana hospitals, this occurred between two and four hours after hospital staff were told the IRTs had been deployed.

When the IRTs were deployed, they were given very little information about what was happening. Their only instructions were to conduct patient interviews and transport samples to the DPHL. They were given no other relevant information about why they were being activated or what type of protective measures they should take. In the absence of this information, the IRTs began their work without a common operating picture.

Recommendations

Separate DENS messages should be considered when notifying IRTs, or if their notification is part of a broader DENS alert, specific instructions to "standby" should be included. In addition, notification procedures should be clarified in the IRT plan. A checklist of DENS messages and who should receive them for different levels of SHOC activation could help prevent notification problems in the future.

Currently, the plan calls for IRT discipline leads to "implement notification procedures of IRT members for activation," but it does not specify what these procedures are. In addition to clarifying the language, it might help to develop a checklist of key tasks for discipline leads to complete upon initial notification.

The IRT plan also describes a multistep process for composing and activating teams that is cumbersome and could be time consuming. DPH should consider streamlining this aspect of the plan. For example:

- Use an "on-call" roster system to facilitate the rapid deployment of IRTs in an emergency. The rosters would rotate so workers would only be on-call (and available for activation) for a specified period of time. Moreover, each discipline would be well represented during each rotation so that teams could still be composed based on the type of incident. This rotational system has the added benefit of allowing staff to plan ahead for a possible deployment so their day-to-day duties can be covered.
- Alternatively, train a select group of staff from each discipline to serve on rapid-response IRTs. These teams would basically be "ready-to-go" assets that could deploy at the first signs of a problem. This would allow the IRT Unit Leader to get at least some staff in the field while he determines the need for additional support.

At a minimum, an initial briefing for the IRTs prior to deployment should be conducted to establish situational awareness of known incident parameters. It will also help IRT staff understand their role within the overall response system. This briefing could be con-

ducted by conference call or in person. Examples of key issues to address during a biological incident include the following:

- Common clinical symptoms observed or other data that might help in the investigation (e.g., age or sex distribution of cases)
- Names and locations of hospitals or other facilities reporting cases
- Suspected size and geographical extent of the outbreak
- Types of samples to be collected and/or transported, and the precautions to take when handling samples
- Recommendations for personal protective equipment (PPE) and/or prophylaxis.

The early stages of the epidemiological investigation

Only minimal epidemiological data were available early in the response. The first hours of incident response are often critical in minimizing risk to the public and emergency responders. During this time, epidemiologists are pressed by competing priorities—the desire to make sound judgments based on available facts and the need to provide decisionmakers with timely analyses and recommendations. Epidemiological analysis during the early phases of response informs strategic planning and helps identify response system limitations and potential resource needs.

Once the SHOC was stood up on day 1, the Command Section wanted information on the extent of the outbreak and the possible source. However, the IRTs were not yet deployed, so there was little information in DERSS. Epidemiologists in the Planning Section were frustrated early on by the lack of available information and initially struggled to identify alternative data sources. They eventually contacted the hospitals to collect information on case counts and clinical presentation, and to ask key epidemiological questions.

Recommendations

This scenario involved a large-scale quickly evolving outbreak. At the outset, information will be limited and it is likely in an emergency that key decisions will need to be made before data and in-

formation can be provided by IRTs. SHOC plans should address the initial stages of information collection and IRT deployment by:

- Including emergency procedures for the Planning Section to use until epidemiologists and IRTs are deployed to the field. These should describe the type of information to collect and how to get it, and include contact information for obtaining these data (e.g., hospital points of contact).
- Pre-setting the criteria for deploying epidemiologists and IRTs to save time during an emergency situation.

Equally important is the need to continually train epidemiologists and other public health professionals via exercises and drills on the types of analyses that may be required early in a response. Practicing under the simulated stress of an emergency helps staff become more familiar and comfortable working in a manner that is quite different from what they are used to in their day-to-day jobs. This includes learning how to analyze and interpret data and information that are incomplete or unvalidated.

IRT activities in the field

For many IRT members, Operation Diamond Shield II marked the first time that they worked together. Establishing these relationships and building rapport with colleagues was a uniquely beneficial outcome of the exercise that will improve coordination in a real-world event. For some, this was their first opportunity to practice using the case investigation form and the Web-based data collection tool. For others, it was a chance to improve their patient interviewing skills. Overall, the IRTs exhibited great professionalism as they conducted their work both at the hospitals and in patients' homes.

Next, we examine some of the key issues that arose for the IRTs as they conducted their field investigations, and present recommendations for improvements to plans and current procedures.

IRT situational awareness

The IRTs lacked a common situational awareness. Once deployed, communication between the IRTs and the IRT Unit Leader was conducted ad hoc. There was no established operations tempo for reporting findings back to the SHOC or for conducting briefings or conference calls with the Unit Leader and other IRTs to update situational awareness. Instead, each IRT operated essentially on its own with little knowledge about what the other IRTs were finding and how the overall incident and response were unfolding.

The draft IRT plan requires the IRTs to report their status and case investigation findings hourly to the Unit Leader and others (e.g., laboratory), as appropriate. This schedule was not followed during the exercise. When the IRTs deployed, they were told only to report to the IRT Unit Leader "as needed," but were given no clear explanation about what this meant.

The plan also states that the Unit Leader will keep IRTs informed of any changes in the following:

- Event status
- Biological, chemical, or radiological issues
- Weather
- Other relevant information.

At no point during the IRT's deployment was there a scheduled call with the Unit Leader to discuss what was happening and how event parameters had changed. For example, when the DPHL confirmed that *F. tularensis* was the biological agent causing the illness, the finding was never communicated to the IRTs. Instead, many heard about it secondhand from hospital staff, who had been informed by the SHOC. This type of information could have implications for which protective measures IRT members should take and whether prophylaxis was needed.

In addition to communicating with incident management, the plan calls for the IRTs to regularly coordinate with each other. This promotes a common operating picture and ensures consistency in the types of precautions taken and information collected. Unfortu-

nately, there is little evidence in the exercise data that the IRTs communicated with each other after they were deployed. The lack of an established briefing or call schedule contributed to the issue.

Recommendations

To maintain good situational awareness, it is important for the IRTs to be connected to the larger response effort. The Unit Leader should establish a reporting cycle for the IRTs and use it to update IRTs on any changes to the incident or response parameters, and to confirm or deny any rumors the IRTs may have heard. The SHOC should establish a conference call (or radio call) schedule with deployed IRTs contingent on the situation and where they are in the response. This scheduled call would have the added benefit of assuring that all activated IRTs are in regular communications with one another to share information and coordinate their activities.

Data collection and reporting

Data collection tools were not consistent and electronic reporting was hampered by technical problems. The exercise data reveal that different IRTs used different case investigation forms when interviewing patients. The shorter version—and the one that had been intended for use—was titled "Unknown Disease Case Investigation" and was three pages long. It closely matched a Web-based program that was used to transfer data to the SHOC. However, some IRTs used the eight-page "Suspect BT Case Investigation Form," which they found to be cumbersome and time consuming to complete. In addition, the longer form did not correlate well with the Web-based template. There is no clear explanation for why the two versions were used during the exercise.

The IRTs also had trouble using their laptops to transfer patient data to the SHOC for analysis. In at least one case, problems began when staff tried to log onto their laptops and were repeatedly denied access. The system failed to recognize any of the users' "profiles." Other IRTs reported that the Verizon aircards used to provide the wireless Internet connectivity were unreliable and often did not work in certain areas of the hospitals.

The problems persisted even after IRTs were able to successfully access the Web-based data collection tool. First, the electronic form did not exactly match the paper form that was used initially by some of the IRTs to collect information from patients. Because they were not consistent, IRT staff wasted time trying to locate where the information on the paper form should be placed in the electronic form. Moreover, the layout of the Web-based tool was not user-friendly, and had many drop-down boxes that staff had to navigate rather than directly typing the data into text boxes. The process was time intensive, often taking three to four times longer to complete than the paper-based forms. It should be noted that at least part of this additional time might be attributed to the lack of training given to staff in how to use the electronic form.

Recommendations

Standardize data collection forms used during emergency responses. The IRT initial briefing should reiterate which forms should be used. It would also be helpful to schedule a workshop or training session to educate staff on the new form and allow them to practice using it. The newer forms should be provided in all equipment sets so they are easily accessible to the IRTs in the field.

Addressing the technical issues related to electronic data collection and transport requires two courses of action, as follows:

- First, the Web-based program should be revised to be more user-friendly and should be aligned with the paper-based investigative forms. DPH's IT staff should collaborate with the IRTs to determine how best to accomplish this since they will be the primary users of the program in the field. Then the equipment should be checked to ensure that IRT staff can access it and that supporting components (wireless cards) are working properly.
- Second, IRTs must receive comprehensive training on how to use the data collection tools. The success of these programs in expediting data collection and analysis is entirely dependent on the skill and comfort level of staff using them. Therefore, periodic workshops or drills should be conducted so staff can gain familiarity with using the equipment and programs.

It is recognized that the DPH is continuing to look at alternative and improved ways to collect and analyze data, including the use of electronic tablets. Although this technology offers clear advantages, the fact remains that IRT staff must be well trained in its use prior to an actual emergency.

Even the most sophisticated data collection tools are bound to experience problems. It is difficult to ensure that wireless connections will work in all possible IRT work locations. DPH must be prepared to use its paper-based backup system and develop procedures for quickly collecting forms, performing data entry, and consolidating the data in the SHOC.

IRT coordination with hospitals

There was little coordination between DPH and the hospitals when deploying the IRTs. For its day-to-day operations, DPH works with hospital infection control staff to monitor for evidence of unusual illness or laboratory results that may require further investigation. Yet, these established relationships were not well utilized by DPH during the exercise, especially with respect to the coordination of the work of the IRTs.

When the IRTs were deployed, little information was communicated to hospital staff about when or where they might arrive. Instead, the IRTs typically showed up at hospital EDs with no point-of-contact to help them get situated and locate an appropriate workspace for them. The IRTs had to seek out ED personnel, who were understandably busy, to ask for a briefing on the situation. The hospitals expected that the IRTs would have information for them about the situation and response, but the IRTs had very little information to provide.

It is questionable whether the hospital ED was the ideal location for the IRTs to report to once they arrived at the hospitals. In a real-world emergency, the hospital ED likely will be the hub of activity. The arrival of an IRT might only add to the burden on ED personnel. In the exercise, the ED staff did not appear to acknowledge the IRT or the job it was sent to do.

Another issue raised by the exercise concerns access to electronic patient records by IRT and non-hospital personnel. As healthcare systems move increasingly close to implementing electronic-based record systems, consideration must be given to how access to these systems will be granted in an emergency. It is likely that review of a patient's full medical record, rather than just one day's chart, may be critical to an investigation. Patient confidentiality laws undoubtedly will dictate that all medical records are password protected and perhaps accessible only from certain workstations.

Recommendations

The SHOC should be proactive in sharing information with outside agencies and organizations. In the future, the IRT Unit Leader should contact hospitals immediately when IRTs are deployed to their facilities so arrangements can be made to accommodate the IRTs and to assist them (if possible) with their tasking. Ideally, this communication should flow through a hospital's incident command post (if activated) or, alternatively, through the infection control office. Such relevant information as the expected arrival time of the IRT, the number of people deployed, the name of the team's leader or primary point-of-contact, and the type(s) of data or information the IRT needs access to should be conveyed. This will help hospital staff prepare and get information ready ahead of the IRT's arrival.

Regarding the issue of access to electronic patient records, the DPH and Delaware's healthcare community must collaborate to establish criteria for when and how DPH staff could access and review these files. Appropriate legal counsel should be sought and safeguards must be established to ensure that patient confidentiality is protected to the maximum extent possible. Two possible solutions are:

- Hospitals or other healthcare facilities would approve temporary access to electronic files for designated DPH staff and assign temporary passcodes to access the files.
- DPH staff could gain access using a hospital or other healthcare facility employee's passcode. The employee could change his passcode after the event or when the information is no longer needed.

Public information and risk communication

Successful creation and distribution of public information is a key element of the response to an emergency. The message must be clear, concise, informative, and consistent. During Operation Diamond Shield II, two Public Affairs Officers (PAOs) were assigned to the Command Section in the SHOC and supported by additional personnel in the Cooper Building. Table 5 summarizes both the successes and the key issues that we discuss in this section.

Table 5. Public information successes and issues

Objective	Success
Test use of DHAN	DHAN used to alert hospitals of the outbreak and update them when tularemia was confirmed
Activate risk communication plan	Risk communication plan activated when SHOC went to Level 1, PAOs worked in Command Section and managed crisis communications, call center notionally activated at 4:00 pm on day 2, DSAMH provided mental health expertise
Exercise coordination of message development and dissemination to the hospitals and local news media	SHOC PAOs coordinated with hospital PAOs and interacted with simulated media representatives to develop and disseminate public messages

Issue	Recommendation
Some of the messages contained minor errors, or lacked detailed information	Ensure a review process is established, prepare a risk communication strategy to support NEHC and ACC plans

The purpose of the *Crisis and Risk Communication Plan* is to provide rapid dissemination of accurate and coordinated information to the public in the event of an impending or actual public health emergency. This section focuses on issues related to the development of the public message.

Coordinating the public message

Throughout the exercise, the PAOs scheduled press conferences, produced press releases and other public information materials, and responded to simulated media inquiries. Table 6 lists the press releases prepared during the exercise.

