A District-Wide Community-Based Bioterrorism Response

Prepared by

Linda M. Foley, MS
Epidemiologist
Green River District Health Department
1501 Breckenridge Street
Owensboro, KY 42302
Phone: (270) 686-7747; Fax: (270) 926-9862
E-mail: linda.foley@mail.state.ky.us

Judy G. Gilmore, BSN
Director of Nursing
Green River District Health Department
1501 Breckenridge Street
Owensboro, KY 42302
Phone: (270) 686-7747; Fax: (270) 926-9862
E-mail: judyg.gilmore@mail.state.ky.us

Mark E. Sears, BS
Director of Environmental Services
Green River District Health Department
1501 Breckenridge Street
Owensboro, KY 42302
Phone: (270) 686-7747; Fax: (270) 926-9862
E-mail: marke.sears@mail.state.ky.us

Daniel T. Troutman, MPA
Senior Health Environmentalist
Boyle County Health Department
448 South Third Street
Danville, KY 40422
Phone: (859) 236-2053; Fax: (859) 236-2863
Email: daniel.troutman@mail.state.ky.us

Mentors:
W. Paul McKinney, MD & Timothy W. Stump, MPA

Executive Summary

It is necessary for health departments to have a system in place to detect and respond to acts of bioterrorism. Generally, by developing a comprehensive plan that is effective yet practical, an accurate and timely response will save lives, curtail epidemics and conserve resources. Specifically, our project goals included: implementing a community-based response plan that recognizes possible causative agents of bioterrorism; eliciting participation from the appropriate agencies; increasing disease surveillance; and educating health department employees, responders from other agencies and the public. It was assumed that an act of bioterrorism is possible in the United States and that health departments would take the lead role in responding to such acts. It was also assumed that an act of bioterrorism would have serious ramifications that may affect the entire population of a community. Additionally, health departments and communities alike are not prepared to deal with the consequences.

Key stakeholders included: the Federal Bureau of Investigation (FBI); the director of the health department; the medical community including hospitals, doctors, nurses, veterinarians, pharmacists, and other health care providers; public safety, including ambulance, fire, and police; government officials; the media; and public works - utilities such as power and water.

As a result of establishing and strengthening community partnerships, educating responders and the public, and increasing our surveillance for diseases that could be possible indicators for bioterrorism we are protecting our communities at the highest level possible.

A District-Wide Community-Based Bioterrorism Response

Like one, that on a lonesome road
Doth walk in fear and dread,
And having once turned round, walks on,
And turns no more his head;
Because he knows a frightful fiend
Doth close behind him tread…
-Samuel Taylor Coleridge,
The Rime of the Ancient Mariner

Introduction/Background

Is it smallpox? Maybe a mass anthrax infection, or could it be some currently unknown super germ genetically engineered in a basement laboratory? Truly, it is nearly impossible to answer the questions - who, what, when and where, but one thing is certain - a "frightful fiend" is out there waiting and we must be prepared.

The focus of this document is bioterrorism preparedness at the community level, including a community-based response definition and how various partnerships can work together to reach the preparedness goal. In addition, a brief historical background will be provided to add validity by showing past incidences of bioterrorism or "germ warfare". Moreover, the overall intent of this document is to provide a generic model that could be tailored and/or expanded to fit specific situations.

Early Historical Trends of Biological Incidents

Epidemiologists and academics have theorized that the first biological outbreaks may have occurred as far back as biblical times. Some suggest that the ten plagues of Egypt were actually a result of what we today call "bioterrorism". Aside from the theology of the bible, it is clear that the idea of eliminating one's enemies through the use of some type of biological agent can be found throughout history[1].

Perhaps the first know incident of bioterrorism can be traced back to sixth century B.C. when the Assyrians poisoned enemy wells with rye ergot, a fungus (*Claviceps purpurea*) that is often associated with gangrene, psychotic delusions, nervous spasms, abortion, and convulsions when ingested[2].

The Roman army has been linked to bioterrorism by placing dead animals in enemy wells. This tactic had a dual intent, not only to foul the water, but also to lower morale. The idea being that a weakened enemy is easily defeated.

In 1346, the Tartar army, during a siege of Kaffa (present day Feososia in Crimea) began catapulting corpses infected with bubonic plague over the city walls, causing an epidemic

that eventually forced their surrender. Historians believe that this act led to the Black Death that swept across Europe killing 25 million people.

The first suspected bio-warfare event came to what is now the United States in 1754, during the French and Indian wars. Native Americans greatly outnumbered the British and were suspected of being French supporters. As an "act of good will" the British gave blankets to the Indians. However, these blankets came from a hospital that treated smallpox victims and were laden with the virus. As a result, smallpox raged through the Native American population and devastated their numbers.

Modern History of Bioterrorism

The Japanese began the modern era of Biological Warfare in 1918 with the creation of Unit 731, a special section of the military dedicated to biologic weapons. In 1931, Japan expanded its territory by invading part of Manchuria where they used prisoners of war as test subjects for biologic weapons. Then, in 1941 and 1942, Japan attempted separate biological attacks on China by spraying bubonic bacilli from airplanes and dropping bacterial bombs. When the United States found out what the Japanese were doing, a similar program was started in America at Ft. Detrick.

