THE WORRIED WELL: STRATEGIES FOR INSTALLATION COMMANDERS

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INTRODUCTION

How do you use mitigation strategies, including education of personnel, to decrease the number of the worried-well? What are the best media/public affairs strategies or responses to a BW incident? (INSS Abstract)

The question concerning the most effective strategies that should be employed by base commanders to mitigate problems involving the worried well in the event of a biological weapons attack is important and critical. The anthrax crisis, following on the heels of the devastating terrorist attacks of September 11, 2001, drew attention to the very real possibility of the use of biological weapons by terrorist or criminal elements seeking to disrupt society. The discovery of attempts to produce lethal amounts of ricin in London in 2002 added to these fears. The fact that not all of the biological agents developed in the former Soviet Union are accounted for also presents great cause for concern; added to this concern is the fear that scientists who once worked in the Soviet biological weapons program may be vulnerable to exploitation and co-option. Considering the very weak inspection framework of the Biological Weapons Convention, it is difficult, if not impossible, to determine the extent to which additional states are pursuing active biological weapons development.[1]

Given the very real possibility of a biological weapons (BW) incident in the future, it is prudent for base commanders to consider appropriate responses to this threat. The problem of the "worried

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well" has been increasingly recognized by all levels of government, scholars, and specific emergency response teams. In a crisis situation involving intentional disease outbreaks, any contingency plan has to consider the effect on resources of those who think they are sick, but who realistically are not medically at risk for a specific disease. In addition, there are huge mental health components to any terrorism event that must be understood and appreciated, including post-traumatic stress disorder, somatic presentations of psychological distress, and intensification of formerly identified medical and psychological ailments.

Questions concerning appropriate responses to the problem of the worried well have been addressed in this research project through multiple approaches: reports summarizing BW simulations and exercises have been examined and scholarship on the worried well has been consulted. However, it became apparent that the problem of the worried well, as it affects strategies of base commanders, could not be looked at in isolation. Issues involving quarantines, media relations, surge capacities of hospitals and emergency facilities are closely connected to the problem of the worried well. Any strategy being developed by a base commander has to include thinking about a broad range of issues. Above all, no military installation can operate in complete isolation from the community that surrounds it; most are deeply connected and interrelated with local communities.

The larger question for the base commander concerns his need to keep the base operational so that it can fulfill its mission in times of crisis. An additional and critical concern for the base commander concerns the short- and long-term physical and mental health of his personnel and their dependents. These questions

cannot be addressed in isolation from the community in which the base is located. Therefore, any strategy to plan for a BW crisis must include familiarity and planned interaction with the community surrounding the military installation. Additionally, any strategy concerning appropriate responses to a BW incident must also address the problem of the worried well.

After an initial evaluation of the mental health components of terrorism, particularly the use of BW, through a survey of reports, journals, symposia, and other literature, the author conducted interviews with numerous "stakeholders" in the city of Colorado Springs, including local and county officials, members of emergency response units, physicians' groups, and experts on mental health. The objective of these interviews was to obtain one snapshot of perceptions on local relationships with the military installations in the area. Although El Paso County may not be entirely representative of communities in which other bases are situated, it does represent an area where four military installations are located (US Air Force Academy, Peterson Air Force Base, Fort Carson, and Schriever Air Force Base). Important insights into the interrelationships between military bases and local communities were gained; specific concerns of actors within the community were highlighted that are undoubtedly appropriate beyond this specific geographic area.

Each section of this report is organized as follows: under the general heading of an important facet or concern involving a potential BW event, expertise is reviewed to explain the concept or to elucidate elements of the concept that might not be readily understood. Insights from the local interviews are then shared, when relevant to the general concept or issue under discussion.

Finally, based upon all pertinent information, including interview material, recommendations to installation commanders are highlighted in bold type.

THE BIOLOGICAL WEAPONS THREAT

The three basic groups of biological agents which are most likely to be used as biological weapons are bacteria, viruses, and toxins. Each one of these groups has different implications for disease, lethality, and treatment. Bacteria often produce diseases that respond to treatment with antibiotics. Viruses require living cells in which to reproduce, and they produce diseases that do not respond to antibiotics. However, antiviral drugs are sometimes effective. Toxins are poisonous substances found in and extracted from living organisms (plants, animals, or microorganisms). Some toxins can be treated with specific antitoxins and others can be treated with specific drugs.

The CDC has developed a list of potential biological agents, and divided them into categories. Category A agents can be easily disseminated or transmitted person-to-person, can cause high mortality, might cause panic and social disruption, and require special action for health preparedness. Category A agents include smallpox, anthrax, plague, botulism, tularemia, filoviruses such as Ebola Hemorrhagic Fever, and arenaviruses such as Lassa Fever. The second highest priority agents, according to the CDC, are moderately easy to disseminate, cause moderate morbidity and low mortality, and require specific enhancements of CDC's diagnostic capacity and enhanced disease surveillance. They include Q fever, brucellosis, glanders, and ricin. A subset of List B agents includes salmonella. Category C agents include emerging pathogens that could be engineered in the future and include Hantaviruses, tick-

borne viruses, and multi-drug-resistant tuberculosis. List C agents require ongoing research to improve detection, diagnosis, treatment, and prevention.[2]

Some experts believe that the major biological threats are anthrax, ricin, or contamination of food/water. In these cases, person-to-person transmission is not a concern (they are non-contagious). However, in the case of anthrax, persistent contamination is a problem. So although quarantine is not necessary, people must be prevented from entering an area that is potentially contaminated. The above threats are considered to be high-probability, low consequence agents. Smallpox and plague are identified as the most likely agents that cause contagious diseases, and could potentially precipitate an "epidemic." If these agents were used, infection control would become a paramount issue. The deliberate reintroduction of smallpox is particularly frightening. In a society that has not been immunized, each person infected with smallpox could conceivably infect between 10 and 20 others. With a transmission rate of 20, the first 50 victims of a disease could hypothetically infect 1000 others, who could infect 20,000 more. Within a very short period of time, over 160 million persons could become involved.[3] Timely interventions, however, can reduce these numbers dramatically.

Biological agents could be dispersed in various ways. It would be possible, though technically difficult, for an agent to be dispersed into the air as an aerosol, forming a mist or cloud that could potentially travel for miles. Inhaling this might cause disease in animals or humans. Others are spread by insects and animals, such as fleas and mosquitoes. Spreading disease through livestock is referred to as agroterrorism. Food and water present fairly

accessible targets, and could be contaminated with biological agents.

In the case of the anthrax crisis of 2001, anthrax spores formulated as white powder were mailed to individuals in the government and media. Postal sorting machines and opening of letters facilitated the dispersal of the spores, which resulted in several deaths and widespread fear of contamination of postal facilities and government offices. Finally, some infectious agents are spread through person-to-person contact. Smallpox, plague, and the Lassa viruses fall into this category.