Table 6. DPH press releases

Date	Title
June 23	Press Conference re: Outbreak of Respiratory Illness in Delaware
June 23	Untitled (initial press release announcing the outbreak)
June 24	Coping with Stressful Emergencies
June 24	Direct and Indirect Contact Disease Transmission Methods
June 24	DPH Confirms Tularemia, Exposed Need Antibiotics
June 24	DPH Lab Confirms Tularemia Outbreak
June 24	DPH Opens Neighborhood Emergency Help Centers
June 24	Governor Ruth Ann Minner Raises Security Threat Level to Red In Response to Delaware's Emergency
June 24	Humans at Risk of Zoonotic Disease
June 24	Instructions for Reporting to a Neighborhood Emergency Help Center
June 24	Press Conference: Update on Tularemia Outbreak in Delaware
June 24	Tularemia Outbreak not from Water Contamination

The role of the PAOs as described in DPH plans is to prepare, coordinate, and disseminate public health information related to the response to the public, media, and/or other agencies. This requires close coordination with response personnel so that public information materials support response operations. In addition to defining the responsibilities of public affairs personnel, the *Crisis and Risk Communication Plan* calls for coordination with DPH Section Chiefs and Subject Matter Experts to review and approve press releases. It also describes coordination with the Division of Substance Abuse and Mental Health (DSAMH) to ensure messages effectively reduce panic and fear and meet public needs.

During the exercise, the PAOs worked with the SHOC sections to prepare and release messages. A DSAMH representative also worked with public affairs staff in the Cooper Building to address mental health aspects of message development. However, on reviewing the

press releases prepared during the exercise, we found some problems with message accuracy.

Message accuracy

Some of the messages contained errors or lacked detailed information. For example, the name of the football game where the agent was dispersed was repeatedly referred to as "Green and Brown" when it was the "Green and Black" game. In some releases, the game was also said to have been held at the University of Delaware (when it was Northern Delaware College). Although this could partly be because a fictional game and university were used in the exercise scenario, it is an example of the type of information that should be checked for accuracy.

Only two of the press releases mentioned the ACC and they did so after directing people with symptoms to report to hospital EDs. One said, "Physicians will refer very sick people to established ACCs as needed." The other said, "Physicians will make referrals to an established ACC at the Bank One Center in Wilmington." However, the ACC was not yet operating at the time of the releases, so physicians could not yet refer patients there. Once opened, the plan was to refer sick people from both hospitals and the NEHCs to the ACC. Although several of the press releases directed exposed persons without symptoms to report to NEHCs, none of these mentioned directing people from the NEHCs to the ACC. Furthermore, SHOC personnel said that the location of the ACC should not be identified because they did not want people showing up there on their own.

Recommendations

During an emergency, the PAOs should ensure that the review process outlined in the *Crisis and Risk Communication Plan* is followed. It calls for SHOC Section Chiefs and Subject Matter Experts to review all public information materials and for the Incident Commander or State Health Officer to give final approval when feasible. An approval sheet could be used to accompany public information materials through the approval process and ensure that messages are carefully approved prior to release. This process must

be timely, however, to ensure that press releases are sent out while they are still relevant.

DPH's plans to provide prophylaxis and treatment to the public through NEHCs and ACCs are complex activities. They require that clear information be distributed to the public that tells different populations (unexposed, exposed, sick) where to go while reducing panic and fear, and discouraging the public from unnecessarily presenting to hospitals and other facilities. DPH should work with DSAMH to prepare a risk communication strategy to assist in the implementation of NEHC and ACC plans. This strategy should be documented in DPH plans and include sample press releases and other public information materials.

During an emergency, SHOC PAOs should coordinate closely with other sections of the SHOC to customize these messages and ensure that content-appropriate experts review the information. These messages should give the public information on their health risk, advise them what they should do and where they should go based on this risk, and describe the assistance and treatment they will encounter when they get there.

Public health laboratory response

The Delaware Public Health Laboratory is a Biosafety Level (BSL) 3 facility and a member of the LRN. If necessary, it can maintain 24/7 operations and is a key component in the state's response to any bioterrorist attack. It receives and tests samples from patients who are suspected to have been exposed to a bioagent. Time is of the essence in this process, since a prompt confirmatory diagnosis would be the basis for a coordinated public health response. Table 7 summarizes both the successes and the key issues that we discuss in this section.

Table 7. Laboratory response successes and issues

Objective	Success
Demonstrate sample collection and transport procedures	Five samples were transported from Christiana Hospital to DPHL by a DPHL courier
Perform PCR testing and LRN notification	Positive PCR test results completed for *F. tularensis,* LRN notified of tularemia confirmation at 1:30 pm on Friday
Exercise communications and information sharing with SHOC and hospitals	DPHL communicated with SHOC and hospitals on laboratory issues
Exercise CoC procedures and sample transport	CoC issues raised (but not resolved during exercise)

Issue	Recommendation
There was no written protocol for sample collection and transport	Prepare a detailed sample collection and transport procedure
Many players were unfamiliar with how CoC procedures are applied in a bioterrorism scenario	Clarify CoC requirements in sample collection and transport procedures
Laboratory results were miscommunicated by DPH personnel	Educate personnel on the meaning of different types of diagnoses and lab results

For the first PCR test, performed on day 1, the lab decided to run a PCR panel for eight to nine biological agents with one primer set because it was not given any medical or epidemiological information to narrow down the possible list of agents. Less than three hours later, this test pointed to *F. tularensis* as the agent in the sample and signified a presumptive laboratory diagnosis of tularemia. The lab technician then set up the full panel (using multiple primer sets) for *F. tularensis*, which resulted in another positive test result about three hours later.

Although the technical aspects of the laboratory response went remarkably well, the coordination of sample collection and transport was a problem. There were also issues concerning how the laboratory results were communicated to others in the SHOC and to the public. We discuss each of these problems below.

Sample collection and transport

Two of the exercise objectives were designed to demonstrate sample collection and transport and to exercise CoC procedures. We discuss issues in both of these areas below.

Collection and transport

There was no written protocol for sample collection and transport. Although the laboratory response is described in the SHOC and ESF-8 plans, and in DPHL's bioterrorism protocols, these documents do not describe sample collection and transport. Thus, players had different ideas as to how samples would be collected and transported to the lab.

DPHL had couriers on standby and expected the SHOC and individual hospitals to coordinate sample transport using these couriers (who routinely transport samples from the hospitals to the lab). As we discussed earlier, the SHOC was not aware it had to coordinate this and lacked a Laboratory Unit Leader during the exercise. The SHOC Planning Section expected to use the IRTs to transport samples and instructed the IRTs to carry out this responsibility during the exercise. However, they were not dispatched to the affected hospitals until the early afternoon of day 1, delaying sample trans-

port. One of the IRTs was ready to transport samples shortly before 5:00 p.m. that day, but could not do so because exercise play ended at 5:00 p.m. The samples were considered to have notionally been transported after 5:00 p.m. for the purposes of the exercise. The next day, five samples were transported from Christiana Hospital to DPHL by a laboratory courier.

There were also different understandings regarding the types of specimens that should be collected. In an 11:40 a.m. conference call on day 1, DPH told DPHL that the IRTs would collect blood and stool samples from all 87 patients. In a 2:00 p.m. call the IRT Unit Leader asked DPHL which type of samples should be collected. In reply, DPHL asked for blood in EDTA[3] tubes and for any nasal/pharyngeal swabs that were taken. When an IRT discussed sample collection with A.I. duPont physicians on day 2, it said the state would want tracheal wash specimens, not blood samples. The case definition that DPH provided to hospitals on the afternoon of day 2 did not specify which types of samples should be collected.

The type of sample is important information for both the hospitals, which are collecting the samples, and the lab, which needs to prepare the sample for testing and run LRN-approved protocols. After the 11:40 a.m. conference call on day 1, the lab checked into the availability of the appropriate media needed to prepare 87 blood and stool samples and checked LRN protocols. There is no LRN-approved protocol for PCR on stool samples, so the lab ran the panel set using approved protocols for blood samples.

The need for an order to allow hospitals to collect samples for DPHL was also an unforeseen issue. At the 9:00 a.m. conference call on day 2 between the SHOC and the hospitals, Christiana Hospital requested an order from DPH to collect blood samples. Both the SHOC and DPHL were unaware that one was required, and the SHOC began looking into the matter. At 10:30 a.m. that morning, DPH recommended that the governor declare a Public Health Emergency, which would allow for the emergency order. The order

3. EDTA tubes are lavender-topped blood-collection tubes that contain EDTA or ethylenediaminetetraacetic acid, which binds calcium and inhibits coagulation.

was drafted and faxed to hospitals a few minutes later. However, one hospital expressed dissatisfaction with the wording of the order.

Recommendations

DPH should work with DPHL, the hospitals, DNREC, and law enforcement agencies to draft a detailed protocol for the collection and transport of human and environmental samples that:

- Identifies how samples will be transported. Laboratory couriers may be the best choice since the IRTs may be busy carrying out the epidemiological investigation. Agreements should arrange for the use of couriers after hours in an emergency situation. The role of law enforcement should also be clarified.
- Includes information on the types of samples that should be collected in different scenarios (e.g., when different agents are suspected or for different clinical presentations)
- Includes an example of a written order and clarifies when one is needed, who is authorized to sign it, and the procedure for completing this order.

The implementation of this protocol should be the responsibility of the SHOC Laboratory Unit Leader, and this position should be present in the SHOC and staffed by a person trained in laboratory procedures.

Chain of custody procedures

Many players were unfamiliar with how Chain of Custody procedures are applied in a bioterrorism scenario. CoC refers to the ability to guarantee the identity and integrity of a specimen from collection through the reporting of test results. It is important for supporting the law enforcement investigation and ensuring the results can be used later in a trial. EDs are generally familiar with CoC requirements, particularly in cases involving a suspected rape. In this situation, law enforcement officers work with the ED to implement CoC procedures.

In the exercise, the request for samples from DPH came after initial samples were drawn by the hospital. This meant samples needed to be re-drawn to start CoC. However, many of the SHOC personnel involved in coordinating sample collection and transport were not familiar with CoC procedures. They often communicated with the hospital labs, which are not accustomed to carrying out CoC (because it is typically initiated in the ED).

The IRTs were tasked to assist in sample collection and transport by the SHOC. They were not familiar with CoC and did not have the forms. As a result, the five samples that were transported during the exercise did not follow CoC procedures.

Recommendations

The sample collection and transport protocol recommended in the previous section should include CoC forms and detail how the procedure should be implemented and followed by DPH and hospital personnel. It should also clarify the role of law enforcement in implementing and carrying out CoC procedures. All personnel involved in this process should be trained to carry out their responsibilities during an emergency.

Laboratory confirmation of tularemia

Hospital labs reported the earliest lab results on the afternoon of day 1. Several had negative Gram stain test results that they communicated to DPHL and/or the SHOC. DPHL reported presumptive positive PCR results to the SHOC at 8:15 a.m. on day 2. Later that morning it confirmed tularemia by three different methods (agar confirmation, direct fluorescent antibody (DFA), and slide agglutination) and communicated these results to the SHOC at 11:55 a.m. Although the initial communication of lab results went smoothly, others in the SHOC occasionally miscommunicated this information later.

Communication of laboratory results

DPH personnel miscommunicated laboratory results. At the 3:00 p.m. Leads meeting on day 1, players discussed the Gram-negative test results reported by Christiana Hospital. They referred to the results as "Gram negative for tularemia." However, the Gram stain only ruled out Gram-positive bacteria, such as *Bacillus anthracis*. Other Gram-negative agents, such as *Yersinia pestis,* still could not be ruled out at that point.

At about the same time, a simulated reporter called the SHOC to ask the name of the disease. She was told that DPH was still waiting for confirmation from DPHL and that this could take up to 24 hours, which was correct. However, during a 4:30 p.m. phone call between the SHOC and Wilmington Hospital, the SHOC told the hospital that tularemia was the agent and it had positive lab results, but this information had not yet been confirmed by the state lab. The only lab result at this time was still the Gram stain, which suggested that tularemia, as well as several other agents, could be the cause.

During an 8:30 a.m. discussion in the SHOC the next day, players reported that the lab had confirmed tularemia by PCR in reference to the presumptive positive test results that had been communicated earlier by DPHL. However, this test result was presumptive, not confirmatory.

The distinction is important because hospitals will treat the agent as contagious until it is confirmed not to be. At 9:20 a.m. on day 2, A.I. duPont was still maintaining the cautions of negative pressure until receiving official confirmation of tularemia. At 11:10 a.m., before the SHOC got word of laboratory confirmation, it told A.I. duPont that tularemia was confirmed and that negative pressure was no longer required.

At 9:24 a.m., during another simulated call from the media to the SHOC, the media asked if they had laboratory confirmation of tularemia. The response was "yes," which was incorrect. When the reporter questioned further, she was told that they "trust the laboratory and that it was confirmed through several tests."

At 12:30 p.m. after the SHOC had received the call from DPHL reporting laboratory confirmation, players discussed the fact that the earlier PCR positive result was actually presumptive and that now it was confirmed.

Recommendations

All staff working in the SHOC should be educated about the differences between presumptive diagnoses, presumptive lab results, and confirmed lab results so that they can accurately communicate this information to other agencies, hospitals, medical providers, and the public. Ensuring that the Laboratory Unit Leader position in the Planning Section is staffed will also ensure that a person is on hand who understands the differences between these tests.

Related to our recommendations for improving Planning Section information management, the status of diagnoses and laboratory test results should be tracked by this section and included in visual displays, briefings, and situation reports.

Hospital response

One of the key focus areas of Operation Diamond Shield II was hospital surge, and six hospitals actively participated in the exercise by triaging and admitting mock patients, activating their command centers, and coordinating with DPH on the medical response. Table 8 summarizes both the successes and the key issues that we discuss in this section.