Most of the United States program was based on defense. However, two separate test studies were conducted by the military to study the potential effects of a bioterrorism attack on U.S. soil. First, in San Francisco a test was conducted where *Serratia marcescens* was sprayed across the coastal area inward. The results showed that nearly every single person became infected with the test organism.

In 1966, a separate study was conducted in New York City to determine how vulnerable the underground subway was to attack. For this study, *Bacillus subtilis* was released at one station. It was later determined that due to the strong winds created by the movement of the trains, it was possible to infect the entire underground system by releasing an agent at one point[3].

A Case Study: Latest Trends in Bioterrorism on U.S. Soil

Prior to the terrorist attacks of September 11th most people thought that such a biological attack was just an abstract idea. Now it is all too clearly a reality. With anthrax letters and packages showing up in offices in Florida and New York the entire nation got a first hand look into the face of bioterrorism. Although the number of anthrax cases was relatively low, many resources were used responding to anthrax scares. These hoaxes left many people frightened and concerned.

Many people do not realize that one other biological attack has been conducted in the United States, which affected a greater number of people. In 1984, a community in Wasco County, Oregon, became the victim of bioterrorism. This case centered on a religious cult (the Rashneeshee) who had established a large commune in the rural county east of Portland.

Differences between the cult and the county residents had been escalating and the cult members wanted to have control over the county government. Therefore, they devised an elaborate plan to influence the November election by bringing homeless people to the commune and registering them as voters. The second phase of the plan was to prevent county residents from voting.

The cult had a state-certified medical laboratory through which they could order infectious agents for research. However, instead of research they decided to purchase an agent that would most likely not be lethal, but would make residents too ill to vote. The cult ordered a culture of *Salmonella typhimurium* (a diarrheal disease) that could be used for this task.

In August, the group began testing methods of infection by first using water laced with the agent, but this method was largely ineffective, with only two county commissioners becoming ill (one of which required hospitalization).

However, in September the results to the second test were much different. The Cult decided since contaminated water didn't work, they would try the food supply. The target was ten local eateries where the disease was spread by pouring vials of media that contained the organism over salad bar foods. The result was an estimated 751 cases of Salmonella gastroenteritis that were associated with eating or working at area restaurants.

Later epidemiological studies implicated eating from salad bars as the major risk factor for infection. The food items implicated differed from restaurant to restaurant with no common source. The study found that in some instances, infected employees, inadequate refrigeration and inadequate food rotation may have facilitated growth, but could not have caused the outbreak[4].

Although the cult had success with the September attack, they were unable to proceed due to publicity and legal pressure. Two of the cult members were eventually convicted for their participation in the plot.

Project Overview

Bioterrorism has been used for centuries as a means of destruction. Due to its recent emergence it is necessary for health departments to have a system in place to detect and respond to acts of bioterrorism. The idea that the United States would be a target for bioterrorist attacks had been one that only a few had believed possible. In fact most Americans felt safe and secure from any form of mass attack by either foreign or domestic enemies. All that changed on September 11, 2001. Many have said that life as we knew it was changed with the terrorist attacks on our citizens on that day. And as a result, we must now face the realization that we are indeed vulnerable to such hostile attacks. So how do we prepare ourselves as individual citizens and as members of our respective communities to respond to such events? The intent of this project is to demonstrate the importance of implementing a system that has the capacity to recognize and respond to acts of terrorism that utilize biological weapons.

This project utilized several of the 10 Essential Services of Public Health. Included in the text of the discussion are examples of how community partnerships were mobilized to help identify concerns about the risk of bioterrorism to our community (#4), the development and implementation of local policies and plans to assist in our community's response (#5), our community – based response included the education of our citizens regarding the risks of bioterrorism (#3), and assuring that the community had a competent public health workforce that was ready to respond to a bioterrorist attack (#8).

When the project was first proposed none of us had any idea that our project would become a reality. Our initial planning included forming relationships within the community that included public safety workers, emergency providers, the media, local government, and other members of the medical community. In addition, we made some basic assumptions that included:

- An act of bioterrorism can occur
- The health department has the lead role in an event of bioterrorism
- Health departments are not prepared
- Communities are not prepared
- An act of bioterrorism may have serious ramifications that may affect the entire population of a community

Each of these assumptions were tested during these past few months and proven to be accurate. The following text of this document will illustrate how each of these assumptions were challenged and how the "community" came together to develop a practical, comprehensive response to the threat of bioterrorism.

The Gilmore Commission

"WMD preparedness is a huge challenge. Capacity of local health jurisdiction to respond in a rapid, effective fashion will take a major investment in staffing, training and communication systems. This capacity can also be used to respond to non-WMD communicable diseases and environmental toxic effects."
-Comments from a local Public Health Official

The quote above is excerpted from the *Third Annual Report to the President and the Congress of the Advisory Panel to Assess Domestic Response Capabilities for Terrorism Involving Weapons of Mass Destruction, 15 December 2001*. The report is an important document in the field of Public Health. The advisory panel, otherwise known as the "Gilmore Commission", was established three years ago to make recommendations to the President and to Congress as to how our country can best protect itself against acts of terrorism.