Dr. Raymond Zilinskas, of the Center for Non-Proliferation Studies at the Monterey Institute, has noted that "it is highly probable that biological attacks by terrorists or criminals utilizing food borne and water borne pathogens or toxic chemicals will occur in the next five years."[4] He notes that these attacks are likely to cause casualties ranging in number from a few to hundreds, and gives as an example past attacks, including the contamination of 10 salad bars by the Rajneeshee cult in Oregon in 1984, causing illness to 751 people.[5] He believes that the probability of airborne attacks with pathogens in the next five years is low, due to technical difficulties of effective aerosol dispersal. He notes, however, that biological and toxin weapons are likely to become more attractive to criminals and terrorists in the future, because the number of persons possessing expertise in microbiology and the biosciences will increase, and some might be willing to sell or apply their expertise for anti-societal purposes. The lack of sophistication necessary to develop and deliver certain pathogens and toxins and the ability to hide them also makes the possibility of the use of these agents more likely.[6]

The very nature of biological weapons has implications for public reaction to a terrorist event in which they are employed, for "(t)he invisibility of biological agents and the insidious nature of bioterrorist events makes them especially frightening."[7] Additionally, a BW event may not be readily detected and is unlikely to be viewed as finite in time and space. These characteristics suggest that a crisis involving BW has enormous potential for producing extreme stress and anxiety in the public.

Insights from Interviews

According to psychologist Dr. Charles Benight, from a stress perspective, a BW attack presents three huge problems—it is viewed as unpredictable, ambiguous, and uncontrollable. To reduce the stress of such an event, therefore, you need to address all three of those elements. To address unpredictability, you can engage the public in planning and preparedness. To address ambiguity, you need rapid and effective detection systems and clear algorithms for clinical responses, with clear risk communication to the public. To address uncontrollability, you need to put into place medically sound plans to limit the risk to the public and control an outbreak.

He notes that once a crisis occurs, a person's thought process becomes narrowly focused, and rationality may be impaired. Therefore, the earlier that information can reach the public in a crisis, the better, from the standpoint of stress management.[8]

THE WORRIED WELL

Experts have long recognized the gravity of problems associated with the "worried well." Although we have few instances of intentional use of BW from which to increase our understanding of the worried well phenomenon, we can look at the

impact of other terrorist events, natural disease outbreaks, and virtual simulations to give us insights.

In 1995, the Japanese cult, Aum Shinrikyo, released sarin gas into the Tokyo subway system. This catastrophe led to 12 deaths; 5,500 presented at Tokyo hospitals. Of these, about 1,000 were casualties related to the attack.[9] Unexposed persons flooded emergency rooms in Tokyo after the attack; the number of those presenting to health professionals with complaints of post-exposure symptoms exceeded the number who required medical treatment caused by exposure by a ratio of 4:1.[10]

The "worried well" can be divided into three major categories. The first are those who experience symptoms of the disease in question, or generalized symptoms, but who do not have the disease. These individuals may not have been exposed in any real way, and yet they are genuinely convinced that they are ill. This group would include those who experience physiological symptoms as a consequence of heightened fear, alertness, or feelings of helplessness. The second group consists of those who are anxious about potentially being or becoming infected, but are not experiencing physical symptoms. In these cases, there may or may not be a rational basis for their anxiety. These may seek health care partly as a preventive measure or due to their uncertainty as to risk. The third category consists of those who experience psychological distress during or after a traumatic event, such as chronic anxiety, depression, fatigue, and despair. These categories may overlap, but all represent unique problems that must be addressed in planning undertaken by disaster response teams and health facilities.

The idea of mass psychogenic illness has been noted for hundreds of years. Outbreaks of this nature often start with an

environmental "trigger," which can be a "bad smell, a suspicious-looking substance or something else that makes people in a group believe they have been exposed to a germ or a poison."[11] In mass psychogenic illness, people feel sick, but physical exams show normal results, and experts cannot detect a rational cause of the sickness (for example, a poison). Yet people who are involved in outbreaks of this kind have real, and not imagined, symptoms. They may feel dizzy or experience headaches, but these may have been induced by stress or anxiety.

Reports on the psychological consequences of the terrorist attacks on 9/11 are still emerging. They all point to the huge mental and emotional health component of a disaster such as 9/11. Physiological manifestations of psychological distress are common, often stemming from "living with a heightened state of alertness and harboring a fear of the unknown.…"[12] It is estimated that about half of individuals will cope well with even extreme trauma and threat; these hardy persons will "roll with the punches." Another 30% are likely to feel somewhat anxious or depressed for a period of time, but will return to normal levels of psychological health. However, "about 18% are vulnerable to persistently engaging in behaviors most Americans only briefly if ever considered or engaged in post-September 11; avoiding airplanes and other public transportation; steering clear of tall buildings, national landmarks, tunnels, and bridges; stockpiling food, water, and Cipro (ciprofloxacin hydrochloride); purchasing gas masks; discarding their mail unopened; and/or retreating into their homes in an attempt to assert personal control over the uncontrollable and assuage fears of the unpredictable. It is *this* type of person, experiencing

unrelenting fear and hyperarousal, who, often silently, may develop multiple serious health consequences."[13]

Therefore, the problem of health consequences following a terrorist attack is far more complicated than the immediate surge of persons who have been exposed to agents or diseases, those who worry that they may be infected, or those who are impacted emotionally by the catastrophe. The mental health consequences with concomitant implications for health-threatening behaviors and stress reactive disease, may be long term and extremely significant. A study in the *Journal of the American Medical Association* noted that 17% of the US population outside of NYC reported symptoms of September 11-related posttraumatic stress, two months after the attacks.[14] Indeed, the psychological casualties from a WMD incident is expected to greatly exceed the number of physical casualties. The figure may be as large as a 5:1 ratio for planning purposes.[15]

Three to five days after the 9/11 attacks, 90% of those surveyed nationally experienced at least one moderate symptom of stress, and 44% reported experiencing a substantial symptom.[16] Based on this, one might expect to find increases in incidence and severity of conditions and diseases that are affected by psychological distress—coronary artery disease, diabetes mellitus, peptic ulcer disease, hypertension, upper respiratory tract infections, asthma, psoriasis, autoimmune disease, Graves disease, and others. In addition, when under stress, people tend to engage in behaviors that may additionally impair their health, such as increased use of alcohol, drugs, tobacco, and overeating. People may "forgo health-enhancing activities such as following medical regimens, getting

exercise, obtaining adequate sleep, and pursuing hobbies and other relaxing activities."[17]

Surveys conducted on persons exposed to terrorist incidents in Israel and in Oklahoma City confirm these relationships. Persons at high risk for stress-related somatic disorders were not necessarily those in closest physical proximity to the event, nor were the effects of a terrorist event short-lived. A study conducted one and one half to three years after the Murrah Federal Building bombing showed that "up to one third of survivors reported worsening of preexisting medical conditions;" other studies have shown that more than a year after the event, high rates of psychological distress, use of alcohol and tobacco, and PTSD symptoms persist.[18] Studies in Israel regarding the first Gulf War show that more people were killed from problems stemming from anxiety than from war, such as the misuse of gas masks and medicines.[19]

Studies of the psychosocial effects of radiation accidents are also illuminating. Common stress reactions to such an incident are compounded and complicated by the fact that "exposure to invisible contaminant has also been shown to produce a chronic state of alarm."[20] Interestingly, research on a radiological accident in Brazil found that people who had been exposed to radiation and others who had not been exposed but were concerned about potential exposure, showed similar psychological behavioral and cardiovascular-neuroendocrine effects. The effects of a radiation accident have been shown to extend far beyond the immediate area of impact.