Table 8. Hospital response successes and issues

Objective	Success
Exercise hospital emergency plans and procedures	Hospitals initiated Code Delta emergency plans, established command centers, and took a variety of measures to increase surge capacity
Focus on command post play	All hospitals activated their command centers except Wilmington, which coordinated through Christiana Hospital
Use a small number of role-players for emergency department play	Three hospitals (A.I. duPont, Christiana, Wilmington) successfully triaged and admitted patients played by volunteer actors on day 1
Test communications, coordination, and information sharing among the hospitals, ACC, and the SHOC	Hospitals communicated with the SHOC through regular conference calls and FRED, successfully coordinated the activation and set up of the ACC on day 2

Issue	Recommendation
Dissemination of a case definition occurred later than the hospitals expected	Prepare a case definition template and clarify the responsibility for drafting and disseminating it in DPH plans
The SHOC and hospitals were unfamiliar with IND requirements	DPH plans should explain and clarify the IND process
There was uncertainty about the requirements of EMTALA in the exercise scenario	Clarify applicability of EMTALA in ACC and hospital plans

The exercise brought to light some key public health issues related to the medical response and hospital surge. This section addresses three areas: case definitions, use of non-approved drugs, and access to emergency care.

Case definition

Whether it is naturally occurring or not, once a disease outbreak has been determined, a case definition needs to be established and disseminated as quickly as possible. The case definition helps hospitals consistently triage and treat patients, and forms the basis of a coordinated epidemiological investigation that involves hospital-based infection control and infectious disease personnel. A clear case definition is important because there may not be time to confirm each new case with a laboratory test. It is generally adequate to confirm the first few cases and then treat additional cases as presumptive based on the clinical definition.

The construction of a case definition is essential to personnel tasked with triage responsibilities because it can serve as a guide for distinguishing between potential attack victims and the "worried well." It often includes treatment guidelines as well as sample collection instructions.

Disseminating a case definition

Dissemination of a case definition occurred later than the hospitals expected. At approximately 10:00 a.m. on day 2 of Operation Diamond Shield II, Christiana hospital asked the SHOC if a case definition for the suspect disease would be released. Hospital personnel communicated to the SHOC that a case definition was essential for them to determine which types of specimens to take and how to distinguish the worried well from the truly sick. They noted a case definition was provided during the recent SARS outbreak.

After some discussion at the SHOC regarding how to disseminate a case definition (via DHAN or fax), it was agreed that the case definition would be written and faxed to participating hospitals. This process was completed by 12:30 p.m. However, the case definition

was quite brief and contained no information on sample collection requirements.

Recommendations

Prepare a case definition template and clarify the responsibility for drafting and disseminating it in DPH plans (Most likely, it belongs under the Medical Unit Leader in the Planning Section.).

Using drugs that are not approved by the FDA

Two of the drugs recommended for treatment of tularemia in a bioterrorism situation are gentamicin and ciprofloxacin [5]. Both were used by hospitals and the ACC during the exercise. Neither are approved by the Food and Drug Administration (FDA) for treating tularemia. When using hospital supplies, physicians can prescribe drugs for "off-label" use. However, once the state began using SNS supplies to resupply hospitals, NEHCs, and stock the ACC, IND procedures need to be followed.

IND requirements

The SHOC and hospitals were unfamiliar with IND requirements. Shortly after a confirmatory diagnosis of tularemia was made, a simulated CDC representative initiated a discussion at the SHOC regarding the IND process. Operations Section personnel were unfamiliar with IND procedures, which involved the naming of a co-principle investigator, informed consent when administering the drug, and detailed record-keeping procedures. SHOC personnel discussed the need to disseminate consent forms to hospitals and the ACC, and who would be named as the co-principle investigator.

Personnel at the ACC were knowledgeable about the need for use of IND waiver forms for patients presenting there. However, they did not have the forms and were not sure where they should get them. Other discussions reflected a degree of uncertainty about the legal ramifications of dispensing certain drugs without first going through the IND process.

Recommendations

DPH plans should explain and clarify the IND process, and include the informed consent forms for use in an emergency situation. The co-principle investigator should be pre-designated in the plan. NEHC and ACC personnel should be trained in implementing the IND process in these facilities.

Access to emergency care

The federal Emergency Medical Treatment and Labor Act (EMTALA) of 1986 requires hospitals to examine each and every patient who comes to an ED and to provide stabilizing treatment if the patient has an emergency medical condition. The Centers for Medicare and Medicaid Services (CMS) is charged with monitoring compliance with EMTALA.

EMTALA

There was uncertainty about EMTALA's requirements in the exercise scenario. On day 2 of Operation Diamond Shield II, CMS Region II contacted several hospitals to check on their compliance with EMTALA.[4] During a SHOC conference call that afternoon, one hospital asked if and how EMTALA might be suspended during a real mass casualty incident. The hospital was concerned with whether it could legally transfer patients to the ACC after it was activated, but a ready answer was not forthcoming.

After 9/11, EMTALA was reexamined to determine how hospitals could have greater flexibility to refer patients elsewhere. In November 2001, CMS clarified that it is not a violation of EMTALA for a hospital to refer patients with potential exposure to a bioagent prior to medical screening if the community disaster plan requires such referral [6]. For mass casualty situations in general, including bioterrorist events, the issue can also be addressed by state-level enabling legislation or draft gubernatorial orders.

4. This was notional, meaning that the letter was an inject rather than a player action.

Recommendations

For cases in which state or local governments have developed community response plans that designate specific entities (like the ACC) with responsibility for handling certain categories of patients in bioterrorism situations, the transfer or referral of these patients in accordance with such a community plan would not violate a hospital's EMTALA obligations. This should be clarified in ACC plans with the help of state legal authorities, who should also clarify situations in which a gubernatorial order might be needed.

Acute care center

Operation Diamond Shield II marked the first time that an ACC had ever been set up in Delaware. The exercise was designed to demonstrate the activation, set up, and operation of an ACC and serve as a learning experience for hospital and volunteer personnel, many of whom were working together for the first time. Table 9 summarizes both the successes and the key issues that we discuss in this section.

Table 9. ACC successes and issues

Objective	Success
Activate, set up, and demonstrate an ACC	The ACC was set up for the first time, ACC personnel successfully admitted and treated patients, first time that multiple hospitals worked together in a joint facility, activated MRC for the first time
Test communications, coordination, and information sharing among the hospitals, ACC, and the SHOC	SHOC and 3 hospitals coordinated to activate and set up the ACC on day 2

Issue	Recommendation
The role and purpose of the ACC was unclear to some players	ACC plans should clarify the role and purpose of the ACC
There were different interpretations of how the ACC would be activated	State and hospital plans should be reviewed to ensure that the ACC activation process is clear
Procedures for selecting ACC facilities were not discussed	ACC plans should be revised to include criteria/guidance for selecting facilities
A formal command structure for the ACC was not established	Ensure that a clear command structure is established for the ACC
Some problems with patient registration and discharge	Increase registration personnel, include discharge procedures in ACC plans
ACC personnel had difficulty dealing with special situations	Address special populations (e.g., foreign language speakers) in ACC plans
Some minor logistical issues were identified	Update ACC plans to address logistical issues

The demonstration provided an opportunity to identify issues that should be addressed in ACC plans. This section discusses two aspects of the ACC: activation and setup, and operation.

Activation and setup

By day 2 of the exercise, the hospitals and SHOC began discussing the need to activate the ACC. The decision to activate came on Friday morning and DPH delivered the ACC trailers to the ACC site. Hospital personnel unloaded the trailers and set up the ACC on Friday afternoon. The medical supplies and equipment were offloaded and set up in the facility in less than two hours (see appendix B for a diagram of how the ACC was organized). It is important to note that the administrative cache was not set up for this exercise and would have required additional time to unload and set up. Also, only 150 of the 200 ACC beds were set up because one of the four hospitals charged with operating the ACC did not participate in this portion of the exercise.

The role and purpose of the ACC

The role and purpose of the ACC was unclear to some players. Some ACC staff members were unsure about the type of patients that they would be receiving and the level of care they would be expected to provide in the facility. It was never made clear during the exercise how the ACC fit into the overall picture of patient care. According to ACC plans, the mission of this facility is to provide care to the largest number of patients possible and to facilitate the care of patients who are likely to die from injuries caused by disaster or illness as a result of exposure to a bioterrorist agent.

The exercise design team was told that the purpose of the ACC was to create surge capacity and that it would receive sick people directed from the NEHC. However, the details of who the ACC was to care for and how they would be directed there were not discussed during the exercise. Only minimal information, which contained no details on its purpose, was released to the public about the ACC. On

Saturday, when the ACC was preparing to open the staff was not briefed[5] on the mission and purpose of the ACC.

After the ACC demonstration was finished, it became clear that staff had different understandings about which type of patients the ACC was to receive. Some thought that all of the sick were being sent to the ACC and that the hospitals had stopped admitting tularemia patients. Others said that very sick patients (such as those in critical condition) were being sent to the hospitals, and less critical patients were being sent to the ACC.

Recommendations

The ACC plans should clarify the role and purpose of the ACC, the types of patients it is designed to receive, and the level of care it provides. Hospital training for ACC personnel should also include information on the role and purpose of the ACC. Its function should be made clear during an emergency situation by documenting it in incident plans and public information materials. At the opening of the ACC, an in-brief for personnel should describe the mission and purpose of the ACC and the type of care that will be provided.

Activating the ACC

There were different interpretations of how the ACC would be activated. According to the ACC plan, the PHPS will notify the Administrator-on-call (AOC) at each hospital when the SHOC activates to Level II since this would indicate an event with potential statewide impact (and a potential need for an ACC). During the exercise, the SHOC went to Level II at approximately 11:45 a.m. on day 1. According to the plan, there should have been a discussion regarding the potential for activating an ACC in the affected areas. However, data collectors did not record such a conversation.[6]

5. The staff was given an in-brief by exercise controllers to update them on the scenario and provide guidelines for exercise play.

6. Although such a discussion may have occurred, it was not observed or recorded by exercise data collectors.

The ACC plan identifies the State Health Officer as the lead authority for determining ACC activation, and so the hospitals waited for the SHOC to tell them if and when the ACC would be activated. In the 9:00 a.m. hospital conference call on day 2, Christiana Hospital asked whether DPH was going to activate an ACC in Wilmington. The Operations Section had been waiting for the hospitals to request that an ACC be stood up and asked if Christiana Hospital was requesting one. The hospital replied that it did need an ACC because it was at capacity, and so the Operations Section began preparations to deliver the ACC trailers.

There was no delay during the exercise, and the ACC was set up within five hours of the decision to activate. However, in a real emergency, multiple ACCs may have been activated, and disagreement over who should drive these decisions could cause delays.

Recommendations

State and hospital plans should be reviewed to ensure that the ACC activation process is clear. Consider developing a formula for ACC activation based on hospital surge capacity. During the demonstration, it was unclear how surge capacity was used to determine the need for an ACC. Since the level of surge was closely monitored by the SHOC, it should be clear to all involved at which surge level the ACC would be activated.

Selecting ACC facilities

Procedures for selecting ACC facilities were not discussed. Because the location of the ACC had been pre-chosen for the exercise, players did not discuss where the ACC would be set up. The location (the Bank One Center) probably would not have been used in a real emergency because it lacked several critical capabilities (e.g., back-up generators, adequate bathroom facilities). The current plan does not provide specific guidance for determining which facilities are appropriate and some players wondered which locations would be available in a real emergency.

Recommendations

DPH has pre-selected several facilities across the state to potentially serve as ACCs in an emergency. The ACC plan should include criteria or guidance for selecting which facilities to use in an actual emergency.

ACC operations

The ACC opened on the morning of 25 June and was staffed by personnel from A.I. duPont Hospital for Children, Christiana Hospital, and Wilmington Hospital, as well as Christiana Care Health Services MRC volunteers. Fifty-seven mock victims, both adult and pediatric, were admitted and treated. We discuss several key issues that were observed by players and data collectors during the ACC demonstration.

Command and control

A formal command structure for the ACC was not established. Although ACC plans include a command chart and several of the positions were staffed during the exercise, many personnel were not familiar with the command system or its purpose. The person chosen to serve as the ACC Administrator was an MRC volunteer who was not familiar with ACC plans. During the demonstration, ACC staff members had difficulty determining whom to contact with questions and problems that arose and were unsure of the chain-of-command beyond their individual sections. For example, when one of the sections changed the bed assignments made by registration, they did not know they should notify anyone of the change or whether they were authorized to make such changes. Players also commented that they did not know whom to contact if they had questions, issues, or needed assistance.

Recommendations

Ensure that a clear command structure is established for the ACC in accordance with incident command system principles. Personnel staffing the command positions within the ACC should be familiar with ACC plans and trained to fulfill their duties. Furthermore, all

ACC personnel should be trained in how to communicate and work within the command structure. This information could be reiterated in an in-brief for ACC personnel.

Registration and discharge

Some problems with patient registration and discharge were observed, for example:

- Registration and bed assignment were slow and caused an initial bottleneck. The single registration desk reviewed patient forms and made bed assignment, and this process took time.
- The bed assignment scheme implemented at the registration desk did not meet the needs of one of the pods. This pod decided to implement a process for bed registration based on the patient's acuity and reassigned beds as patients were admitted into the pod.
- The process for discharging patients was unknown to ACC staff. Players did not know how to deal with patients once their course of treatment was complete. The ACC plan designates the Medical Operations Section Lead as the responsible party for deciding which patients to discharge (to clear beds), but there is no process defined for what should be done with patients after this point. There was no area established to monitor patients after they were discharged or to help coordinate transport from the facility.

Recommendations

ACC planners should work with participating hospitals to clarify procedures for registration and discharge. A bed assignment procedure that works for all pods should be established so that staff members do not make changes during operations. The ACC plan should include additional registration desks/personnel to speed up this process. Many participants suggested having two lines at registration: one line for families and unaccompanied children, and another for adults.