While the first and second-year reports of the Gilmore Commission dealt with development of a national strategy for combating terrorism (including development of an Executive-level office for coordination which has been named the Office for Homeland Security), this third-year report yields specific recommendations dealing with five specific areas: *State and Local Response; Health and Medical Capabilities; Immigration and Border Control; Security Against Cyber Attack; and Roles and Missions on the Use*

of the Military. On January 31, 2002 Health and Human Services Secretary Tommy Thompson announced that $1.1 billion would be sent directly to the states to strengthen their capacity to respond to bioterrorism and other public health emergencies. The Commonwealth of Kentucky will receive $15.8 million of those funds. Many of the recommendations made in the Gilmore Commission Report were already in the planning stages in Kentucky, and now can be implemented. Recommendations from the *Empowering State and Local Response* section include:

- Federal agencies should design related training/equipment programs as part of all-hazards preparedness including components to sustain the training process.
- Congress should increase the level of funding to State and Local governments for combating terrorism.
- Federal grant programs for terrorism preparedness in the Office of Homeland Security should be consolidated and funding and grant programs should be coordinated through the states.

Recommendations from the *Improving Health and Medical Capabilities* section include:

- Federal, State and local entities, as well as affected private-sector organizations, should fully implement the AMA "Report and Recommendations on Medical Preparedness for Terrorism and Other Disasters".
- Medical systems should fully implement the JCAHO Revised Emergency Management Standard.
- Congress should provide sufficient resources to the U.S. Department for Health and Human Services for full implementation of the "Biological and Chemical Terrorism: Strategic Plan for Preparedness and Response" and the "Laboratory Response Network for Bioterrorism" of the CDC.
- Congress should provide sufficient resources for full implementation of the CDC Secure and Rapid Communication Networks.
- Congress should increase Federal resources for exercises informed by and targeted at State and Local health and medical entities.
- The Office of Homeland Security should develop an information and education program on the legal and procedural problems involved in a health and medical response to terrorism.
- The office of Homeland Security should develop ongoing programs as part of the national strategy for public education prior to terrorist events and for coordinating public pronouncements during and following an attack.

It is important to remember the lessons of these tragedies. As George Santayana said, "Those who cannot remember the past are condemned to repeat it." With the horror of the September 11th airplane attacks and the subsequent anthrax incidents, the United States is certainly in uncharted territory. Although bioterrorism is not new, the world itself is very different. With each passing generation the population of the world continues to grow. Even with current medical technology, antibiotics and emergency response, the release of any deadly biological agent could be far more devastating to human life than any before. It is only through education and experience from the hard lessons that history provides that we as a community, a state, and a nation can become prepared.

Project Description/Methods

The impetus for this project began when it we realized that although the threat of bioterrorism was minimal, we were completely unprepared. Bioterrorism was a topic presented at many conferences but the relative importance of this topic was ignored. Despite this common misconception this topic was chosen because of a growing body of evidence that stated that it was not an issue of "*if* " an attack would occur but rather "*when*" an attack will occur. It is difficult to prepare for an attack but not impossible.

Outlined in Table 1, is a brief description of the goals, objectives, activities, and resources for a community-based response to an act of bioterrorism. The community is emphasized in this project for many reasons. The health department cannot solely be responsible for the response to an event of this magnitude. The scope and nature of such an event includes the participation and cooperation of law enforcement, fire, ambulance, pharmacy, hospital, military, local government and city works employees and volunteers. It is only through cooperation and understanding that communities will be able to effectively protect themselves.

Core Competencies for Public Health Workers

The Center for Health Policy, Columbia University School of Nursing has developed *Core Emergency Preparedness Competencies for All Public Health Workers*, an informational brochure that should be utilized by local Health Departments in their disaster planning. These core competencies are based upon the essential services of public health and are applicable to every public health employee. According to this document, in order to meet performance standards in emergency preparedness, the Public Health Leader/Administrator must be competent to:

1. DESCRIBE the public health role in emergency response in a range of emergencies that may arise.
2. DESCRIBE the chain of command in emergency response.
3. IDENTIFY and LOCATE the agency emergency response plan (or the pertinent portion of the plan).
4. DESCRIBE his/her functional role(s) in emergency response and demonstrate his/her role(s) in regular drills.
5. DEMONSTRATE correct use of all communication equipment used for emergency communication.
6. DESCRIBE communication role(s) in emergency response:
    - Within the agency
    - Media
    - General public
    - Personal (family, neighbors)
7. IDENTIFY limits to own knowledge/skills/authority and IDENTIFY key system resources for referring matters that exceed these limits.

8. APPLY creative problem solving and flexible thinking to unusual challenges within his/her functional responsibilities and EVALUATE effectiveness of all actions taken.
9. RECOGNIZE deviations from the norm that might indicate an emergency and DESCRIBE appropriate action
10. EVALUATE every emergency response drill/emergency response to identify needed internal/external improvements.
11. ASSURE that knowledge/skill gaps identified through emergency response planning, drills and evaluation are filled.

Essential Public Health Services

Every community should evaluate its capability of responding to an adverse event, whether as a result of a natural or man-made disaster. Often, community planning has not included the role of Public Health. The perception was that public health did not have much of a role other than dealing with contaminated food supplies or disease outbreak situations. It was not until the city of Owensboro experienced a tornado in 2000 that we began to realize that we needed to work more closely with the other community agencies. The problem was that even though we were aware of our potential contributions very few in the community realized the need to have us present. It was at that point that we began looking at ways to educate the community about the many roles of public health, which included our role in the event of a community-wide disaster.