Certain populations appear to be especially at risk for adverse psychological consequences. These include those with previous high levels of "neuroticism," (trait anxiety), children, females

between the ages of 40 and 60 years, and those with previous histories of psychiatric disorders. Emergency workers and mothers with small children may also be at special risk.[21] Health care workers need to be aware that patients presenting with symptoms without medical explanations still need to take patients' concerns seriously, without trivializing the very real distress the patient may be experiencing.

In the anthrax crisis, five people died, all from inhalation anthrax, from October 5 to November 21, 2001. Seventeen others became ill by inhalation or cutaneous anthrax. Decontamination of several post office buildings, the headquarters of American Media, Inc., in Boca Raton, and government office buildings in Washington DC is in some cases, ongoing. Technically, the huge number of persons who called fire departments around the United States, with concerns about white powdery substances in the mail, would not be considered the "worried well." However, it has been estimated that there were over 200,000 such calls around the country.

The anthrax-related events in 2001 led numerous individuals to self-medicate, purchase protective masks, and even forego opening their mail. Federal health agencies reported that 32,000 Americans took antibiotics because of concerns raised by the anthrax mailing. A poll taken by the Harvard School of Public Health indicated that 25% of those surveyed were very or somewhat worried that they might become infected with anthrax. Of these, almost 15% said that they had taken one or more extreme measures, such as the purchase of a firearm or stockpiling antibiotics.[22]

The problem of the worried well is real and serious. Studies of the anthrax crisis and other natural disease outbreaks demonstrate that there are serious mental health issues in any disaster scenario.

Insights from Interviews

During the anthrax crisis of September and October 2001, every credible call in Colorado Springs was investigated by a crisis team from the Fire Department. In all, over 300 calls were answered in this community alone. This placed enormous stress on emergency personnel. However, as one county official said, "In many ways, the anthrax crisis was the best thing that ever happened to us. We had to develop effective communication and learn how to handle an emergency of this nature. Before, we were totally unprepared. Now we are much better prepared."[23]

Recommendations for Base Commanders

Base commanders should familiarize themselves with the short and long term mental health consequences of disasters, including the phenomenon of the worried well. These potential consequences warrant serious concern.

DETECTION SYSTEMS

Public Health preparedness has been a focal point for the CDC's strategic response plan regarding BW. Unless a disease outbreak is detected accurately and in a timely manner, accurate information to the public and assessment of risk and response will be delayed, with potentially dangerous consequences for the community. Training of health workers to recognize and accurately diagnose symptoms that might be related to intentional disease outbreaks and educating them on appropriate responses to such illnesses have been high priority items. Computer systems designed to detect and track disease outbreaks also have been a primary focus.

The quick and authoritative determination that a BW event has occurred is not dissimilar to efforts to track frequency and severity of natural disease outbreaks. Clusters of patients presenting with

uncommon symptoms or unusual distributions of outbreaks can be picked up in a variety of ways; all involve data entry or some other form of communication comprising pertinent evidence from laboratories, hospitals, physicians, veterinarians, and even billing entities. Surveillance systems to compile and review data of this nature have been rapidly developed. However, they are only as useful as the data that goes into them.

In August 2003, a legislative audit of the Colorado Electronic Disease Reporting Systems (CEDRS), which was developed in 1999 to link hospitals and health departments in Colorado to track outbreaks of diseases such as SARS and West Nile, found that the system was significantly underutilized. Among the specific criticisms was that the CEDRS database was not updated on a regular basis, and in some cases there could be a substantial lag in time between an outbreak incident, collection of the data, and dissemination to parties. Only 41 of 70 hospitals used CEDRS at all in 2002, and some significant information about the diseases were missing from the data—for example, the locality in which the victim was exposed to the disease.[24]

The Department of Defense Global Emerging Infections System (DoD-GEIS) has developed a system for early detection of infectious disease outbreaks at military treatment facilities. This system, called ESSENCE, for Electronic Surveillance System for the Early Notification of Community-based Epidemics, relies primarily on data collected during patient visits, rather than after diagnoses or laboratory work, thereby greatly lessening the time lag between collection of data and detection of syndromes. The system plots data on a graph and sorts it by symptoms, age group, zip code and other factors. It has been praised as very useful in identifying

unusual clusters of illness, even before they are noticed on the ground. For example, in 2002 the network caught an outbreak of diarrhea at a Marine facility before doctors there were even aware of it. Since the September 11th attacks, it has been expanded, and now includes data from 121 Army, 110 Navy, 80 Air Force, and 2 Coast Guard installations. It has historical data, against which current data is compared, dating back three years.[25]

The Global Outbreak Alert and Response Network links many informational and diagnostic networks around the world. This World Health Organization initiative includes information from the 191 member countries. It checks for reports and rumors of any outbreak of infectious disease, either naturally occurring or deliberate. Each report is checked by a team of WHO specialists. This network has picked up and verified outbreaks of Ebola in Uganda and yellow fever in Cote d'Ivoire.[26]

Accurate detection/diagnoses are critical to an effective BW response. As indicated earlier, each agent requires a different response from health care workers. Some illnesses will require quarantine/isolation; others will not require quarantine, but will necessitate decontamination closures. Health workers will take different precautions in different disease scenarios. Therefore, communication between military and civilian physicians, the CDC, and state/county/local departments of health is absolutely essential to the success of a BW emergency response.

There are many prototypes of "clinical pathways" for the most likely bioterrorist events. For example, Stanford University has developed a series on bioterrorism that includes a "Clinic Anthrax Phone Call Pathway/"Worried Well" Pathway.[27] It calls for distinguishing between symptomatic and asymptomatic patients,

exposure assessments, and clinical consequences. These kinds of diagnostic aids would be very helpful in a mass outbreak.

Recommendations for Base Commanders

The Base Commander should ensure that the early detection systems on his/her installation are being fully utilized. He/she should foster good communication between the health professional leadership on his base with their counterparts in the community, and in particular state, county, and local health departments.

SURGE CAPABILITIES

A biological weapons (BW) attack has the potential for putting a severe strain on many kinds of resources, including health care personnel, volunteers, disaster treatment facilities, contact tracers, law enforcement, medical supplies, and equipment. Addressing the problems associated with an overwhelming patient surge has been recognized as a critical feature of any contingency plan. A press release from the Department of Homeland Security noted that "(m)any of our health care systems are not adequately prepared for a large-scale attack."[28] According to DHS, the lack of surge capabilities and isolation facilities in the event of escalating numbers of victims, and antiquated and inadequate information systems that knit together hospital emergency rooms and health officials, scarcity of mutual aid compacts among health institutions, and infrequent training for health care providers in the handling of bioterrorism victims are all problems that need to be addressed.

Evaluations of the SARS outbreak in Singapore noted that "(w)ith the … SARS outbreak, the local hospital system is being stretched to its limits by a not-too-lethal bug which has claimed 28 lives from the 205 cases to date."[29] The TOPOFF exercise, the first full-scale simulated test of the public health system in a terrorist attack using BW (May 2000), demonstrated that probably no

hospital could deal with more than 100 contagious patients at a time. The worried well represents considerable additional stress on the capacity of the health system to treat the sick.

Alternate sites for triage, treatment, and possibly isolation need to be inventoried. Problems associated with the requisitioning of hotels, schools, vacant housing, and other suitable sites should be considered prior to the actual necessity to use them, for it is probable that in a BW crisis, they will be needed. Additionally, routes and modes of transportation to these sites must be considered in order to minimize contamination in the broader area.