The plan should also establish patient discharge procedures, including:

- A staffed area to monitor discharged patients
- Procedures for special needs populations (e.g., unaccompanied minors)
- Pre-scripted discharge orders

The MRC could be used to provide additional personnel for registration and discharge.

Special populations and circumstances

ACC personnel had difficulty dealing with a few special situations that arose during the exercise. Examples included the following:

- A victim arrived who did not speak English and the registration personnel could not determine which language she spoke. Although the NEHC form contains a check box to indicate non-English speaking patients, it does not indicate which language they speak. Staff had access to a medical translation service, but until they determined which language they were dealing with, this service was useless.
- A victim arrived without a NEHC form. Registration personnel were unsure what to do and initially wanted to send the person back to the NEHC. They did not have extra forms on hand for people to fill out. Staff ended up triaging the victim to determine whether he should be admitted.
- A child arrived unaccompanied by a parent. Although staff members were unsure how to handle him, he was admitted into the facility.

Recommendations

Procedures for dealing with special situations and special populations should be included in ACC plans. During an emergency situation, dealing with unforeseen circumstances can take a lot of time and delay the registration process. For example, maps or other cues can be used to help identify an individual's native language.

Logistics

Exercise observers and participants identified a number of minor logistical issues. Examples include the following:

- There were no hand washing facilities at the ACC and no waterless, alcohol-based hand gels for sanitation.
- The bathroom facilities were located in a separate area in the facility. It was unclear whether patients would be taken to a restroom facility or if bedpans were the appropriate option. Patient privacy was also a concern.
- The labeling system used to number the cots (and identify patients) was not uniform.
- Some supplies were not appropriate for the pediatric pod. For example, the bedside tables were unsafe for children and could cause injury.
- The medical cache did not contain wheelchairs, backboards, or stretchers. Several members of the nursing staff expressed concern over how they would be able to assist non-ambulatory patients. For example, in the Christiana Hospital pod one of the mock patients collapsed and it took three nurses to help him to one of the cots. In a real event, there may not be staffing available for assistance, and staff could be injured in the process.

Recommendations

ACC plans should be reviewed to address these issues. Planners should pre-develop supply and equipment lists for different scenarios (e.g., communicable versus non-communicable outbreak). Separate lists should be developed for pediatric pods.

Recommendations for future exercises

Exercises such as Operation Diamond Shield II are part of a continuing cycle of exercise, evaluation, and corrective action. This AAR provides an evaluation of Operation Diamond Shield II that DPH should use to identify which corrective actions should be implemented and to set a schedule for implementation and training.

After the identified corrective actions have been taken and personnel have been trained on new policies and procedures, the exercise cycle begins again. This section provides recommendations for future DPH exercises. There are many types of exercises[7] and they can help both in the development of new policies and procedures and in testing them. Our recommendations are organized into the same focus areas as the report: coordination and communication, epidemiological investigation, public information, laboratory, hospitals and the medical response, and the ACC.

Coordination and communication

We recommended adding additional structure and detail to DPH plans involving the SHOC. A tabletop exercise could be used to define the categories and types of information that need to be collected in different types of scenarios and create a framework for a detailed information management protocol.

We recommend new procedures be tested in a command post exercise (CPX) that focuses on the following:

- The SHOC internal operational cycle of planning meetings, briefings, and situation updates
- The use of revised job action sheets

7. See *HSEEP Volume I: Overview and Doctrine*, for an explanation of the different types of exercises [7].

- How different sections coordinate and share information
- How a common operating picture is maintained.

Once internal processes have been tested, DPH should test coordination with field responders, hospitals, and other agencies and organizations.

Epidemiological investigation

DPH should develop a regular schedule of IRT drills that include the following:

- Conducting patient interviews and using the appropriate paper-based case investigation forms
- Familiarizing non-medically trained staff with medical terms and their definitions
- Using the Web-based software to electronically record and transfer patient data to the SHOC
- Using radios, laptops, new computer tablets, and other communications equipment
- Using PPE.

Future CPXs and FSEs should exercise the following:

- Coordination of IRT activities with the SHOC
- Deployment of IRTs to activated NEHCs to coordinate with staff and assist with the patient interview process
- Shift changes with the IRTs and change-over briefings or other procedures designed to maintain situational awareness
- Coordination between IRTs, law enforcement, and other responders
- Coordination of IRT activities with the hospitals.

A tabletop exercise could address the issue of initial data collection and analysis and help define a procedure to be used until IRTs are deployed and data are available in DERSS.

Public information

Either through tabletop exercises or as part of a larger, statewide FSE, the public affairs office should exercise:

- Crafting public messages in support of NEHC and ACC plans
- Coordination with hospitals and other state agencies in public messaging (such as through a Joint Information Center).

Laboratory

Once clear procedures are established for collecting and transporting samples to the state lab, and personnel are trained in their use, future exercises and drills should retest this process, including the following:

- Coordination between DPHL, the SHOC, the IRTs and the hospitals to get the correct samples from the hospitals to the lab
- The CoC forms and procedures the hospitals must follow
- The security measures needed to adhere to CoC requirements
- An effort to familiarize the IRTs, the hospitals, the SHOC, and public affairs with the technical language used in the labs.

Hospitals and the medical response

Seminars or tabletop exercises could be used to bring together expertise from public health, legal, law enforcement, and other agencies and organizations to explore how to address particular issues in plans and procedures, for example:

- How EMTALA applies to bioterrorism situations
- How quarantine and isolation can be applied in a contagious disease outbreak.

Future FSEs could increase play in the hospitals and examine the response to a communicable disease.

Acute care center

After the issues raised in the ACC section have been discussed and resolved, the DPH should host another exercise to test and evaluate a full setup of the ACC. This could be conducted as a standalone site test or as part of an FSE. The next ACC site test could include the following:

- Offload and setup of both the medical and administrative caches
- Inclusion of all hospitals that are part of the ACC plan
- Establishment of a central command system
- Evaluation of ACC throughput and operational capacity, using more volunteer patients
- Outbreak of a contagious disease and the protective measures that would be taken in this scenario
- Participation of local law enforcement in the establishment of a security and traffic plan
- Better representation of special needs populations.

Another portion of emergency plans that needs to be coordinated with the ACC plan is the casualty transportation system, which is charged with supporting healthcare facility evacuation and patient movement through NEHCs and ACCs. A future FSE should test this system.

Appendix A: Timeline of key events

Figure 2. Timeline of key events: June 23rd

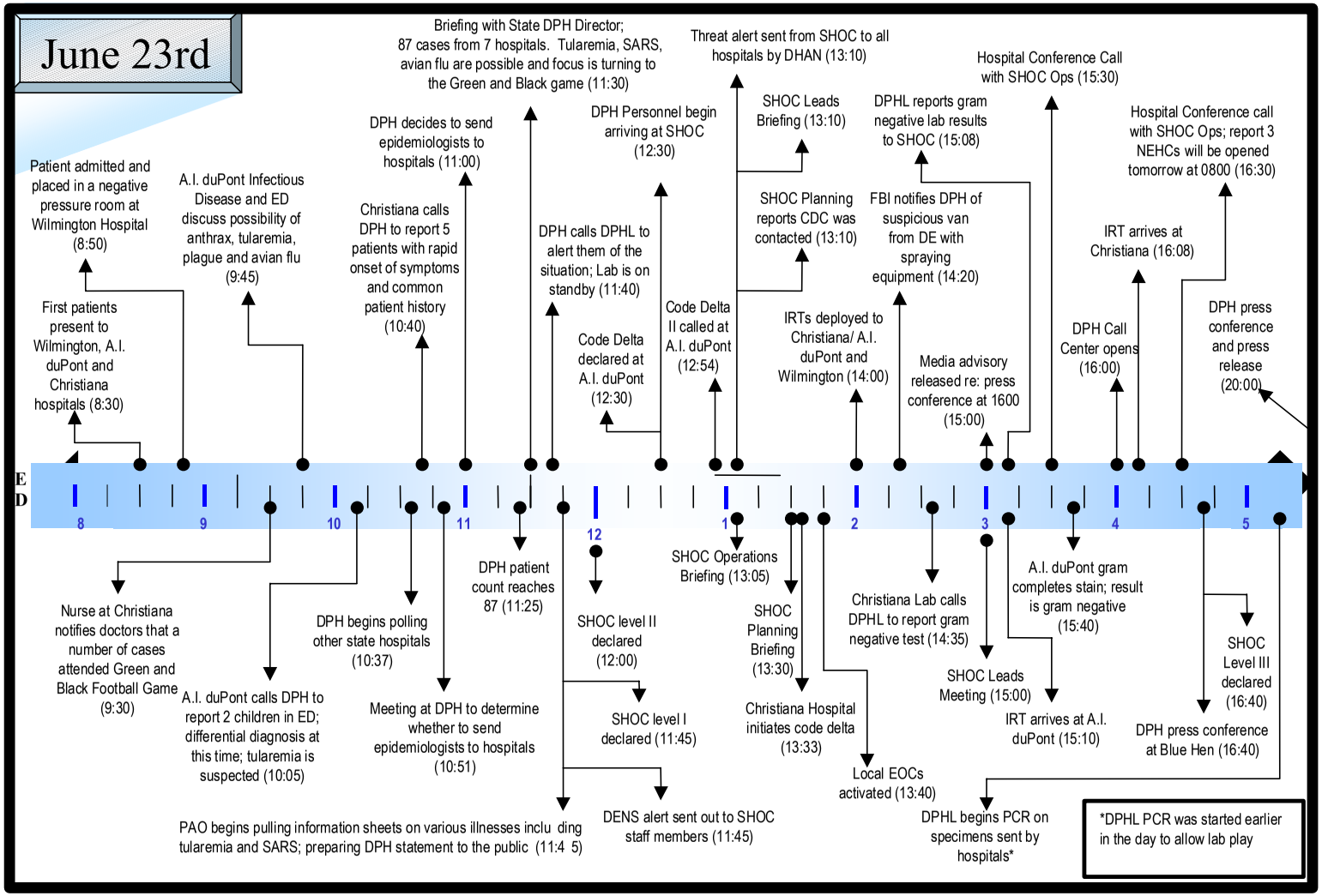
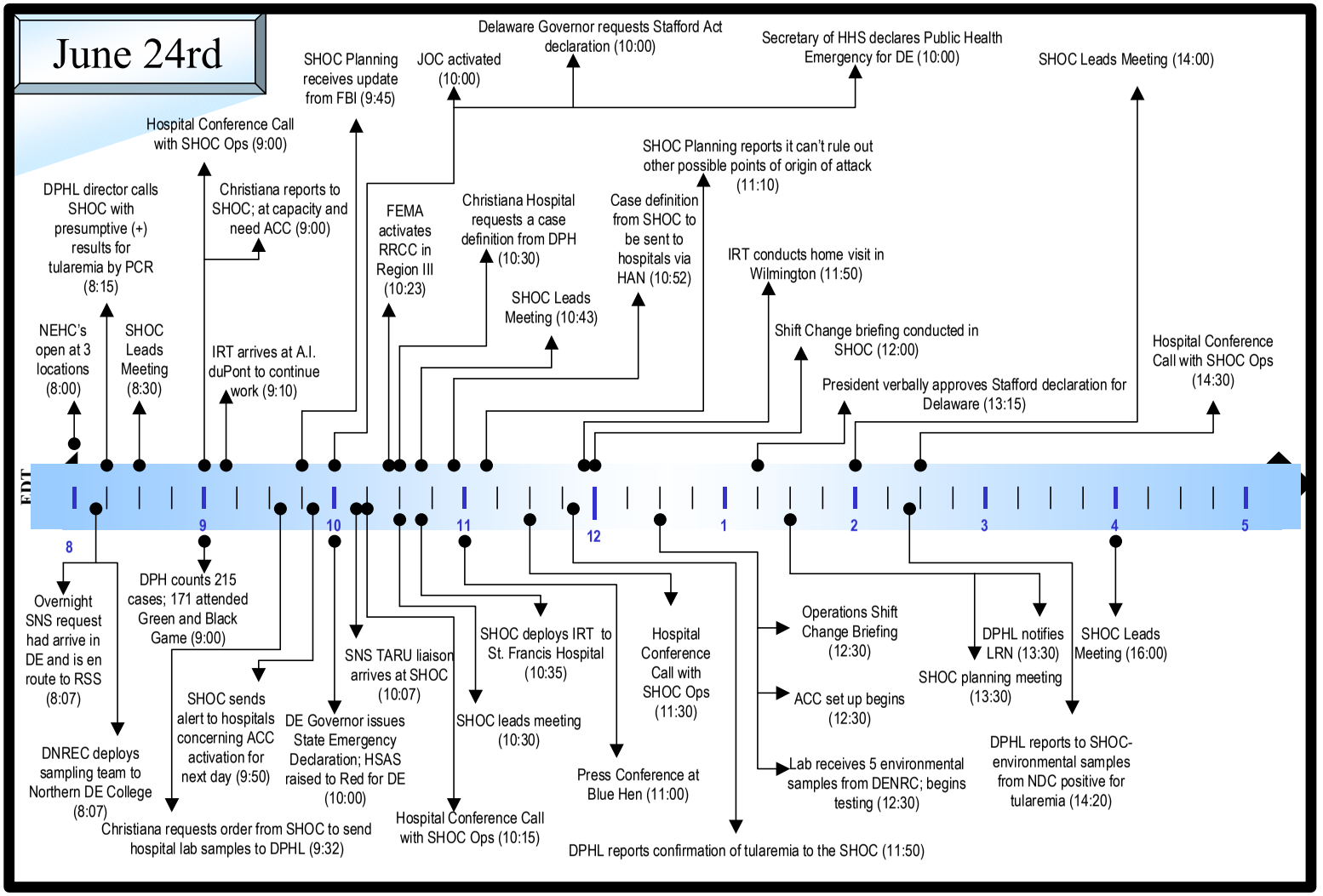