We found that after several successful community ventures that we were in a better position to navigate among community leaders. We had gained some respect in areas such as school health, diabetes and tobacco. We now felt that we could begin to become involved in areas such as disaster preparedness. This had previously been an area that was exclusively under the direction of the Emergency Management System, the local hospital and primary responders. The ten Essential Services of Public Health gave us a framework for marketing ourselves to the local authorities.

When we began to think about how to assist in the development of a community-wide bioterrorism plan, we quickly realized that it was going to be a major undertaking. It would require utilization of most of the ten Essential Public Health Services in some way. There are four services, however, that most accurately reflect the development of the Green River District community-wide bioterrorism response plan. They are as follows:

- Inform, educate, and empower people about health issues (#3)
- Mobilize community partnerships to identify and solve public health problems (#4)
- Develop policies and plans that support individual and community health efforts (#5)
- Assure a competent public health and personal health care workforce (#8)

One of the primary responsibilities to our community was to inform our citizens about the remote but possible threat of a bioterrorist attack. We had believed that this would be a hard sell but it was discovered that in the wake of the anthrax contaminated mail that

followed the attacks on the World Trade Centers and the Pentagon it was highly sought information. The educational process began immediately. We addressed real and perceived risks to the public and in the process allayed fears and prevented hysteria. Our plan to systematically accomplish our project goals was put aside and everyone went into high gear. Providing the education and information laid the groundwork for empowering our citizens to be able to make decisions that could determine how they would respond to situations that could activate an emergency response to a real anthrax or other biological event in the community.

The mobilization of community partners also began sooner than we had anticipated. We discovered that none of the usual responders to emergency situations wanted to claim any authority in responding to a bioterrorist attack. The Green River District Health Department became very visible in our communities' response planning. In fact, our presence was requested immediately. This was an excellent opportunity for members of the community to come together and learn about available resources and learn areas of expertise.

As the meetings progressed and as our community began implementing response protocol, it gave us an opportunity to actually develop policies and plans in an effort to address the immediate crisis as well as provide strategies for addressing any similar future occurrences. These plans were tested and revised over the course of several weeks.

A great deal of work took place in a very short amount of time as a result of the anthrax scares in the community. The educational process was not only targeted towards the public but also included educating our public health workforce. We found that we had to quickly become the authorities on how to handle an anthrax contamination. Many hours were spent in becoming personally competent as well as educating the rest of our staff so that they too would be able to address this type of emergency. As a result, the Green River District Health Department now has a competent team of responders that have earned credibility in the community as a result of the collaborative work that was done with our community partners.

The primary reason for planning and conducting a project of this type is to ensure that a community has identified resources and is ready to respond to an act of bioterrorism. No one hopes to actually have the opportunity to implement a disaster plan but it is certainly much easier for a community to meet the needs of their citizens when there is a well-thought out, well-rehearsed plan in place. It is also known that even with planning, situations arise that have not been anticipated. Although there are never any perfect plans, a successful outcome to a disaster is much greater when community members come together and function with one outcome in mind.

Results

Following the September terrorist attacks, there was an increasing number of letters and packages that were contaminated with the biological agent, anthrax. Most of these were

sent through the postal system. United States citizens were becoming more alarmed and began questioning their personal safety. The citizens of the Green River District were no different. Every day new reports circulated throughout the media that seemed to add to the fear that was already present.

The Green River District Health Department became involved in our community's response to anthrax in mid-October. On October 12, 2001, medical providers in Owensboro received two suspicious letters. One letter was opened and one remained unopened. A call was placed to 911 to activate a response. Police and HazMat team members cordoned off the medical office building, which also meant that a portion of the local hospital was inaccessible. Neither Public Health nor Emergency Management was officially contacted. We both became aware of the situation by accident while attending a tabletop disaster exercise. Determining that this was a situation that we should know about, we went to the scene. It was at that point that the community began to view public health as a necessary entity. We suddenly became the experts in the area of bioterrorism. We tracked our responses to situations like this one on an Incident Log (see Appendix A).

October 12, 2001 was the beginning of the actual implementation of our project. Prior to this date we had formulated a plan that included the goals and objectives for the project, our key stakeholders, some basic assumptions, and our expected outcomes. We had even projected a tentative time line. After a review of these initial plans, it was determined that the only thing that really changed was the projected time line. Our community-based response to bioterrorism was a project that was very much needed but the timing was sooner than anticipated.

The approach that was taken by the Green River District Health Department is not the same approach that was assumed by other health departments across the Commonwealth. We believed that it was the responsibility of Public Health to not only assist in community education but to also have some public visibility. We accomplished both of these ideas by providing training on biological agents for our local fire fighters, our public utilities, EMS, hospital personnel, our health department staff, and our District Board of Health. In addition we participated in three televised town hall forums across the community, spoke at the Optimist Club meeting, contributed to newspaper articles, and participated in a radio talk show program.