Even more critical than facilities, is the availability of health care workers—doctors, nurses, laboratory technicians, ambulance drivers, etc. Fear of exposure may influence some to limit their work time at exactly the moment that patient surges are placing additional stress on the health care system. Mass vaccinations and distribution of preventive drugs may require enlisting law enforcement personnel, members of the armed forces, pharmacists, veterinarians, and civilian volunteers to assist.

Insights from Interviews

Even though plans have been developed to share resources, perhaps utilizing base clinics and hospitals, some local actors feel that in the event of a BW terrorist incident a base will lock down, and that the burden of caring for military personnel, their dependents, and retirees who are off base in the community will fall solely upon the locality.[30]

Recommendations for Base Commanders

1. The Base Commander should anticipate the surge of patients that will be associated with most BW attacks.

2. The Base Commander should inventory both the personnel and facilities on his installation. Management,

Coordination, and Resource-Sharing Plans may exist, but may not be widely understood or disseminated. He/she should consider the implications for the community in the event that the base locks down.

TRIAGE

Most state and local contingency plans recognize the need for a triage system that distinguishes between the acutely ill, the possibly ill, and the worried well. Guidelines established by the CDC and incorporated into disaster response plans indicate the need for this, but are often developed in a relatively simplistic way. For example, the Georgia Division of Public Health has developed a bullet plan for dealing with a BW crisis that enumerates the need to develop a questionnaire that can be used to rapidly collect victim identification and background information, including where they have been recently. Although it is important to have such questionnaires readily available in the event of an emergency, the bullet plan emphasizes the need to "send the worried well home," and send the acutely ill to appropriate medical facilities, and conduct an initial outreach by sectors in the community. This might involve door-to-door sector surveys, during which medical information is provided, with a full community outreach follow-on that includes citizen home help mobilization and potential non-infected patient relocations.[31]

It is true that if the worried well were to swamp emergency care facilities, they actually might contribute to the spread of a bioterrorist epidemic, as they are much more likely to become infected with a pathogen at the health facility than at home. Therefore, it is essential for any strategic plan to be able to divert this population quickly, with the help of diagnostic kits (that need to be readily available), to alternate facilities, and ultimately to safe

locations. "Public health officials could use nurse call centers, mass communications media, or both to convey to the public the need to remain calm and to limit use of urgent health care facilities to truly urgent cases."[32]

However, most experts agree that it is not necessarily appropriate to send the worried well home immediately. Some prevention of adverse psychological effects will occur at the point of an individual's encounter with health workers in the triage system, which definitely should include a strong mental health component. One of the most important recommendations of experts is to provide "safe holding areas" where those with acute psychological responses to a crisis can be observed while removed from the intensity surrounding the facilities where truly ill patients are being treated. It is clear that implementing a positive mental health strategy will require the assistance of community mental health workers, social workers, pastoral care, and other volunteers, so that emergency and primary care health professionals are free to devote their attention to the critically ill.[33]

The importance of the appropriate response to the worried well during triage cannot be overemphasized. "First responders, pre-medical care personnel, and mental health treatment providers must be prepared to provide some level of treatment for individuals with acute (and most often transient) emotional and behavioral disorganization or other symptoms."[34] The creation of a location where symptoms can be observed and monitored, or a holding environment, "favors social and psychological recovery."[35]

The Modular Emergency Medical System (MEMS) has been developed to deal with triage in the event of a large-scale biological weapons attack. It seeks to address shortfalls in hospital space,

equipment, and medical personnel. In short, while area hospitals form their own internal emergency medical command centers, acute care centers would be established close to area hospitals for the acutely ill who exceed hospital capacity, and neighborhood emergency help centers (NEHCs) would provide the main point of entry into the emergency medical system for BW patients and worried well, and would distribute medical prophylaxis medications. Community outreach would link home-bound patients to the NEHC. A citizen home care effort would augment NEHCs. "Thus, during catastrophic medical emergencies such as large scale bioterrorist attacks, area hospital, clinics, and private medical doctors would forego their normal autonomy and begin functioning as an integrated system."[36]

Recommendations for Base Commanders

1. Base Medical Contingency Plans should include a strong mental health component. After initial triage, which should include diagnostic kits and questionnaires to discriminate between patients, the worried well or those suffering other mental/emotional trauma should be diverted to holding facilities where their progress can be monitored. Triage facilities, acute care facilities, and holding facilities should be predetermined, and their status should be inventoried on a regular basis. The MEMS Plan presents a useful model for triage that includes appropriate attention to mental health issues.

2. The need for competent personnel to address mental health issues in a BW crisis should be anticipated. Available personnel who can be activated should be inventoried and contact information readily accessible.

ENGAGING THE PUBLIC: INFORMATION AND EDUCATION

Information during a crisis is absolutely critical to the response of the public. "Better than any medication that we know, information treats anxiety during crisis."[37] Without access to

complete and honest information, rumors may fester, and mistrust in authority may grow.

The nature of the threat should be determined as early and as accurately as possible. The threshold for information sharing with the public should be "the earlier the better," and as soon as there is reasonable scientific verification of the evidence. Uncertainty is preferable to silence, as long as it is stated within the framework of an "all-out attempt" to ascertain the facts.

Conflicting reports by government officials about the nature of an attack, persistent dangers of the attack itself, previous indications of a terrorist event, and risks related to proximity to an attack can lead to increased anxiety and a decrease in public trust. Therefore, every attempt should be made to share information between stakeholders to achieve consensus. However, delays in communicating to the public breed fear and rumors. Citizens need to believe they are being kept fully informed. Public information and rumor control are extremely important components of emergency response. Hotlines, information to the media, press conferences, and self-help fact sheets are all tools for information dissemination. Timely and accurate dissemination of information is critical, and media participation is essential.

Reports following the anthrax crisis are instructive. Neal L. Cohen, M.D., Commissioner of New York City's Department of Health, 1998-2002, said of his "lessons learned": "Always err on the side of letting the public know as much as possible."[38] He adds from his experience that "we did not see our job at NYCDOH as reassuring people. Our job was only to provide information. The public makes pretty good decisions when given information."[39]

On working with the media, Dr. Cohen notes that "the media are too savvy and too committed to 'catching' you. That is their job—you cannot blame them."[40] Therefore, communication must be a top priority. Honesty is imperative—for if you are dishonest up front, the media will not trust you later.