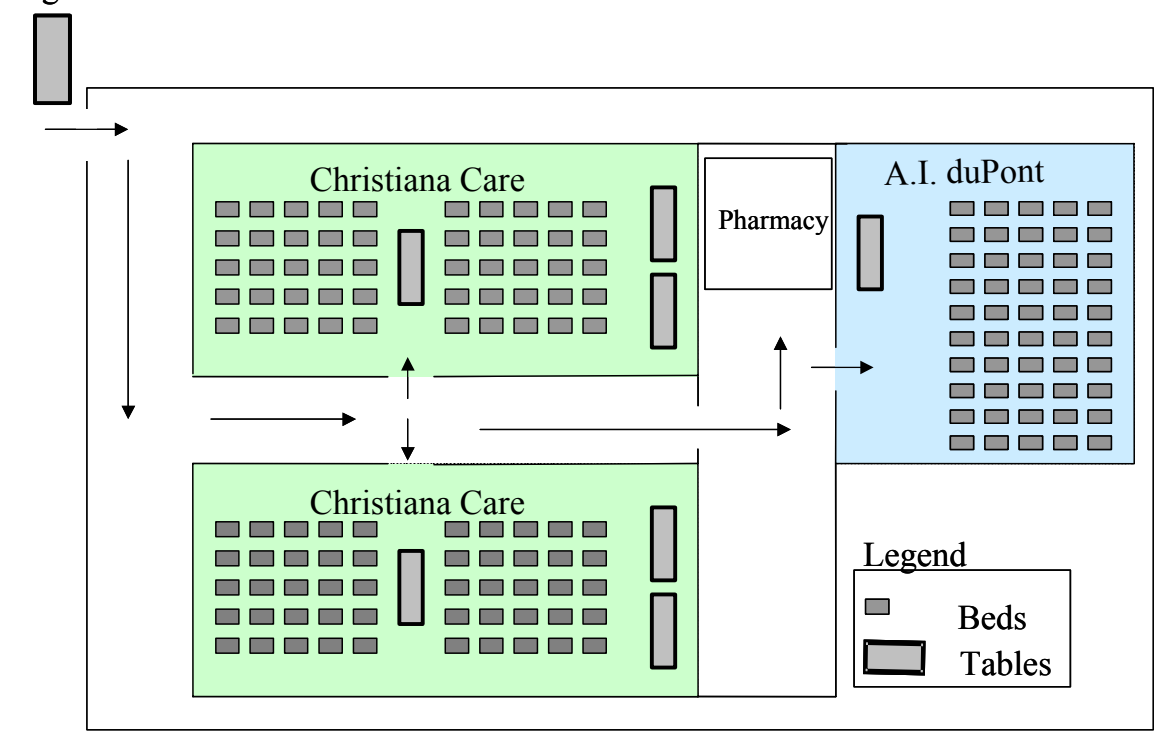
Figure 3. Timeline of key events: June 24th



Appendix B: ACC layout

The ACC was set up in a large room typically used for concerts or shows. The DPH ACC plan calls for a 100-bed facility that is divided into four 50-bed "pods". Three pods were set up for the exercise. Christiana Care Health System operated two adult pods, and one pediatric pod was operated by A.I. duPont Hospital for Children. Figure 4 shows the layout of the ACC. Curtains were used to separate the pods. The arrows show how patients were directed through the facility.

Figure 4. ACC site plan



Glossary

AAR	After Action Report
ACC	Acute Care Center
AOC	Administrator-on-call
BHCC	Blue Hen Corporate Center
BSL	Biosafety Level
CDC	The Centers for Disease Control and Prevention
CMS	Centers for Medicare & Medicaid Services
CNAC	The CNA Corporation
CoC	Chain of Custody
CPX	Command Post Exercise
DEMA	Delaware Emergency Management Agency
DENS	Delaware Emergency Notification System
DERSS	Delaware Electronic Reporting and Surveillance System
DFA	Direct Fluorescent Antibody
DHAN	Delaware Health Alert Network
DNREC	Department of Natural Resources and Environmental Control
DPH	Division of Public Health
DPHL	Division of Public Health Laboratory
DSAMH	Division of Substance Abuse and Mental Health

ED	Emergency Department
EDTA	Ethylenediaminetetraacetic acid
EMTALA	Emergency Medical Treatment and Labor Act
FBI	Federal Bureau of Investigation
FDA	Food and Drug Administration
FRED	Facility Resource Emergency Database
FSE	Full-Scale Exercise
HSEEP	Homeland Security Exercise and Evaluation Program
IAP	Incident Action Plan
ICS	Incident Command System
IND	Investigational New Drug
IRT	Investigative Response Team
LRN	Laboratory Response Network
MRC	Medical Reserve Corps
MSEL	Master Scenario Events List
NEHC	Neighborhood Emergency Help Center
NIMS	National Incident Management System
PAO	Public Affairs Officers
PCR	Polymerase Chain Reaction
PHPS	Public Health Preparedness Section
PPE	Personal Protective Equipment
SHOC	State Health Operations Center
SIMCELL	Simulation Cell

SNS	Strategic National Stockpile
SOP	Standard Operating Procedure

References

[1] U.S. Department of Homeland Security Office of Domestic Preparedness. *Homeland Security Exercise and Evaluation ProGram Volume III: Exercise ProGram Management and Exercise Planning Process*, Jul 2004

[2] Monica Giovachino and Eric Trabert. *Operation Diamond Shield II: Exercise Plan*, Jun 2005 (IPR 11386)

[3] Monica Giovachino, Eric Trabert, Dawn Nebelkopf, and Tammy Felix. *Operation Diamond Shield II: Scenario and MSEL*, Jun 2005 (IPR 11471)

[4] U.S. Department of Homeland Security Office of Domestic Preparedness. *Homeland Security Exercise and Evaluation ProGram Volume II: Exercise Evaluation and Improvement*, Oct 2003

[5] David T. Dennis et al. *Tularemia as a Biological Weapon*, Journal of the American Medical Association, Vol. 285, No. 21, 6 Jun 2001

[6] Page, Wolfberg & Wirth, LLC, *EMTALA and Anthrax: What Are the Hospital's Obligations?* (http://www.pwwemslaw.com/ACTIVE/Tips/TipsArchives/11.24.01.htm) 24 Nov 2001

[7] U.S. Department of Homeland Security Office of Domestic Preparedness. *Homeland Security Exercise and Evaluation ProGram Volume I: Overview and Doctrine*, May 2004

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IPR 11600 / Final
October 2005

Red Carriage After Action Report: Analysis of a Strategic National Stockpile Point of Dispensing Site Test

Monica Giovachino • Lauren Byrne

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This document was prepared by The CNA Corporation for the Prince George's County Health Department. This document represents the best opinion of The CNA Corporation at the time of issue. It does not necessarily represent the opinion of the Prince George's County Health Department.

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Executive summary

On August 25 and 26, 2005, the Prince George's County Health Department held a two-part Strategic National Stockpile (SNS) exercise called "Red Carriage" that tested its SNS response plan. The first part was a tabletop exercise held on August 25 that dealt with the initial response to a bioterrorism event. The second part was a functional exercise held on August 26 that tested the setup and operation of an SNS Point of Dispensing (POD) site and included the transport of supplies from the designated warehouse to the POD. This report provides an evaluation of part 2 of the exercise.

Sixty volunteer mock patients went through the POD and were given medicines. The POD processed about one person every two minutes. Once extra personnel were shifted to the dispensing station, the POD could have processed about one person per minute. With additional staffing, the POD could achieve a throughput of 1.5 to 2 persons per minute.

The exercise provided an opportunity to validate strengths in Prince George's County Health Department's capability to set up and operate a POD. Some of the successes included the following:

- Logistics and setup: Transport of supplies from the warehouse to the POD took only six minutes and personnel from different agencies coordinated to secure and set up the facility.
- Command and control: Personnel quickly assessed problem areas and instituted remedies.
- Staffing: Personnel were attentive, reassuring, and professional. They learned quickly and shifted to other duties as needed.
- Operations: All patients, both potentially exposed and sick, were cared for and given the appropriate medicines.
- Special populations: The POD dealt with foreign language speakers and several irate patients.

The exercise also provided an opportunity to identify areas that need improvement. Some of the key issues included the following:

- Logistics and setup: The first patients arrived before the POD was set up and crossing pathways within the center disrupted patient flow. POD locations should not be announced until they are set up to reduce potential crowd control and security problems. A one-way patient flow should be used to facilitate the movement of people through the facility.
- Command and control: Many personnel were unfamiliar with the POD command structure. Plans and training should clarify this structure and how to work and communicate within it. A staff in brief should be conducted at shift changes that reiterates this information.
- Staffing: Many personnel were unfamiliar with their roles and responsibilities, the disease, and the medications dispensed. Pre-event training should be conducted and job aids should be developed to help personnel perform their duties. Additional personnel dedicated to traffic control and runners are also needed.
- Operations: Dispensing was the primary bottleneck in the POD. To streamline this step, Prince George's County Health Department should assign more personnel, reduce duplication of effort (dispensing personnel repeated tasks that were performed in the screening step), and use consent forms only when required for Investigational New Drug requirements.
- Special populations: There was only one Spanish-speaking staff member on hand and no means of dealing with other foreign languages. Additional tools should be available to help staff communicate with those who don't speak English. Prince George's County should also identify all special populations, including those that may be home-bound and institutionalized, and determine how they will be cared for in an emergency.

Introduction

The Strategic National Stockpile (SNS) is a cache of medicines and medical supplies that is managed by the Centers for Disease Control and Prevention (CDC). It is designed to protect the American public if there is a public health emergency (e.g., terrorist attack, flu outbreak, earthquake) severe enough to cause local supplies to run out. Once Federal and local authorities agree that the SNS is needed, medicines will be delivered to any state in the U.S. within 12 hours.

Each state must have plans to receive and distribute SNS medicine and medical supplies to local communities as quickly as possible. Prince George's County has an SNS response plan that describes the receipt, staging, management, movement, distribution, and recovery of the portion of the SNS that Prince George's County would receive from the state in an emergency.

On August 25 and 26, the Prince George's County Health Department held a two-part SNS exercise called "Red Carriage" that tested its SNS response plan. The first part was a tabletop exercise held on August 25 that dealt with the initial response to a bioterrorism event. The second part was a functional exercise held on August 26 that tested the setup and operation of an SNS Point of Dispensing (POD) site and included the transport of supplies from the designated warehouse to the POD.

Background

The exercise was designed to meet the following objectives:

- Enhance communication among senior leaders at state and local levels within Prince George's County
- Examine policies and procedures for responding to receipt and distribution of the SNS

- Establish baseline numbers for throughput at the POD
- Enhance coordination among response partners
- Establish intragovernmental transportation protocol.

The exercise scenario involved the intentional contamination of food at a "Taste of Maryland" festival with *Francisella tularensis*, the bacteria that causes tularemia. Tularemia is a severe, influenza-like illness caused by bacteria found in animals, particularly rodents, rabbits, and hares. Human cases are typically caused by insect bites, handling infected animal carcasses, or eating or drinking contaminated food or water. The case-fatality rate is low and has been documented to be fewer than 2 percent in recent years. Naturally occurring human cases are most common in the western states.

Participating agencies

Many Prince George's County agencies participated in the exercise, including the:

- Health Department
- Office of Central Services
- Police Department
- Fire/EMS Department
- Maryland National Capitol Park and Planning Commission
- Department of Public Works and Transportation
- Maryland State Police
- Office of Homeland Security
- Office of Public Information.

Tasking and approach

The Prince George's County Health Department asked The CNA Corporation (CNAC) to evaluate part 2 of the Red Carriage exer-

cise, which was the POD site test. The CNAC tasking included three components:

- Develop an evaluation plan
- Provide an evaluation team during the exercise
- Write an after action report (AAR).

Evaluation plan

We used a three-step process of observation, reconstruction, and analysis to determine what happened in the exercise and why. The purpose of the analysis was to provide participants with the information necessary to improve their policies and procedures for responding to major public health events, whether terrorist related or naturally occurring. The intent of this methodology is not to "evaluate" individual player performance. Rather, its purpose is to deliver knowledge to players so that their agencies can improve or create policies and procedures based on lessons learned from the exercise.

In the observation step, we collected two main types of data during the exercise:

- Quantitative service time data: we collected the entrance and exit time for each mock patient who went through the POD. We also collected the individual service times for each step in the dispensing process for a subset of mock patients.
- Qualitative data: Evaluators at the Central Services warehouse, with the truck carrying supplies, and at the POD kept detailed logs of their observations during the exercise. We also collected observations and feedback from all participants in an exercise hotwash held immediately following the exercise and in participant feedback forms.

In the reconstruction and analysis phase, we compiled and analyzed the service time data and we used the evaluator logs to create a synchronized timeline of exercise events. We used these data along with the participant observations to select five key focus areas for analysis:

- Logistics and setup
- Command and control
- Staffing
- Operations
- Special populations.

Within each of these areas, we documented strengths, identified key issue areas, and provided recommendations for improvement.

Organization of this report

This AAR provides an overview and analysis of part 2 of the Prince George's County Health Department Red Carriage exercise. The next section (exercise overview) provides a summary and timeline of the exercise. The following section presents an analysis of the throughput data and the final five sections discuss the successes, issues, and recommendations in each focus area. Appendix A summarizes the player feedback form comments and appendix B summarizes the hotwash comments.