In addition to our role of educating the public, Public Health needed to be actively involved in formulating an actual response plan to an incident involving biological agents. Once again, this began on October 12, 2001. Following the actual incident, community members sat down to a critique of the event. It was discovered that there were many problems in the way the situation was handled. This gave us an opportunity to begin the first of several draft protocols for handling a possible biological contamination threat. A copy of the final protocol is found in Appendix B.

The protocol was written with input from public health, local emergency management, city and county fire department, local and state police department, the hospital laboratory, FBI, and local government. In addition to the actual participants sitting around the table,

the Kentucky Department of Public Health offered expertise in the areas of epidemiology, the state laboratory and through their bioterrorism coordinator.

Some of the usual barriers found among community agencies were present in this situation as well. Originally, samples were submitted for laboratory analysis to the local hospital laboratory but later that procedure was discontinued. Instead, specimens were transported to the state laboratory for testing by law enforcement. Theoretically this was the plan but the actual implementation was not easily accomplished. No one wanted to assume actual responsibility for this task. The transportation issue was the greatest obstacle in the Green River District.

In the initial phase of the community response, public health department employees were placed on a rotating call schedule. We responded to all calls that required a specimen collection. In several of the cases, health department employees actually collected the specimen and transported it to the District Office for storage until it was transported. As the community responders became more comfortable with the protocol, we relied upon the HazMat team of the fire department to collect specimens and deliver to the Health Department. Much time was involved in making the protocol a usable tool. There were several opportunities to actually evaluate and revise our plan. Now, should an act of bioterrorism occur, the Green River District will be much more prepared to respond as a community.

Goal I - Establish & Strengthen Partnerships

- Increase and strengthen communications with healthcare providers to insure accurate and rapid notification of reportable diseases
- Prepare the response for a possible BT attack
- Get to know officials involved with a BT response

To establish and strengthen relationships with key groups in the community, a newsletter was sent to district healthcare providers. The hope was to keep information flowing between the health department and community healthcare providers and to insure accurate and rapid notification of reportable diseases. The newsletter was sent to doctors, infection control practitioners, veterinarians, health department employees, and pharmacists.

To establish new relationships with community officials that would have a role in a bioterrorism response, we attended public forums, community meetings and conferences. Meeting these individuals and seeing them at different gatherings provided us the opportunity to better work with each other since we were previously acquainted and already familiar with our respective job responsibilities.
While it is important to establish new relationships and strengthen existing partnerships, it is imperative to have a bioterrorism plan in place when the need arises. It is detrimental to implement partnerships and then fail to deliver a quality response, so the third objective is to continually update the bioterrorism response plan in an effort to be as prepared as possible. Practicing the response is as important as writing it. Table-top

exercises provide a wonderful opportunity for community leaders to get to know each other and practice the response as realistically as possible.

Increasing communication goes along with establishing and strengthening community partnerships. The Health Alert Network (HAN) is a nationwide, integrated information and communication system serving as a platform for national disease surveillance, epidemiologic investigation, training, electronic laboratory reporting and rapid communication[5]. The implementation of the HAN is in the beginning stages but will be a beneficial network once it is fully established.

Goal II - Educate Those Involved in a BT Response

- Educate health department staff
- Inform and educate those that must respond
- Provide educational materials

The assessment of the credibility of the threats and the extent of the exposure are two of the first things that must be established. The education of those involved in a bioterrorism response must include these two points.

Firstly, the health department staff must be educated. This is not only so we, ourselves, know with what we are dealing, but also so that we may educate the responders from other agencies. The education of health department employees consisted of attending conferences, lectures, and trainings on bioterrorism (see Appendix C for the Education Log). We also gave presentations and based on what we had learned and showed videos to the other health department employees that did not attend the conferences.

Secondly, we educated individuals that must respond to these situations. Responders from other agencies requested that we give presentations on anthrax and other agents of bioterrorism. We gave numerous presentations to the fire department since they responded to the majority of the calls. Additionally, other groups, including the water company, were also given presentations. With each presentation informational fact sheets were distributed.

Education of city officials also was important. Examples of the types of authority that may be required during a bioterrorist public health emergency event include the ability to:

- Request out-of-state medical personnel to provide medical care
- Receive pharmaceutical or vaccine stockpiles, including the National Pharmaceutical Stockpile
- Quarantine individuals
- Evacuate an area
- Commandeer or seize private, commercial or other facilities for public health purposes
- Embargo products
- Handle contaminated remains and dispose of contaminated products

It is important to remember to educate these individuals because public health is not thought of as a key player until an incident of this nature occurs. Officials in different organizations may not be aware of public health's role unless we remind them.

Goal III - Educate the Public

- Get public informed to reduce panic
- Provide resources for the public

Educating the public helps to assuage fear and control panic behavior. We educated the public by passing out information on anthrax and other diseases that may be possible indicators of bioterrorism. We also co-hosted a public forum with our county Emergency Management Agency and the Red Cross and participated in two other forums. One of the items that we emphasized in the forums was the level of preparedness we had at each level of government: national, state, and local. At the national level we discussed the National Pharmaceutical Stockpile. The National Pharmaceutical Stockpile (NPS) is an important asset to incorporate in local emergency response planning. The aim of the Stockpile program is to ensure the availability and rapid deployment of life-saving pharmaceuticals and medical material after local and state supplies have been depleted[6]. We also gave multiple television, radio and newspaper interviews. On our website, www.healthdepartment.org, we had updated disease fact sheets, available for the public to read and download.