Some of the problems involved in crisis management can be mitigated by engaging the public in self-help preparedness measures. Mental health experts advocate the empowerment of the public through the creation of emergency plans. These plans might include establishing a network listing the routine whereabouts of friends and family, contact phone numbers and e-mails, choosing a leader, selecting a meeting point, stocking emergency supplies, and inviting experts on terrorism to speak to civic and church groups.[41]

The development of a planned response is important for the mitigation of "a community's sense of helplessness…. Doing so (Planning) also increases the community's capacity to provide social support to victims. Because poor planning or failed execution would increase the risk for feeling helpless or overwhelmed, there is a pressing need to practice continually and to evaluate the effectiveness of the planned actions."[42]

During a crisis, a public information plan should inform the public, help the public interpret the attack, and include measures they can carry out to protect themselves and their loved ones.[43] "It is critical that the information provided be truthful, even if it is bad news. Information regarding distribution of medications or vaccinations must be delivered in a manner that does not increase panic when inevitable shortages are recognized."[44] Clearly, understanding the nature of the pathogen and its effects is vital to an educated public response. Precise risk communication information

will ease the burden of the second group of worried well, who will visit emergency rooms and triage centers primarily as a preventive measure. "Clear, consistent, accessible, reliable, and redundant information (received from trusted sources) will diminish public uncertainty about the cause of symptoms that might otherwise prompt persons to seek unnecessary treatment."[45]

Analysis of the medical and public health response to the anthrax crisis of 2001 has illuminated the very real challenges of information dissemination and risk communication in the midst of an ongoing crisis where there is scientific uncertainty. The CDC changed guidance on protocols, there was a lack of trust in CDC recommendations, and the different recommendations on remedies on the part of the CDC and the Congressional physicians caused equity to be questioned and confusion to prevail. The CDC website crashed twice during the crisis due to heavy use and lack of redundancy.[46]

Studies of the anthrax crisis have also found that public health officials lacked prepared materials or detailed public communication plans. Dealing with media demands became extremely time-consuming and difficult. There was tension among elected officials and health practitioners "trying to reach consensus about how much information should be released to the press."[47] The media reported great difficulty obtaining reliable information, and complained that public health officials were unresponsive. Only very late in the game were daily telephone press briefings instituted. Without information from public health officials, reporters "had to assemble pieces of the anthrax puzzle from a variety of what they hoped would be credible sources."[48] One of the major conclusions of these studies is that public health

emergencies require media-savvy spokespersons who will provide accurate and comprehensive information to the public. Even though individuals resorted to self-help measures that were unwarranted during the anthrax crisis of 2001, and in spite of the challenges of communicating with the media, it should be noted that there was no general panic.

Risk communication has been the focus of debate for those attempting to establish best practice guidelines for future crises. The consensus seems to be that "(p)ast public health emergencies, notably those involving environmental crises, have yielded many well-tested lessons about how health risk information can reliably be communicated. The essence of these lessons is that authorities should tell the truth as they know it, when they know it; they should be forthright about what is not known; and they should explain what is being done to improve understanding of the situation and manage the problem."[49]

Experience with natural disasters and disease outbreaks clearly indicates that public reaction can be effective and adaptive, if appropriate education of and communication with the public takes place. A recent influential article on the importance of the engagement of the public in responses to emergencies names five guidelines for integrating the public into bioterrorism response planning: 1) treat the public as a capable ally, 2) enlist civic organizations in public health activities, 3) anticipate the need for home-based patient care and infection control, 4) invest in public outreach and communication strategies, and 5) ensure that planning reflects the values and priorities of affected populations.[50]

While censorship undermines public trust, partnership between the media and the emergency response network should be

encouraged. A clear framework for cooperation should already have been established in contingency planning, and within this framework, the media should be encouraged to contribute to self-restraint when necessary to avoid public panic. We know that repetitive images of horror, such as those continually shown in the September 11 crisis, have serious consequences for mental health. Sensationalist images have an effect on children and those who are psychologically at risk. It is important to educate the media, before as well as during a crisis, to enlist their support in informing, but not unnecessarily terrorizing, the public.

Insights from Interviews

The El Paso County Emergency Action Teams expressed the view that Public Information Officer Training is extremely important. "We need the media to help, not incite panic." They noted that it is a good idea to bring the media into the preparedness process, and have a "heart to heart" with representatives of major media outlets in the community.[51] They noted the importance of a common message, and thought that the military should be part of a Crisis Communications Network. A "common language" is critical, and the importance of simple direct messages with a minimum of acronyms cannot be overstated.

Stephen Dubay, Director of Emergency Management in Colorado Springs noted an incident at a conference on emergency response in Los Angeles. When response managers talked about a "partnership with the media," members of a media panel, including representatives from national television, radio and print media protested that they may not view themselves as partners. They perceive of their role as the Fourth Estate, and have a watchdog obligation."[52] In spite of the sometimes adversarial or skeptical

posture that the media may feel their role should be, their inclusion in preparedness is seen by the El Paso County community to be critical.

One of the problems local administrators noted regarding working with media involved the rapid turnover of personnel in a mid-size market such as Colorado Springs, where journalists and TV personnel aspire to move into larger markets. Because of the transient nature of personnel in media, the establishment of routine communication networks is difficult and connections need to be continually updated.

In addition to media outlets, emergency managers have other ways of communicating with the public—including reverse 911 networks, national weather service radio, the internet, and other alert systems. Military installations in this area are linked to the Office of Emergency Management with 24-hour contact numbers.

Dr. Larry Schaad recalled the importance of information in an incident in which a 14-month old died of septicemic plague on the USAFA installation. The Academy received calls from all over the country from parents concerned about the health risks to cadets. Correct information concerning the nature of this kind of plague was extremely important in calming the anxieties of parents, and informing them correctly as to the risk to their children.

The Department of Defense has altered its philosophy regarding its role in the dissemination of information and communications with the public in general following the TOPOFF 2 exercise in May 2003, in which international, national, state, and local cooperation was tested. Prior to the exercise, DOD generally deferred to Federal agencies in communications with the public. The importance of public confidence in all levels and departments of government is

now recognized, and DOD has taken on a more active role in communications. This represents a partnering role with other agencies and a significant change in emphasis.[53]

Recommendations to Base Commanders

1. Information dissemination to the public should be timely, accurate, and straightforward. It should include plans that can be actualized.

2. Points of contact for public affairs personnel with the media and local police/fire departments/hospitals/government officials should be pre-established.

3. Military Installations should be connected with Crisis Communications Networks in surrounding communities.

4. The threshold for dissemination of information to the public should be "as soon as possible." The Base Commander should rely on the positive potential of the public to understand and react responsibly to knowledge and information, as long as that message is clear, timely, and includes practical information (actionable information is highly desirable). He/she should avoid the tendency to withhold disturbing information from the public or to conduct emergency responses in secrecy.

5. The Base Commander needs to have pre-established, continually updated links to the main media outlets both on his/her installation and in the community at large.

6. The Base Commander needs to update contact information for these contacts continually.

7. The Base Commander should continually foster trust and good relations with the media, so that when there is a crisis, a partnership already exists.

8. Public Information Personnel need training in how to communicate in crisis situations. This training should be accomplished in cooperative efforts with community emergency response teams.

9. There should be a pre-determination of who will be the primary/secondary spokesperson for the military installation.

ADDITIONAL INSIGHT INTO RISK COMMUNICATION

A Rift Valley fever simulation conducted in 2003 strongly indicated the enormous importance of clear messages to the public. Interestingly, the most confused and fearful group of respondents in this exercise were the journalists themselves. The study concluded that in the event of an actual crisis, the media may not be able to serve the best interests of the public effectively.[54] In addition, respondents were wary of sole source information. Responses concerning the most trusted purveyors of information varied, but often included the President, physicians, and local government officials. The exercise concluded that "bioterrorism training should include information management for risk communicators and public affairs officers who have the responsibility of providing timely and accurate information to dispel the 'fog' of rumors and misinformation present during the aftermath of an intentional disease outbreak. Journalists and other media specialists should participate actively in scenarios and other similar exercises to gain insight into the complexity of information management in a bioterrorism-related crisis."[55]

The West Nile virus outbreak and spread also provides an excellent laboratory for analysis of public information and education campaigns. The NYC Mayor's office established an emergency hotline, operated by the Mayor's Office of Emergency Management, staffed by the NYC Department of Health, to answer questions about the illness, pesticides (especially the mosquito spraying undertaken by the government), and the use by citizens of insect repellents. The hotline, operating during September and October, received over 150,000 calls. Peak calling periods revolved around spraying schedules and media attention.[56]

Citizens need to have the knowledge necessary for informed decision-making about risks to themselves and to their families. This implies the need for governments/leaders to rapidly gather and analyze facts, develop clear, understandable and actionable advice, truthfully provide continuous information to the media, and help people understand their options.