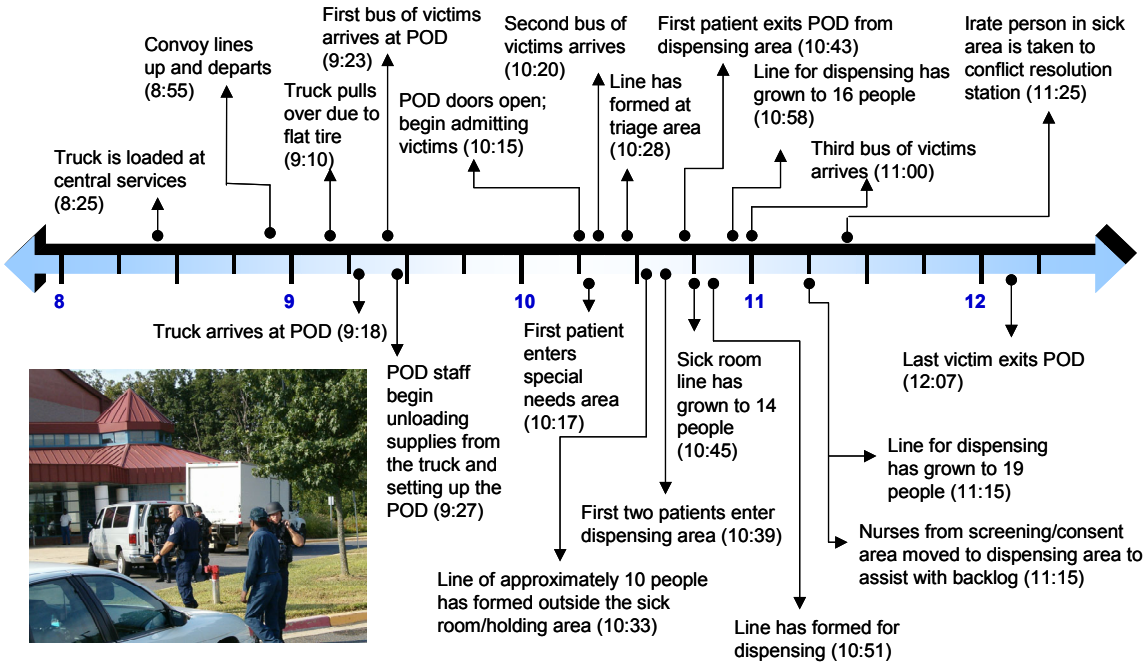
Exercise overview

The exercise began at approximately 8:00 a.m. on August 26 and ran through noon that day. It involved players at several locations:

- Office of Central Services: Players at the warehouse loaded a truck with POD and medical supplies
- In transit: Players from the Police Department and the Department of Public Works and Transportation transported the supplies to the POD with a police escort
- POD: Players secured the POD, unloaded the truck, set up the POD, and operated the POD.

Figure 1 shows a timeline that summarizes key exercise events.

Figure 1. Exercise timeline



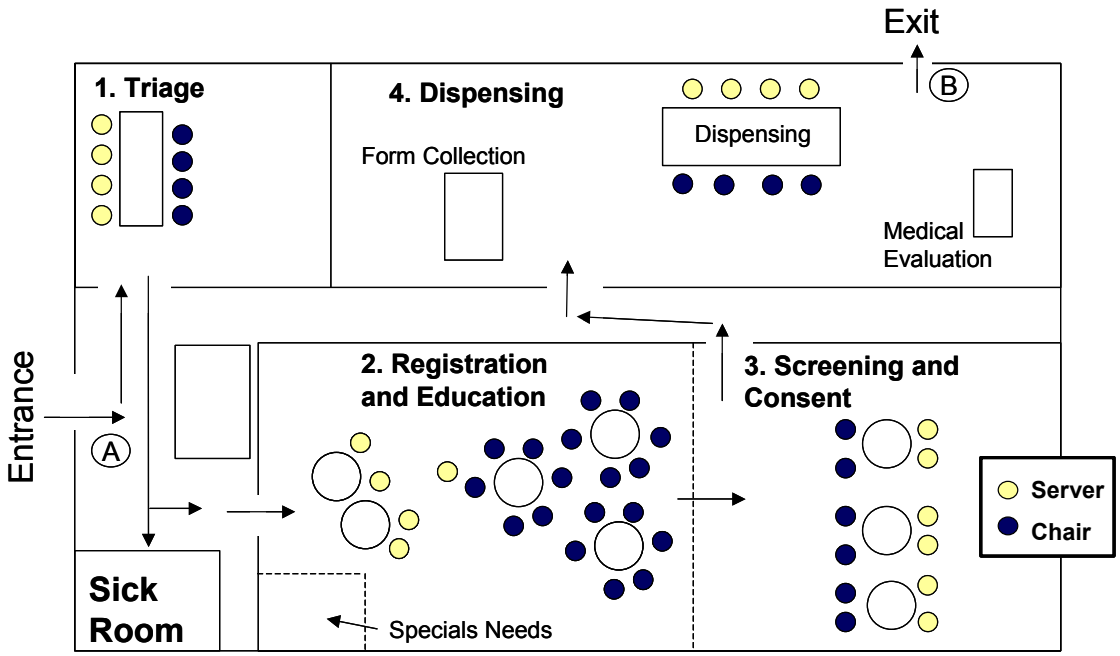
Prince George's County recruited volunteer mock-patients to role-play victims of the attack. These "mock patients" were bused to the POD to simulate victims arriving by bus to the POD.

POD layout and data collection

As shown in figure 2, the POD had four main steps:

- Triage: Sick patients were separated from the potentially exposed (but well) patients and sent to the Sick Room for further evaluation; well patients were directed to registration
- Registration: Patients were given medical information forms and filled them out
- Screening and consent: Patients' medical information forms were reviewed by a nurse and patients were given an educational brief and asked to sign a consent form
- Dispensing: Patients were given additional educational information along with the appropriate medication, and their forms were collected.

Figure 2. POD layout



There was also an area to assess and transport sick people to the hospital and an area to assist those with special needs (such as foreign-language speakers).

CNAC set up two data collection stations (indicated by the letters "A" and "B" in figure 2) to collect the time each mock patient entered and exited the POD. The mock patients were given a separate green sheet of paper which they carried with them though the POD. Data collectors at the entrance and exit stamped these sheets with a time stamp as the mock patients entered and exited the POD.

Members of the evaluation team also went through the POD as mock patients. These evaluators carried time stamps and recorded the time they entered and exited each step in the dispensing process.

POD throughput analysis

The POD opened and began admitting patients at 10:15 a.m. The exercise ran until about 12:00 noon, with the last patient exiting at 12:07 p.m. During that time, medications were dispensed to 60 patients for a throughput of 0.54 patients per minute (or 32 patients per hour).[1] Table 1 shows the average service time for each of the four main steps in the dispensing process.

Table 1. Average service times[a]

Step	Time (minutes)	Standard deviation (minutes)	Number of observations
Triage	2.06	1.89	17
Registration	4.50	2.88	14
Screening/consent	2.07	1.33	14
Dispensing	7.44	4.08	16

a. The service time is calculated as the time a patient finished service minus the time a patient started service at a particular station.

On average, patients spent 42 minutes in the dispensing center. This time includes the service time at each step as well as time spent waiting in lines and walking from station to station. Of the 60 patients that were dispensed medications, 50 received doxycycline (the drug of choice), 7 received ciprofloxacin (because of contraindications to doxycycline), and it was unknown what the other 3 patients received.

In table 2, we calculate the rate at which each step could process patients with the number of servers (people working at each station) on hand at the beginning of the exercise. Ideally, one would like each step to be processing patients a little faster than the previous

1. This throughput is not necessarily reflective of the maximum throughput the dispensing center could have achieved because there were not enough mock patients to keep all of the servers busy at all times.

step so that lines do not form. As shown in the table, dispensing was much slower than the other steps and created a bottleneck in the POD.

The registration station was a little different than the other stations because patients were given time to sit down and complete their forms. The servers at that station included four workers who handed out the forms and instructed people on how to fill them out. The fifth server assisted people as they filled out their forms.

Table 2. Rates of the dispensing steps (initial POD setup)

Step	Average service time (minutes)	Servers	Rate (people per minute)[a]
Triage	2.06	4	1.94
Registration	4.50	5	1.11
Screening/consent	2.07	6	2.90
Dispensing	7.44	4	0.54

a. Equals the number of servers divided by the service time.

About halfway through the exercise, some of the people working in screening/consent were moved to dispensing to add more servers. These changes are reflected in table 3 and doubled the throughput of the dispensing station to about one person per minute.

Table 3. Rates of the dispensing steps (at 11:30 a.m.)

Step	Average service time (minutes)	Servers	Rate (people per minute)[a]
Triage	2.06	4	1.94
Registration	4.50	5	1.11
Screening/consent	2.07	3	1.45
Dispensing	7.44	8	1.08

a. Equals the number of servers divided by the service time.

Conclusions

The POD achieved a throughput of 0.54 patients per minute (or 32 patients per hour). The limiting station was dispensing. When per-

sonnel were shifted to increase the staffing at the dispensing center, that station could have processed patients at about one per minute. Therefore, the POD could have achieved a maximum throughput of about one person per minute (60 people per hour).

Using the average service times measured during the exercise, we estimated the number of staff members that would be required at each step to increase the throughput to 1.5 persons per minute (90 persons per hour) and 2 persons per minute (120 persons per hour). Our results are shown in table 4. It may be difficult to accommodate the number of personnel needed to achieve a 2 persons-per-minute throughput in the facility that was used for the exercise. The 1.5 person-per-minute setup is probably achievable.

Table 4. Estimated staffing for higher throughput rates[a]

Step	Average service time (minutes)	Servers required for 1.5 person-per-minute rate	Servers required for 2 person-per-minute rate
Triage	2.06	3-4	4-5
Registration	4.50	7	9
Screening/consent	2.07	3-4	4-5
Dispensing	7.44	11-12	15

a. The number of servers required equals the average service time multiplied by the rate.

No set of throughput measurements can serve every possible scenario. Dispensing center plans should be flexible so that they can be reconfigured as needed during operations. Higher throughputs could be achieved by limiting the services provided in the POD. In a mass casualty scenario, it may be necessary to reduce the time spent consulting with patients so that medications can be dispensed faster.

Logistics and setup

The transportation of material to the POD and the setup of the POD are important components of the SNS response plan. Both activities involved the coordination of personnel from many different agencies during the exercise.

Successes

This was the first time that Prince George's County tested material transport and setup in real time. Successes included the following:

- There was good coordination between the Office of Central Services, the Health Department, the Department of Public Works and Transportation, and local law enforcement agencies. A police escort accompanied the truck and special operations units secured the facility and guarded the supplies.
- Transport from the warehouse to the POD took only six minutes and the Department of Public Works and Transportation dealt with a flat tire inject.
- Set up of the POD took about 45 minutes (from the time personnel began unloading the truck to the time the POD began admitting patients) and personnel from the different agencies worked together to get the job done.

Issues

The first busload of patients arrived about five minutes after the truck with supplies arrived. Setup of the POD had not begun and the mock patients stood in line at the entrance of the POD for nearly an hour before being let in. The mock patients had no where to sit and wait and no one came and told them what was going on and when they would be admitted.

A delivery entrance was not predesignated and it took about 10 minutes for personnel to determine that the best point to unload the truck was in the back of the building. The POD Site Coordinator expected Central Services personnel to unload the truck and set up the site. However, Central Services did not expect to be asked to do this. Nonetheless, Central Services and law enforcement personnel assisted and helped unload the truck and set up the POD.

As shown in figure 2, there was not a one-way flow of patients through the POD and those going and coming from triage crossed paths. The path through the POD was not well marked. Although there were signs at each station, there were no signs directing patients from station to station. There were also few traffic control personnel and many of those telling patients where to go had other duties. As a result, some patients went to the wrong stations and some exited back through the entrance instead of using the one-way exit.

Lunch was delivered to the POD for the staff. When it arrived, no one was designated to manage and hand out the food, and there was no plan for allowing staff breaks to eat lunch. Some staff members left their stations to get lunch and help hand out food. However, operations in the POD were still ongoing and some stations were left with fewer personnel. Also, the environmental health officer found that some of the food was outside of temperature limits for food handling. The risk to personnel was assessed to be low and the food was served.

The POD also lacked some supplies that personnel said would be needed in a real emergency. Examples include blood pressure cuffs and sanitation supplies.

Recommendations

Improvements to the SNS response plan and the development of detailed supporting procedures are needed to improve logistics and setup. Most importantly, Prince George's County should ensure that setup occurs before PODs open and begin receiving patients. The situation that occurred in the exercise could create crowd control and security problems. It may also be unsafe in bad weather or in a

contagious disease outbreak, as well as for those with special needs (such as the elderly). The location of PODs should not be announced and patients should not be transported to them until they are ready to open.