Goal IV - Strengthen & Increase Surveillance

- Receive early indication of a possible BT attack
- Increase size of Epi Rapid Response Team

The earlier we receive an indication that a bioterrorism event is about to or already taking place, the more improved our response can be. In addition to increasing communication with healthcare providers, new members were added to the Epi Rapid Response Team. Epi Rapid Responders are trained to deal with outbreaks of communicable diseases whether they be food-borne, vector-borne, or person-to-person transmissible. Members of our Epi Rapid Response Team responded to the possible threats of anthrax. With the increased workload the threats brought, we found that we could have used more people. Sometimes we responded to two or three incidents simultaneously. We added four more employees to the team, including some from outlying counties so there would be better coverage throughout the district.

Conclusions

The goals and objectives for this project are the beginning of a comprehensive community bioterrorism response. Many additional features should be added. Listed below are a few recommendations that came out of our experience. It is not an exhaustive list. It is only meant to suggest future activities that may be beneficial. Each community should personalize their response to meet the needs of their citizens.

Recommendations:

- The implementation of a 911 call monitoring system would increase the likelihood that we could detect an early indication of a possible bioterrorism attack. We recommend that this monitoring system be put into place in every community that has a 911 system. When a call to 911 is answered, the dispatcher enters pertinent information into the computer. There are codes for specific symptoms based on age and gender. Every 24 hours, the dispatch center e-mails a file containing symptoms selected by their ability to indicate a disease process, to the health department. The epidemiologist then puts this information into a program that will flag symptoms that occur above their expected rates. Matching this information with hospital ER admission data could them signal a rise in diseases that are possible indicators of bioterrorism. This has been implemented in several cities. We observed the system that is currently used in Nashville, Tennessee.
- Conduct regularly scheduled table top exercises.
- Conduct a survey of the local responders to measure the level of knowledge they possess regarding bioterrorism and how adequately they feel prepared. The results of the survey will indicate how the level of education can be improved.
- Prepare Single Overriding Communication Objectives (SOCO) in advance. SOCO's allow for unequivocal communication of important information.
- Work closely with community stakeholders.
- Increase communication.
- Write clear concise guidelines for all health departments regardless of size.

Lessons Learned:

- Need to establish and strengthen community partnerships.
- It is challenging to get equal representation and participation from all the community agencies.
- More educational efforts are needed. There are many different ways to get the messages out – mail, radio, television, and presentations.
- The degree of preparation needed in the community and in our organization is substantial.

Leadership Development Opportunities

Linda Foley: Establishing and strengthening community partnerships was one of the most beneficial leadership development opportunities. These relationships will serve the health department not only for biological events but also for other communicable disease situations. These relationships will also increase our level of communication between agencies.

Judy Gilmore: Leadership opportunities are present in many different situations. I have found that it is often much easier to relinquish a leadership role than to assume the additional responsibilities. This project has challenged me to assume a greater role in the community. I believe as a result, the Green River District Health Department has a greater visibility and has attained a new level of respect by those who may have

previously assumed that our role was only to provide services to those with limited resources.

Mark Sears: Establishing credibility in the community, both with other responding organizations as well as the general public, is a direct result of this project. Area emergency management personnel, fire and police now see the health department as an integral part of emergency response. The general public has seen the local health department as more than just an agency that gives shots and inspects septic tanks.

Dan Troutman: The experience of participating in this project has proven to be beneficial in many ways. As a leadership scholar the communication skills and teamwork concepts strengthened through this project will undoubtedly serve me well. The project itself has led to many community partnerships that may not have been established otherwise. Such coalition building within any community will certainly have many long-term benefits beyond this project.