In several of the simulations, questions were raised about secrecy. To some leaders, withholding information from the public may appear to be a logical course of action to "minimize panic." However, most experts and studies clearly agree that honesty and the provision of maximum amounts of information are essential to an appropriate public response. "In emergencies, law enforcement personnel are accustomed to ordering—not explaining. So the biggest challenge is to involve the general public as participants in the development of norms and procedures for worst-case scenarios. This will require specialists unlearning familiar behaviors that thwart communication. The threshold requirement is for clear, understandable, and candid discussion of the risks, the objective, the problems, the options, and the underlying values at stake—before a response is required."[57]

Insights from Interviews

The El Paso County Emergency Team noted that in a BW emergency, hotlines set up by the health department through special software systems would be staffed primarily by nurses. A central line would be called, and the caller would be "farmed" to a bank of phones. Nurses, or other respondents, will be given assistance to develop standardized, consistent responses to common queries.[58]

Recommendations to Base Commanders

1. The military installation should be able to initiate hotlines rapidly, manned by competent personnel with clear guidance on correct information.

2. A plan to notify media and base personnel of hotline numbers should be in place. Hotlines should be open 24 hours a day during an immediate crisis.

3. A variety of ways to contact base personnel, including alert systems, recall rosters, and internet addresses should be predeveloped for use in a crisis.

LESSONS LEARNED: NATURAL DISEASE OUTBREAKS

Natural disease outbreaks and natural disasters have the potential to seriously disrupt base operations. A BW event would probably be even more complicated in terms of its effect on the mission of any particular base. Such an event may manifest itself slowly, over time, and may have continuing, persistent medical effects that involve not only military personnel, but also their families, and civilian base personnel. The locus of the outbreak may be difficult to determine; it may be either on base or off base in the community where many military families live. As opposed to injury inflicted by an explosion or the disruption of a chemical attack, a BW event cannot necessarily be contained to one geographical area. In the event of an infectious disease, contacts may have been expanded from exposed individuals before the event is completely understood. Standard sensory cues such as location, beginning, and end of the event, are not available.

Natural disease outbreaks have tested the reporting and surveillance networks already in place in the United States. The West Nile virus outbreak has been an especially important real-time crisis, and it has led to greater awareness of the strengths and weaknesses of our public health actors and the response of the

public to health emergencies. The initial outbreak in New York required health professionals—including infectious disease specialists and veterinarian pathologists—to observe disease clusters, report them to public health officials, and engage local health care providers, the media, and government personnel in educating the public and fostering community support for an appropriate response.[59]

The public response to West Nile Virus in New York City clearly indicated the enormous importance of educating and communicating with the public. NYC officials, including the mayor, the office of emergency management, and the health commissioner, were available on a *daily* basis to meet with the press and answer their questions. "In addition, New York's health and emergency management officials made significant efforts to educate a multicultural, polyglot city in the need for mosquito control, by providing multilingual educational brochures."[60]

The Air Force has developed a surveillance system called the Air Force Reportable Events Surveillance System. Suspected cases of an infectious disease such as SARS are reported through that system, and then to appropriate local and state health departments. Each disease requires different health protocols for providers. The CDC is considered to be the primary source of information on diseases, epidemics, and details of transmission and precautions.

In 2003, 12 people at Dyess Air Force Base in Abilene, Texas, were isolated for possible SARS infection. Although all of the initial tests on the 12 had come back negative for the virus, each remained in isolation for 10 days after the last symptom had disappeared, according to the CDC guidelines. This incident demonstrated the need for close communication and working

relationships between bases and local communities. "Despite the circumstances, this was a great opportunity for us to test our procedures and lines of communication for dealing with an event like this," noted Dr. (Col) Schuyler Geller, the 7th Medical Group commander. He noted the cooperation of officials in Abilene and the local hospitals.[61]

SIMULATIONS AND EXERCISES

Simulations and exercises provide important insights into community preparedness for a BW event. Much federal money has gone into these exercises, which attempt to discern gaps in communication structures, potential logistical problems, and inconsistencies in decision-making frameworks.

TOPOFF was the first exercise of national dimensions.[62] It consisted of three mock events that took place during May 2000: a chemical attack in Portsmouth, NH, a radiological attack in Washington DC, and a bioweapons attack in Denver CO. The exercise included FEMA, the FBI, the CDC, and multiple state/county/local response teams. In the Denver portion of TOPOFF, plague was the agent, released in an aerosol on May 17. By May 20, 500 persons at area hospitals presented with cough and fever, the CDC had confirmed plague, and CDC staff had been sent to Denver. Upon declaring a public health emergency, the Governor restricted metro-Denver travel. By May 22, state borders had been closed and face masks advised, and by May 23, there were 4000 cases and 1000 probable deaths.

The lessons of TOPOFF were startling—great uncertainty as to proper roles and decision-making in a crisis; questions arose as to who had legal and moral authority; there was no clear-cut system for triaging scarce resources; actors were inefficient, indecisive, and

decisions were frequently reversed; calls overlapped and callers groped for contact information, as they had never worked with one another before; people felt overwhelmed and expressed a sense of hopelessness; and communication was very inefficient (much time was spent exchanging phone, pager and fax numbers!). Another conclusion from TOPOFF was that local health facilities were totally unable to provide the care necessary during a serious surge in patient population. One of the conclusions was that attention had to be paid to determining pre-designated sites for the worried well, who indeed swamped hospitals.

The implications of the exercise for a real crisis were staggering—and led to many changes and processes that had not been in place prior to TOPOFF. One of the most important conclusions of the exercise was that critical first responders needed to stay healthy while managing a disaster, and in order to maintain their commitment to work, they had to be assured of the safety of their families. This has direct implications for military personnel; concern for families will be paramount in their minds.

In 2001, the Johns Hopkins Center for Civilian Biodefense Strategies in collaboration with other similar groups, held a senior level exercise entitled "Dark Winter," that simulated a smallpox attack on the United States. With a fatality rate estimated at 30% and no effective medical treatment, this disfiguring disease presents a very disturbing threat. The tabletop exercise, in which senior participants were presented with a rapidly changing scenario, was conducted over a two week span. One of the problems with an infectious disease such as smallpox is that by the time the disease is recognized, it will already have spread to the next generation of cases.