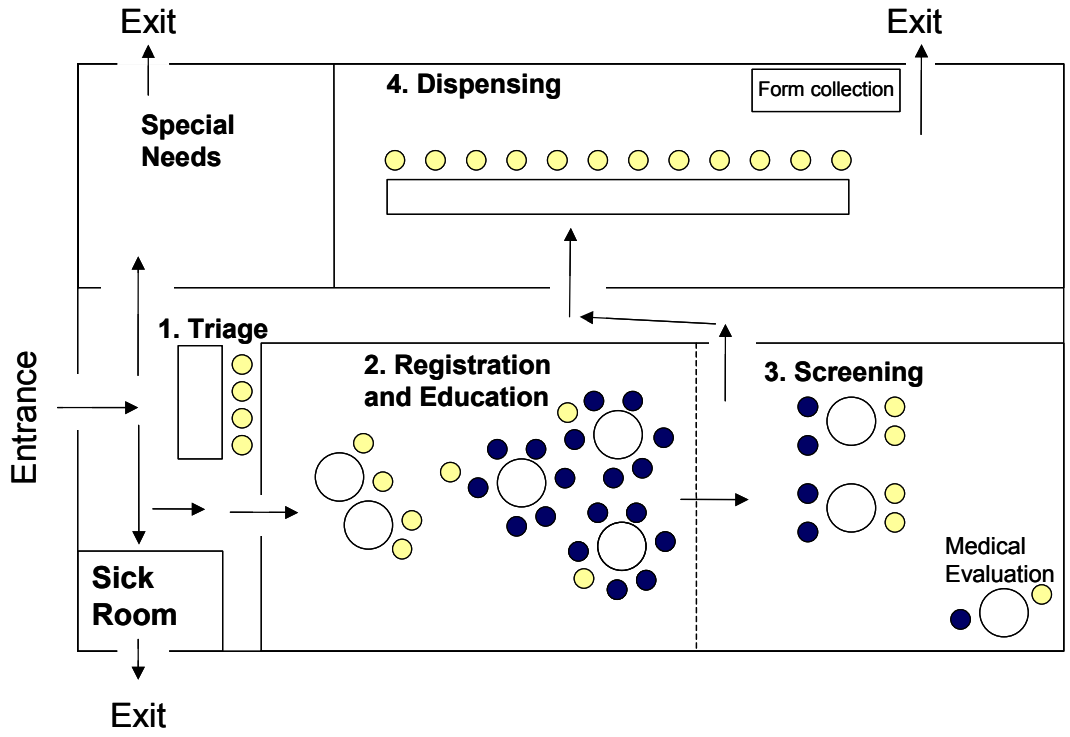
The personnel responsible for unloading supplies and setting up the POD should be designated in the SNS response plan. Prince George's County should prepare site-specific diagrams and checklists that mark the delivery entrance for each POD and indicate where the tables, chairs, and other materials should be set up.

Each diagram should include a one-way pathway through the facility. We show one example of a revised set-up diagram for the facility used in the exercise in figure 3. This figure uses the staffing for a 1.5-person-per minute throughput estimated in table 4.

Responsibilities for food handling and management should be assigned to specific staff members and documented in the SNS response plan. A schedule for allowing staff members to break for lunch and other reasons should also be included. Additional staff to fill in for those on breaks may be required to keep operations running smoothly.

Prince George's County Health Department should also review the POD supply list in light of the exercise and identify additional items to be added. In particular, materials to aid in traffic control, such as signs with arrows, tape to mark paths on the floor, or maps to hand out to the patients, should be considered.

Figure 3. Revised set-up diagram[a]



a. Triage could be moved outside the facility in the event of a contagious epidemic. Those with special needs could be provided all services in the separate "special needs" section to reduce the number of resources needed to accommodate special populations. A separate medical evaluation station (or stations) could be used to counsel those with possible contraindications. This diagram does not show personnel needed for the special needs and sick rooms, or for traffic control, security, and administrative and management functions.

Command and control

Command and control is an important component of POD operations and the POD had a command system in place that was based on Incident Command System (ICS) principles.

Successes

For many players, it was the first time they had worked within a command structure that was different than their normal reporting chain. Successes included the following:

- Personnel quickly identified problems and implemented remedies. For example, when there was a backlog of patients waiting in line for dispensing, the Site Coordinator shifted staff from other areas to provide more servers at this station.
- During the exercise, personnel from different agencies, including law enforcement and public health worked together using the POD command structure.

Issues

There were no pre-designated section leads for the different POD stations, which left only the Site Coordinator in charge of getting the POD set up and making sure staff knew what they were supposed to do. Many of the personnel had no prior training and did not know what they were supposed to be doing. Initially, the Site Coordinator spent a lot of time fielding questions. The Site Coordinator later identified section leads that were able to take responsibility for setting up their sections and orienting their personnel.

Some personnel were unfamiliar with command structure and ICS principles or had different interpretations about how it should be applied. For example, the lead for security expected all requests for security to go through her. However, during the exercise, personnel

contacted the Site Coordinator with security issues and the Site Coordinator communicated directly with law enforcement agencies to request additional support. The security lead thought that this communication should have gone through her.

Although the POD supply cache included radios, they were not used and there was no means of communication other than face-to-face. When personnel needed to talk to others in different locations they had to leave their posts.

Recommendations

Several improvements could address the issues discussed above. First, POD section leads should be pre-designated and trained to direct and manage the operation of their sections. This will reduce the burden on the Site Coordinator. These personnel should also be responsible for orienting their staff members.

The POD command structure and the roles and responsibilities (including lines of communication) of each position should be clarified in plans. An all-hands briefing should be conducted before the dispensing center opens and at shift changes. This briefing should describe the command structure in place and inform staff on how to operate and communicate within it.

Use radios to communicate within the POD and ensure spare batteries are included in the POD equipment cache. This will help section leads and the Site Coordinator communicate without leaving their posts. Assigning additional staff members to serve as runners could also help personnel communicate and share information.

Staffing

Trained personnel are an essential component of the POD and ensuring that enough personnel are available for large-scale emergencies is a challenge facing the Prince George's County Health Department.

Successes

Many of the personnel that staffed the POD had no prior SNS training or experience and the exercise provided a valuable learning experience for them. Other successes included the following:

- Many of the mock patients commented positively about the personnel who helped them and said that they were attentive, reassuring, professional, and took time to answer their questions
- POD personnel also showed flexibility by figuring out what needed to be done and shifting to other duties as needed.

Issues

Many of the staff lacked education and training about the SNS response plan and their roles and responsibilities within the POD. Many were also unfamiliar with the exercise scenario, tularemia, and the medications they were dispensing.

Several areas within the POD lacked personnel. There was only a single greeter at the entrance who had to direct personnel to and from triage, escort patients to the sick room, and address the questions that incoming patients had. People who were also responsible for duties within their sections handled most of the traffic control and there were no runners or extra personnel on hand to assist disabled or special needs patients.

The dispensing area was also short of staff and personnel had to be shifted from other areas to address the backlog that occurred here. Some personnel also said that there were too few doctors and that this caused a delay when questions needed to be answered.

Recommendations

Prince George's County should conduct pre-event education and training to prepare staff to work in PODs during an emergency. This training should provide a general awareness of the most likely bioterrorist agents and the prophylaxis and treatment that is administered for each. Periodic dispensing drills should be conducted to familiarize staff with the jobs that they will perform in the POD. Cross-training staff to perform multiple roles is important to ensure flexibility during operations.

POD plans should clearly list the numbers of staff needed to fill different roles. More traffic control personnel and runners should be added to the staffing plant to assist in patient flow and perform additional duties as needed. These positions do not require clinical skills and could be filled with administrative staff or volunteers.

We recommend adding at least one traffic control person per station to move patients from the line to the next available server. We also recommend stationing traffic control personnel in the halls between stations to direct patients to the next station. These are positions that do not require clinical skills and could be filled by administrative personnel, volunteers, or others.

To assist staff during an emergency, Prince George's County Health Department should create job aids. These include tools such as position-specific checklists that tell personnel what they need to do (e.g., during setup, during their shift, at the end of the shift). Also, protocols for different bioterrorism agents should be prepared that include:

- Basic information on the disease
- Instructions for identifying those with symptoms
- A description of the prophylaxis and treatment regimens

- Instructions for screening those with possible contraindications to the medications
- Fact sheets on both the disease and medication in multiple languages.

As we discussed earlier, a staff briefing should be conducted at the opening of the POD and at shift changes. This brief should include information on the overall situation, the disease, and the medication being dispensed.

Operations

The efficient operation of a POD requires the coordination of all of the individual steps in the process in a manner that maximizes the flow of patients through the center.

Successes

Sixty mock patients went through the POD and were dispensed medications. Other successes include the following:

- The POD addressed all patients' needs whether they were sick or well (we discuss special populations in the next section)
- Although a few sections were short of staff, operations were adjusted to do the best with the staff and resources available.

Issues

The first backlog of patients occurred in the sick area. At first, patients with any type of symptoms were sent here, which caused crowding in the area. The definition of who should be sent here was then refined to include only those with physical symptoms (such as vomiting or diarrhea). Those with fevers or nausea were sent through the POD to receive oral medications.

There was duplication of effort in screening and dispensing. At both stations, medical history forms were reviewed to look for contraindications and consent forms were reviewed and signed. This duplication of effort slowed down the dispensing process. Additionally, some patients did not want to sign the consent form.

Initially, POD staff had different interpretations of "triage." Many viewed screening as a triage process and called it triage. This confused patients who were told to go to triage after filling out their

medical history forms. Many went back to the initial triage station instead of to screening and consent.

The largest bottleneck occurred at the dispensing station. This was the slowest part of the POD and staff was shifted to this station to move patients through more quickly. Some of the personnel who worked in the station were not familiar with tularemia or the medications that were being dispensed. As a result, some patients were given misinformation. For example, one patient was told that tularemia was a very deadly, contagious disease (it is neither). Further complicating this, the dispensing station did not have a fact sheet about the disease to hand out to patients. Although fact sheets on the drugs were available, those in English appeared to be in limited supply and most patients were given fact sheets in French.

Some players noted that the POD lacked security in certain areas. At one point, dispensing station staff members requested security personnel because none were present. This was an exercise artificiality because law enforcement participation was limited to not interfere with normal daily functions. Thus, some of the security presence was "simulated" for the purposes of the exercise. Nonetheless, security of the POD is important for ensuring the safety of both the patients and the personnel working there.

Recommendations

As discussed earlier, protocols for the most likely bioterrorism agents should be prepared. These should include instructions for identifying which patients should be sent to the sick room as well as instructions for identifying possible contraindications in the screening step.

A number of changes should be considered to streamline the dispensing process:

- Assign more staff to this area. We estimated the number required for certain throughputs in table 4. However, if additional changes (like those discussed below) are made to streamline this step, fewer staff may be required.

- Reduce duplication of effort in screening and dispensing. Although duplication may serve to provide checks and balances, it slows the process and should be avoided in a mass casualty situation. We recommend that screening be used to identify those with possible contraindications to the drug of choice (doxycycline in this scenario) and to determine which drug should be dispensed in its place. At dispensing, patients should be handed the drug (which is marked on their form), given instructions, and provided one last opportunity to ask questions.

- Review the use of consent forms with public health and legal experts to ensure they are used only when they are absolutely necessary. In this scenario, informed consent was required from those who were receiving ciprofloxacin because it is not approved by the FDA for treatment of tularemia. Informed consent is a requirement of Investigational New Drug (IND) protocols that apply when using drugs supplied by the SNS that are not approved for treatment of the disease. Doxycycline (which was dispensed to most patients) is approved for treatment of tularemia, so informed consent probably was not necessary. IND protocols also include other requirements, such as patient tracking and the identification of a principle co-investigator, and Prince George's County Health Department should be prepared to implement these in coordination with the state.

Recommendations made earlier, such as conducting pre-event training and holding a staff in brief would also ensure that staff has consistent and correct information on the disease and the appropriate prophylaxis.

Prince George's County should work with local and state law enforcement agencies to carefully review the security requirements of PODs and other elements of the SNS response plan. In after action comments, the Park Police noted that they have enough personnel to secure two facilities the size of the one used in the exercise or one large facility. If additional PODs were opened, the Park Police would turn to other agencies, such as the Maryland State Police. In a large-scale emergency, however, the demand for law enforcement

personnel is likely to be high and there may be competing requests for these personnel.

Special populations

Planning for meeting the needs of special populations is an important consideration in SNS planning. We interpret the term special population to have a broad meaning, including foreign-language speakers, the disabled, families and children, the elderly, those who are institutionalized or homebound, those who may be agitated, and those with other special needs or circumstances.

Successes

The exercise presented two types of special populations: foreign-language speakers and irate patients. Personnel were able to successfully manage these patients. Other successes include the following:

- There were areas set aside for those with special needs
- A Spanish-speaking staff member was on hand and assisted Spanish-speaking patients
- A conflict resolution area was established and had an experienced staff member who counseled irate patients.

Issues

There was only a single Spanish-speaking staff member who helped Spanish-speakers fill out their forms in the special needs area. The Spanish-speakers were then sent on to screening and consent and then to dispensing, but there were no interpreters available in those areas. There were also no interpreters for other languages and no access to communication aids, such as a telephone translation service. The forms and fact sheets available were not translated into Spanish (although there were fact sheets in French).

There was limited access for disabled persons and had there been people in wheelchairs, they would have had difficulty entering, exiting, and moving throughout the POD. There were no provisions to deal with the elderly (who may not be able to stand in lines for very long) and for families with children.

The conflict resolution had only a single staff member. At one point POD personnel didn't know what to do with an irate patient when the staff member was already busy dealing with another patient.

Recommendations

SNS plans should include written protocols for handling special populations. POD supplies should include forms and fact sheets translated into many different languages. In addition, communications aids should be added. Examples include:

- A map of the world so that staff members can identify what language a person is speaking if it is unfamiliar to them
- Access to a medical translation phone service
- A board with pictures of common symptoms to assist those in triage.

Prince George's County should consider handling some or all-special populations in a separate area. In the case of foreign-language speakers, this would reduce the number of bilingual staff needed. It would also facilitate the use of a phone translation service. It would also separate those that may need more time to get around the POD (such as the disabled or families with children) so that they do not slow down the main dispensing process.

Families might present with some sick members and some well (but potentially exposed) members. Current plans call for separating these groups, which could cause problems if children are separated from their parents or guardians. Prince George's County should determine how to handle this situation should it arise.

Finally, the SNS response plan should identify all special populations relevant to Prince George's County and describe how they will be cared for in an emergency. Some, such as the homebound, may not be able to come to the POD and medications may have to be brought to them.