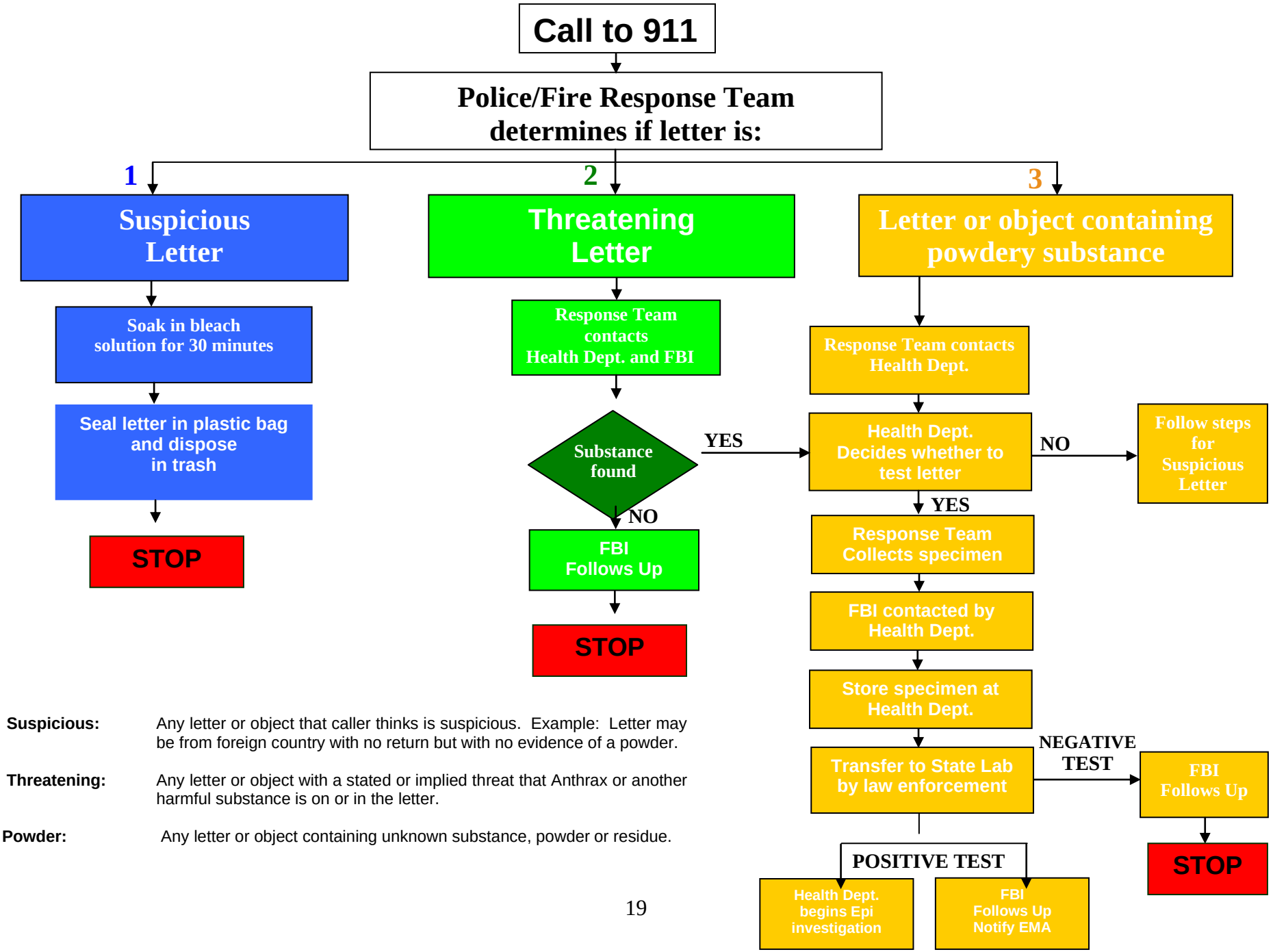
Table 1. Goals, Objectives, Activities, and Resources for a District-wide Community-based Bioterrorism Response

Goals	I. Establish & Strengthen Partnerships	II. Educate those involved in a BT response	III. Educate the Public	IV. Strengthen & Increase Surveillance
Objectives	A. To increase and strengthen communication with healthcare providers to insure accurate and rapid notification of reportable diseases	A. Educate health department staff	A. Get public informed to reduce panic	A. Receive early indicator of a possible BT attack
	B. Get to know officials involved with a BT response	B. Inform and educate those that must respond	B. Provide resources for the public	B. Increase size of the Epi Rapid Response Team
	C. Prepare the response for a possible BT attack	C. Provide educational materials		
	D. Health Alert Network			
Activities	A1. Quarterly Newsletter	A1. Conduct a survey A2. Attend conferences and presentations on BT	A1. Hold public forums A2. Give presentations	A1. Implement 911 call monitoring
	B1. Attend Community Meetings	B1. Conduct a survey B2. Give presentations to those that must respond	B1. Updated website with Fact Sheets	B1. Add new members to the Epi Rapid Response Team from other counties
	C1. Table top exercise	C1. Distribute BT information C2. Prepare SOCO's		
Resources	A1. Clerical support	A1. Clerical support A2. Money for travel and registration	A1. TV, partnerships, panelists, food, advertising, room A2. Presentation equipment	A1. SAS, Excel, expertise, permission/cooperation from dispatcher
	B1. Logistics, incentives	B1. Clerical support B2. Equipment for presentations	B1. Website, clerical support	B1. Training, participation
	D1. Text Message cell phones	C1. Hand outs		

Appendix A **-** Suspected Anthrax Incident Log

Date	Location	Object Description	Action Taken	Contact Information	Responder Information	Date sent to KY Lab	Lab Results

Appendix B - Anthrax Response Flowchart



1. Suspicious: Any letter or object that caller thinks is suspicious. Example: Letter may be from foreign country with no return but with no evidence of a powder.

2. Threatening: Any letter or object with a stated or implied threat that Anthrax or another harmful substance is on or in the letter.