Pilch—The Worried Well

The conclusions reached after an analysis of the response of the senior decision-makers reaffirmed those reached in other exercises—"the challenges of distinguishing the sick from the well and rationing scarce resources, combined with shortages of health care staff, who were themselves worried about becoming infected or bringing infection home to their families, imposed a huge burden on the health care system."[63]

For example, a simulation in 2003 conducted by the CDC featured an intentional outbreak of Rift Valley fever in the southern part of the United States. Video and news reports about the fictional nine-day crisis were released to selected first-responders, families, and journalists, and their responses tabulated. The simulation determined that even though federal health authorities served as primary sources of information and direction, all groups demanded more complete information from and expressed more trust in local sources of information. There was also considerable confusion in the community over disease management, the need for vaccines, and necessary environmental measures.

Operation Determined Promise, a national exercise designed to gauge and improve the cooperation between the military and local, state, and federal responders, was conducted in August, 2003, north of Las Vegas. In this exercise, local fire departments worked with members of the National Guard's WMD civil support team to test for pathogens in a "laboratory." These kinds of exercises are time-consuming and labor intensive, but invaluable in what they can demonstrate about response preparedness.

Insights from Interviews

In September 2003, important actors in emergency management on the county and local level in El Paso County participated in an

exercise in which an outbreak of Q Fever was simulated. The exercise pointed to significant improvements in networks of communication between essential partners, including the involvement of the physicians' response group, DR HELP. Because the many actors have worked together in planning and exercises, they know each others' names, numbers, and e-mail addresses, and they have an idea of the prioritization of who should be called, when, and under what circumstances.

The exercise was extremely useful in that it exposed several loose ends in emergency preparedness—among those were questions concerning agreements with facilities (such as schools) as to their use as auxiliary medical locations and decision-making authority as to when to activate Disaster Medical Aid Centers (DMAC).[64]

Recommendations to Base Commanders

1. Exercises and simulations are labor and time intensive. However they can provide extremely useful insights into weaknesses in emergency preparedness.

2. Base emergency response teams should participate as often as possible in community simulations and exercises.

3. Base emergency response teams should be an integral part of "hotwashes" concerning these simulations.

EMERGENCY RESPONSE TO INFECTIOUS DISEASE: QUARANTINE

As has been previously noted, the use of different biological agents requires different responses. In some cases, as in anthrax, there is no person-to-person transmission. In other cases, there is limited risk of widespread person-to-person transmission. Only a small number present such a great risk of serious illness and death that widespread confinement of large groups of people, in large geographic areas, would become necessary. In most cases, serious

consideration must be given to incubation periods of disease and how long it might be necessary to contain populations before the threat of transmission is past.[65] Biological threats such as smallpox require stringent containment procedures, including quarantine.[66]

In the Rift Valley fever simulation, reacting to *rumors* of quarantine, not to an official quarantine announcement, 59% of media and 75 % of residents said that they would comply and not try to leave. Also, six% of residents and 13% of spouses said they would try to leave regardless of the consequences.[67]

The TOPOFF exercise involving a simulated bioterrorism attack in Denver provided great insight into problems of containment of disease. When the Governor's Emergency Epidemic Response Committee, in consultation with the CDC, discussed closing Colorado state borders and the Denver International Airport, not all committee members agreed that borders should be closed. Several asked how the city planned to feed four million people. Another containment measure considered was to have healthy people go to "holding tanks" while the seven-day incubation period of plague passed. Civil unrest broke out (notionally) in the simulation, as people were not allowed to shop, and food supplies dwindled due to the fact that trucks were not allowed into the state. Gridlock occurred, and there was serious civil disruption. One observer noted, "They told 1 million people to stay in their homes. How would we have enforced this?"[68]

If quarantine were to be mandated in a BW crisis, arrangements would have to be in place for monitoring of those who are quarantined. Web cams have been suggested, and even electronic bracelets, such as those utilized by our correctional system. The idea of quarantine has legal and law enforcement implications.

Logistically, if it were to involve a wide area, it is highly problematic.

EMERGENCY RESPONSE TO INFECTIOUS DISEASES OR OTHER BW CRISES: SHIELDING

The goal of both quarantine and shielding is to limit the spread of infectious disease, breaking the cycle of the disease, and preventing further infections. Although quarantine may be necessary in some cases, it is clear that it presents a problem both in terms of its enforcement, its logistics, and the limitations it imposes on civil liberties. For example, it became clear after the TOPOFF exercise in Denver that violations of mandatory quarantine would have been rampant, and that if more extensive limitations on personal freedom had been imposed, there would have been limited enforcement capacity. The initial overwhelming tendency in a terrorized population may be to flee the immediate area that is viewed as a threat. In some crises, the flight response may be appropriate. However, in the event of a BW crisis, flight might be an inappropriate response. It imposes burdens on the infrastructure and would increase the possibility of secondary outbreaks of an infectious disease. Recent work in the area of disease control in the event of a BW attack has proposed a new concept, that of *shielding*, that may provide a far better strategy than quarantine.[69]

The shielding strategy focuses on self-imposed measures, remaining close to home, and support of the needs of the family and community as they remain in place. The essential features of this idea are that people will be given maximum amounts of information and urged to remain at home for a few days or a few weeks at most, for the good of the whole. Thus the epidemic is contained or minimized. Shielding is considered to be a much better option than quarantine in that it enlists the support of the individual and family,

keeps them in locations that are familiar to them, constitutes a positive action for them and engages them before an incident, maintains more functions of society, and ensures the continuity of some of the most important features of our way of life, including self-reliance in conjunction with community support, liberty, and security.[70]

Shielding maximizes the opportunity for the individual to be part of a plan, and to be treated as a responsible adult who can be counted on to function effectively in the event of a crisis. The very idea of planning to remain in one's home and community "will serve as a positive mental health purpose during and following an incident."[71]

We have learned that coping with crisis works better when we are in stable, rather than unstable, environments. "Stable environments offer security because they have an existing infrastructure of support. Knowing where we will sleep, eat, and receive information is always beneficial…anxiety increases in unstable environments where we lack a sense of control and ownership even over basic decisions involving food, water, and hygiene…familiar environments decrease anxiety."[72]

Shielding is rooted in the "consensual ethic of a social compact," as opposed to the coercive nature of a mass quarantine.[73] It can be instituted as a precaution, even before an emergency is declared. This would ease traffic flows and facilitate delivery of essential personnel and products to where they might be needed. However, it does not imply that government activities will be less important. Those who stay at home have to rely upon safe and reliable delivery of supplies and health care when necessary.