Appendix A: Participant feedback

The following comments were collected through various forms of player feedback. These methods included feedback forms, emails, and comments collected during the After Action Brief held on September 23, 2005 at the Prince George's County Department of Health.

We reprinted all comments below and organized them into the following groups: staffing, communication and coordination, special needs, triage, sick room, registration, consent/dispensing, exercise implementation, site layout, central services, training, patient education, environmental health, safety and security, logistics, and other.

Staffing

- Staff were very professional
- Staff took time to answer questions
- Staff were kind
- Need more staff to assist those with questions
- Staff were not informed of duties
- Staffing was adequate
- Staff were informative
- Need more people at stations
- Needed staff arrived
- Staff didn't know what to do or where to go
- Nurses were well-training and prepared
- Need for family disaster planning/plan for family of staff members being deployed in an emergency

- Remind staff of their role and need to go where directed should an emergency occur
- Deployment of staff needs more work
- Did not see area where a staff person would go to be cleared before being released
- Staff were flexible
- Not everyone had the same story about Tularemia; some thought it was contagious and deadly
- Need to review those positions and roles where you need a person with the capability to perform the task vs. roles where a person requires a license or certification to perform a task
- Need to re-evaluate the staffing capability
- Need system for employees to take themselves off of the roster in the case of illness
- Learned what my role was in the big picture; learned why I was there
- The conflict resolution person needs an assistant; three people needed to see someone in conflict resolution/mental health; found a nurse to speak to other people.

Communication and coordination

- Quick assessment and remedy of backed-up areas
- Good communication
- Need more information about the emergency available
- Clarify who is in charge in each site
- Management seemed to be able to maintain flow and stay on top of problems
- Need clear indication of persons and roles
- We need to activate more than one team leader in the dispensing site

- Communication needs to be improved in all areas
- More information needs to be given to staff
- Need more direction upon arrival
- No direction upon arrival
- Need better organization and effective communications
- Need to review who should explain disease to the client
- Site needs more than one leader or need to designate leaders for each of the stations
- Sites and staff need very clear labeling and identification
- Communications with deployed staff needs more work
- Flow of information to EOC went well
- Resolution of problems went well
- Communications equipment were not adequate

Special needs

- Need better access for people with special needs
- Need areas for children
- Not enough language interpreters
- Need to set up separate stations based on spoken/comprehensible language to minimize finding an interpreter

Triage

- Need more nurses (ration of 1 nurse to 5 patients) for quick mobility of sick persons
- Assessment of symptoms did not go well
- Evaluation of whether or not clients needed to see the doctor did not go well

- Clarify what is sick and when to send client to third triage or sick room
- Time to go through process in triage was good
- Need more than one greeter/escorter
- Team leader and greeter need to communicate via walkie talkie; this would eliminate the greeter/escorter from leaving the sick person and post
- Greeter needs an ID vest
- Lobby was congested; staff and sick were criss-crossing; need to re-route flow of people

Sick room

- Need more help
- A sick person yelling and screaming was unnerving; she went on for over 15 minutes; why didn't she get assistance sooner?
- MD in the clinical area wanted to treat everyone versus those that are only non-ambulatory; better triage/treatment would help this issue
- Sick area was not used for the right purpose

Registration

- Went well
- Nurses should be better briefed as to how to complete forms
- Once we got going all went well
- Assisting patients went well
- Not enough nurses
- Need to be better organized
- Need to know how to deal better with people
- Need to find your station fast

- Need more Doctors
- Need better setup time
- Too many people did not know where to go

Consent/dispensing

- Staff were not trained on the expected side effects of the medication given and what meds can or cannot be give for certain symptoms
- Need to know what the emergency is before clients are seen
- Need more nurses; line too long
- Not all the nurses knew about the medications when asked, but knew where to direct clients to get factual information
- One-on-one counseling went well
- Receiving medications went well
- Maintain eye contact to hold focus and attention
- Know the disease and medications
- Too much information is not so good
- Nurse chart review and dispensing nurse is redundant
- The nurses can review the documents and dispense at the same time; this would decrease wasted professionals
- Need electronic blood pressure equipment at each table
- Separate MD from dispensing area; two different rooms
- The consent form was incorrect
- Walkie-talkies and back-up batteries
- Second-level screening and dispensing staff duplicated their functions in many cases; this could be combined

Exercise implementation

- Add more realism to scenario (panicked, confused people)
- Exercise was long
- Volunteer actors not given good instructions
- Needed more volunteer patients
- Not well organized
- Volunteers waited a long time without any explanations
- Have more people at each station to handle the volunteers at a faster pace
- Waited an hour before exercise started with no place to sit
- Person at front desk didn't know who needed to sign in or where to direct them
- Should have given out role-player information sheets to volunteers so they can be aware of the purpose before exercise began
- Improve realism: use mock adversary force

Site layout

- Time to go through dispensing site was long and confusing
- Process was too chaotic
- Dispensing center was not well marked; needed more staff to help patients through the system (non-clinical staff)
- Needs to be clearly marked signs
- Division of space was good
- Directional flow of people was not good; too much overlapping
- Site needs to be prepared beforehand
- The stations should flow next to each other instead of being separated

- Main area used for both exit and entrance
- Who designates the entrance point at the facility?
- No pre-assigned delivery entrance at the facility
- No one knew where the bathrooms were located
- Need more signs and traffic control personnel

Central Services

- Ensure someone from Health Department is there to serve as Dispensing Chief and give direction on repacking/labeling of SNS for delivery to the POD
- Make sure we get notification/communication from law-enforcement when they arrive to escort the delivery
- Give proper notification/communication to everyone located at Central Services concerning what is taking place so no one is alarmed or startled
- Who is responsible for notification of police escort upon arrival
- Emergency management request for SNS went well
- Prompt assistance from fleet in dispatching a tow truck
- But tow truck was not large enough
- Escort from Prince George's County Special Ops Police Officers went well
- Do vulnerability assessment of SNS sabotage or theft while en route
- Need to test back-up storage facility capabilities

Training

- Need more drills to be really ready in an emergency
- Need 2-3 drills per week

- More training sessions needed to improve goal
- Need to train nurses to keep the system flowing and not get stuck with one patient for more than a certain amount of time- emergency situation, can not get wrapped up with one patient while a large line of patients is waiting to be processed

Patient education

- Clients need information sheet with disease symptoms and any medications that are indicated
- Handouts on the disease for which the POD was set up should be passed out like the medication handout

Environmental health

- Despite cell phone problems at the distribution site, communications worked well due to initiative of sanitarians infield and preplanning.
- Quick response time and assessment of Site Assessment Team
- Pre-assessment of go bags allowed for quick response time
- Preplanning and prior guidance allowed for smooth operation
- Having cell phone number of facility manager worked well
- Cell phones did not work inside facility. Employees who do not normally use Nextel phones did not remember instructions on use and had to receive on-the-spot training. Cell phones were not received until morning of exercise and had to be programmed to use direct connect feature, which took time. Cell phones are being taken home by sanitarians that are liable for them and are not available for emergency needs.
- Doing every day work and the exercise at the same time is difficult
- Serving potentially contaminated (out of temperature) food at the site dispensing site

- The dispensing site was being set up prior to finalizing inspection. Health and Safety inspector did not show up until 9:00am. This resulted in confusion and lack of coordination
- Park and Planning Facility Manager was not polite but was not informed of the exercise or his purpose at the site. Had no information about the availability of generators.
- Multi-tasking of clerical staff- clerical staff assigned jobs within the Branch were being tasked by the Labor Branch utilizing their database
- The lack of floor plans of the facility and not knowing which rooms were to be used for specific purposes extended the time of the assessment

Safety and security

- Good that security was here before Donna arrived
- Most security were at hand
- Did not activate the safety officer in time
- The park police could cover, at most, two dispensing sites of the same size during an emergency or one larger site such as the Showplace Arena

Logistics

- Food preparation and delivery went well
- Not prepared to deal with vomit: need hand sanitizer, gloves, mask, bio-hazard bag
- What groups are responsible for assisting with the setup of the POD
- There is no one designated to pass food out
- Food was out of it's approved temperature range when served and one person reported being ill the following weekend

- Ability to serve food and maintain that food through refrigeration should be taken into account when selecting POD sites.
- Additional Public Works and Transportation staff would be needed for the POD supplies transport in situations with more than one POD.
- Dispensing leader required additional assistance with setup and believed OCS was to provide this support

Other

- Quick service
- Late start and seemed a little confusing
- Busing patients went well
- No public involvement
- No doctors
- Overall everything went well and participation was good
- Organization is important
- All of the patients were seen
- Volunteer actors were helpful
- Multiple dispensing sites will exceed the resources of the Health Department and General Services Division
- Need to focus on providing 1-2 sites that could handle thousands of clients per day

Appendix B: Hotwash comments/issues

The following comments and issues were collected during the hotwash that was conducted directly after the exercise. The issues have been divided into groups reflecting where the issue was seen in the steps of POD dispensing process.

The groups are as follows: central services, security, greeters and runners, conflict resolution, triage, registration, sick room, screening/consent, dispensing, and other.

Central Services

- Everything went very well
- Had police, SWAT, sniper teams there for security
- Fire and EMT were also present for the transport of supplies
- Truck arrived at the POD in approximately six minutes in spite of flat tire

Security

- Park police were a little out of the loop at first, but they eventually got park police on horseback to patrol/secure the perimeter
- Too much congestion in the front, security was not spread out at the beginning
- Security was also sent to the emergency operations center (EOC)
- All security issues should have gone through the lead, this did not happen: public health security was pulled out then put back in without going through the security lead

- There was debate regarding who should be in charge of requesting additional security and reducing security presence
- Too many people were on the phones and involved in the security issue- too many requests going out from too many different people for security
- Command and control were not well informed about security matters, when officers left, etc.
- Need identification on who each person is
- Security was burdened by having to deal with irate patients and conflict resolution
- Need to work out the incident command system and peoples' place within it

Greeters and runners

- There was only one runner/greeter, which was not enough
- Need at least three runners/greeters. In a real event would have had 25/50 people to be leading to stations
- Greeter had too many responsibilities for one person to handle
- Having to escort sick persons to the sick room took her way from the entrance area leaving no one there to fill in and address patients' questions
- Walkie-talkies would have been useful for the team leaders, runners, etc.; the runner would then not have to leave her post

Conflict resolution

- Someone commented that there were not enough interpreters; it took irate foreign language-speaking person 25 minutes and involved two guards pursuing conflict resolution
- If conflict resolution would benefit from having an assistant or a back up in the future

- Conflict resolution personnel didn't know the symptoms of the illness
- Did not know what to do with persons who became ill during conflict resolution
- Could not identify the illness, and did not have good situational awareness
- Documents and forms were not properly filled out

Triage

- Triage; need person to stay in triage to direct people where to go- should not be acting as runner if you are triage team leader
- Not a good flow in and out of triage room. Entrance and exit were the same.
- Need setup of clipboards and paper- just had one list of questions
- Triage personnel had very little information about the incident and the questionnaires were too general
- Two people would not be enough to staff triage- pulled staff from dispensing in beginning and let them back into dispensing at end
- Location of the triage area should be reviewed, e.g., front desk vs. triage room; if the disease had been contagious, should perform triage outdoors?

Registration

- It took a while to get things together/understand role; originally believed they were triage
- Once their role became clear it was easier to manage the station
- Needed to know what they were treating, not familiar with many of the terms

- At times there were only two nurses at the screening station so registration did not know what to do with patients who were waiting
- There were instances with five to six people waiting but only two nurses; registration did not know if they could send more than one person to sit at a table with a nurse in screening due to confidentiality issues
- Confidentiality is an issue
- Confidentiality does not come into play in disaster
- Standardize process and make it so if you fill out the wrong form you will not have to wait to fill a new form

Sick area

- Overwhelmed initially, long line, crowded room, and significant crowd waiting to enter/backlog
- Too broad a definition of "sick" in the beginning
- Sick room should be holding for those going to hospital
- Not knowing the rest of the system the sick room personnel could not answer questions
- What constitutes sick? People went through dispensing with nausea, fever, achy, etc.
- Site leader stated that the definition of sick was changed midway to be active diarrhea and/or vomiting
- Diarrhea or vomiting was considered sick
- Nausea and fever were sent through system and changes would have to be made in the middle if the patients condition worsened

Screening/consent

- Redundancy with dispensing, had to review the form twice
- Not enough information to do the job- had to make decisions

- Reviewing of forms at two different stations is checks and balances
- People need to realize there should be a time limit on how much time to spend with each person
- Consent form said that people would receive information on Tularemia, but people did not receive this
- People did not want to sign the consent form until they heard more information and could ask all questions when they got to dispensing
- Screening should at least do blood pressure and other tests to get better real time information
- Discussion of consistency; everyone doing things the same way; needed fact sheets for tularemia and for prophylaxis.
- Needed correct forms separated by area
- Needed more personnel to talk to patients about consent forms
- Need agent and medical information sheets

Dispensing

- Dispensing; need to get help to pack the supplies to get to all the sites
- Went well in the beginning
- Need security there; did not have anyone to handle patients that became hostile or irate
- Staff was overwhelmed later; also, nurses were pulled out so less people to help.
- When nurses had to leave this area for one reason or another, they were left short-handed; there was no backup staff ready to fill-in
- Dispensing nurse; difficult to keep track and change how many persons were at each step; think of making it station one, two, three to help persons figure it out

Other

- Site manager needs help; too much responsibility on one person without staff; would be easier if there were staff
- Need help for site manager; one aide for staff and one for logistics
- File cabinet never used; was there for data entry
- Map of the site should be easier to figure out.
- Supplies should arrive before people
- Need more foreign language interpreters

List of tables