3. Powder: Any letter or object containing unknown substance, powder or residue.

Appendix C - Education Log

Name of Conference	Date Attended	Location	Sponsored By	Name Attending	Summary
Epi-in-Action	November, 2000	Atlanta, GA	Centers for Disease Control & Prevention (CDC)	Linda Foley	This was a two-week epidemiology course with a half-day presentation and panel discussion on Bioterrorism.
NEHA Chemical & Bioterrorism Preparedness Conference	June/July, 2001	Atlanta, GA	National Environmental Health Association	Mark Sears	This was a four-day Bioterrorism Pre-Conference prior to the Annual NEHA Conference. Discussion topics included the National Pharmaceutical Stockpile, Mass Casualties Preparedness, the National Laboratory Network, lessons learned from Operation Topoff, and carrying out Tabletop Exercises.
Weapons of Mass Destruction	July, 2001	Henderson, KY	US Dept. of Justice & Texas A & M University	Linda Foley	This was a four-day intensive course on emergency operations and incident command, with an emphasis on terrorism. The conference concluded with a tabletop exercise on chemical terrorism.
Public Health Tabletop Exercise	August, 2001	Frankfort, KY	KY Department for Public Health	Dan Troutman	This exercise was an outbreak of pneumonic plague in Boyle County.
Assessment, Treatment, and Transportation of the Contaminated Patient	September, 2001	Owensboro, KY	University of Louisville	Judy Gilmore	The purpose of the course was to teach the participants how to treat patients who are chemically contaminated and how to reduce the risk of secondary contamination. Emphasis was placed on the risks of hazardous material, the role of an operations level responder, basic hazard and risk assessment techniques, the selection and use of proper protective equipment, basic decontamination procedures, and treatment of the contaminated patient. Participants dressed out in Level B personal protective equipment including SCBA respiratory equipment and also went through a couple of simulated drills. A very good learning experience.
A Local Perspective to Emergency Management	October 8, 2001	Owensboro, KY	Wendell H. Ford Government Education Center	Linda Foley Judy Gilmore Mark Sears	This public forum was for the benefit of local high school students to learn more about US government. Panelists included: the Honorable Wendell H. Ford, US senator (ret.); Keith Cain, Daviess County Sheriff; Allen Dixon, Owensboro Police Department; Fred Hina, Owensboro Fire Chief; Greg Carlson, Owensboro Mercy Health System; and William Cavin, US Army National Reserves (ret.).

Education Log (continued)

Name of Conference	Date Attended	Location	Sponsored By	Name Attending	Summary
Regional Disaster Responsiveness	October 10, 2001	Bowling Green, KY	Barren River District Health Department	Linda Foley Judy Gilmore	The purpose of this meeting was to meet employees from other health departments to share information on bioterrorism preparedness and disaster preparedness in general.
Microbiology Readiness for Bioterrorism Events	October 23, 2001	Madisonville, KY	Trover Foundation	Judy Gilmore Mark Sears	Presentation by Dr. James Synder from the University of Louisville concerning bioterrorism and laboratory response.
Public Forum on Bioterrorism	November 5, 12, 26, 2001	Owensboro, KY Gibson Co., IN Henderson, KY	Channel 14 WFIE, Emergency Management, Green River District Health Department, American Red Cross	Linda Foley Judy Gilmore Mark Sears	This public forum was a joint effort with Channel 14 WFIE, Daviess County Emergency Management, Green River District Health Department, and American Red Cross. There was a panel discussion (Linda Foley was the panel) moderated by David James and Mike Blake. The forum was for the benefit of the public with segments filmed live by Channel 14.
The Terrorism Threat in Kentucky	November 9, 2001	Owensboro, KY	Commonwealth of Kentucky	Judy Gilmore Mark Sears	Presentation by State Public Health Officials in an effort to educate community leaders.
Bioterrorism Readiness for Rural Providers	December 5, 2001	Bowling Green, KY	KY Hospital Association, KY Hospital Research & Education Foundation, University of KY Center for Rural Health, KY Department for Public Health	Linda Foley Judy Gilmore	The conference was divided into four disciplines: Hospital; Health Department; EMS; and Critical Stress Management.
Emergency Service Grand Rounds	December 17, 2001	Owensboro, KY	Owensboro Mercy Health System	Linda Foley Judy Gilmore	George Boose, MD from the KY Regional Poison Control Center gave a presentation on Bioterrorism.

References

1. NPR: America Responds—The History of Bioterrorism, 2001.
2. Prescott, 1990.
3. The History of Biological Warfare, 2002.
4. Journal of the American Medical Association, 1997.
5. Elements of Effective Bioterrorism Preparedness: A Planning Primer for Local Public Health Agencies, National Association of County and City Health Officials, January, 2001.
6. *ibid*
7. Third Annual Report to the President and the Congress of the Advisory Panel to Assess Domestic Response Capabilities for Terrorism Involving Weapons of Mass Destruction.
8. Emergency Preparedness Core Competencies for All Public Health Workers

Internet Resource List

1. Association for Professionals in Infection Control and Epidemiology: http://www.apic.org
2. Centers for Disease Control and Prevention (CDC): http://www.bt.cdc.gov
3. Johns Hopkins Center for Civilian Biodefense: http://www.hopkins-biodefense.org
4. US Army Medical Research Institute of Infectious Diseases (USAMRIID): http://www.usamriid.army.mil/education/bluebook.html
5. The full text of the *Third Annual Report to the President and the Congress of the Advisory Panel to Assess Domestic Response Capabilities for Terrorism Involving Weapons of Mass Destruction* can be accessed at http://www.rand.org/nsrd/terrpanel/terror3-screen.pdf.
6. The full text of the *Emergency Preparedness Core Competencies for All Public Health Workers* can be accessed at http://cpmcnet.columbia.edu/dept/nursing/emergency.pdf.
7. Green River District Health Department: www.healthdepartment.org