Insights from Interviews

Models have been run on the courses of infectious diseases. If a case of smallpox were to present, an aggressive contact tracing initiative would be undertaken. People at risk would probably be vaccinated, and under the shielding concept, a "ring" of those at risk would be asked to stay home. This model suggests that the disease would burn itself out in 53 days.[74] Lt Col Donald Thompson has developed models pertaining to different diseases and the impact on the spread of those diseases with various levels of containment or shielding.[75]

When asked for their response to the idea of shielding, the El Paso Emergency Response Team noted the reluctance of people to stay home, even in blizzard conditions. They acknowledged that a mandatory quarantine presents a logistical nightmare, but stressed that education and home access to health care, information, and food would be essential components of shielding. They anticipated that retirees would be most amenable to shielding, and that many others would have to be specifically directed as to when it was important to stay home from work, and when it was not. The support of businesses would have to enlisted, and economic impact on all parties addressed. Many heads of households would perceive that they could not afford to stay home from work. Additionally, not many families have adequate provisions to stay at home for any length of time. Therefore, in order for shielding to work, the public would have to be confident that their primary needs for food and health advice/service would be met at home, and would not necessitate their leaving home to go to the store, etc.[76]

Stephen Dubay noted the importance of Community Emergency Response Training (CERT), which includes the idea of

a "72-hour kit," that is an emergency supply of basic food and health needs for a family. This idea originated in Japan in earthquake response, and was imported to Los Angeles. FEMA and the Federal Government have endorsed this idea for "all hazards preparedness."[77]

The great advantage of shielding, according to Stephen Prior, is that it is a voluntary response and utilizes existing support systems. He notes that being prepared builds "psychic resilience." People need to know the risks involved to themselves and their families, and what they can do to decrease those risks. Therefore, you need to build knowledge in the public. He adds that building public resiliency in this manner may in itself decrease the risk of attack. He noted the difference in response to SARS in Canada and in Hong Kong. In Canada, a voluntary system featuring extensive amounts of public education and home visits by doctors when called for, worked extremely well. In Hong Kong and Singapore, mandatory quarantines in large residential areas were instituted. Before law enforcement could get there to enforce the quarantine, 50% of the population had fled. If shielding were to be used in the United States, for example in the event of a smallpox outbreak, you would have to find ways for homes to be visited by health care professionals when necessary, and for every home to have absolute access to information. In this smallpox example, potentially infected persons would be asked to take their temperature twice a day. If a person runs a temperature of more than 100 degrees in two incidents, he would be isolated. People need to understand that if they are outside an eight-foot radius of an infected person, there is no risk of infection. Each kind of outbreak would necessitate

different educational content for the public. He stressed that it is knowledge, and not just information, that the public requires![78]

Recommendations for Base Commanders

1. The concept of shielding and its positive relationship to the mental health of the public should be understood.

2. Whenever possible, shielding should be utilized in preference to quarantine.

3. The public needs to understand the specific 'best practices' corresponding to the specific BW event, in order to make informed decisions.

4. Military personnel will be very concerned about the safety of their families. The stability of the home environment is preferable to flight during BW crises, and adds a dimension of personal empowerment that will help diminish anxiety.

5. Shielding within home environments necessitates support of those environments with medical assistance, food supplies, and unhampered access to information.

PREPAREDNESS AND MENTAL HEALTH MANAGEMENT

Terrorist attacks have far-reaching psychological consequences. Mental health consequences may be immediate or delayed, and may have longstanding ramifications for individuals, families, and the community. Addressing these psychological effects begins with preparedness and public engagement in their own planning for potential BW events. This mitigates a community's sense of helplessness and increases the community's understanding of its support role in the event of an attack. This, of course, implies the need to practice continually.

There are some tools available for the education of the public on bioterrorism. The new Office of Homeland Security, for example, has a brochure that can be downloaded from its site, called "Preparing Makes Sense: Get Ready Now." However, the information in many of these brochures is broadly formulated and

may not address the information needs of the public adequately. For example, the "Get Ready Now" brochure attempts to inform the public that biological attacks may not be immediately obvious, that some agents do not cause contagious diseases while others do, and that one should not automatically assume he/she should go to a hospital emergency room or that any illness is the result of the biological attack.[79] Most military bases have some brochures or internet training available on how to respond to a BW attack. These may be helpful and correct, but insufficient to truly educate the public.

Preparation deceases anxiety. The idea that individuals and families can be engaged in taking steps to increase their understanding of and preparation for a disaster is empowering, and in itself, fosters better mental health in a community. Helping others is also therapeutic in times of crisis. Community support networks may become activated, including churches, civic groups, and even homeowners' associations. With proper direction, they can be extremely helpful in community support functions.

Recommendations for Base Commanders

1. Educational seminars for the public on bioterrorism should be developed and instituted, and given at regular intervals to base personnel, who tend to transition frequently.

2. Base personnel should be encouraged to have a basic minimum of provisions within their homes.

3. Information on specific potential biological agents and appropriate citizen response in the event of the deliberate use of that agent should be disseminated to the public to enhance knowledge and preparedness. To facilitate this, the base readiness team, especially medical contingency teams, should have current fact sheets on hand or should be aware of exactly how to access very specific information on illnesses and agents. The CDC remains the main source of expertise; however,

communication routes should be established with state, county, and local health authorities.

4. The military installation should NOT rely on computerized lessons/exercises or website information on BW threats. Although these are better than no education at all, there are better educational methods for preparedness available. Websites should be up and running, and may be useful in a crisis. However, it is unlikely that the public will access them in the absence of a specific crisis or some kind of preparedness exercise that calls their attention to the web resource.

COMPLEX RELATIONSHIPS BETWEEN LEVELS OF GOVERNMENT AND OTHER ACTORS

Clinicians will be essential actors in both the detection and response phases of a BW attack. Recognition of diseases will be assisted by surveillance mechanisms, but alert physicians are equally, if not more, important. Frontline clinicians are also very important in dealing with the worried well. In the anthrax crisis, they "faced a challenge that often was even more difficult than diagnosing anthrax—excluding the diagnosis among the many worried patients with concerns about potential exposure among those who sought care for rashes or illnesses suggestive of the diagnosis. In the absence of algorithms or rapid diagnostic tests, their clinical judgment helped reassure patients and avert the distraction that initiating unneeded response efforts would have otherwise entailed."[80]

Effective community response teams will comprise local government officials, emergency management officials, public health authorities, health care organizations, police, fire, public works, emergency medical services, local industry leaders, and other key participants. The wider response will involve state public health departments and federal agencies, notably the Department of Homeland Security, the CDC, and the Department of Health and

Human Services, among others. This labyrinth of agencies and organizations that will be drawn into any crisis situation requires a well-thought out communications plan, that is continually updated. Exercises and simulations provide important means to test communications networks, and to uncover "holes" in the decision-making structure.

Insights from Interviews

A scenario of a bioterrorism event might unfold as follows:[81] an incident increase in a disease or illness would probably be detected by a surveillance system such as CEDRS. The State Department of Health and pertinent county health department would be notified. Local emergency team directors would become involved, as would the FBI. There would be an initial notification of primary stakeholders, and an Emergency Operations Center would be activated. This operations center would include representatives from approximately 40-50 agencies. It would serve as a center for the gathering and dissemination of information. The local director of the Office of Emergency Management would report to the military installations, and would ask for information on the military installation response (such as potential lockdowns). A Crisis Communications Center would become activated, in conjunction with the EOC.

An essential component of the emergency response system in Colorado Springs is the Metropolitan Medical Response System (MMRS). Even prior to September 11, the Federal Government had identified the need for communities to prepare for mass emergencies, including natural disasters, epidemics, and terrorist incidents. Federal assistance was targeted at first to larger urban areas, such as New York, Los Angeles, Chicago, and Washington,

DC. Colorado Springs was identified for the second round of funding.[82] The MMRS is part of the National Disaster Medical System, which is managed by the Department of Health and Human Services. The strategic national stockpile of medicines, cached in secret locations around the country, also falls under their purview. Needed medicines can be rapidly deployed to critical areas under this program.

Military assets can be called upon in the event of an emergency. For example, Ft. Carson can provide assets to the local community even without permission from the Secretary of Defense and the Department of Defense in an immediate emergency (Military Assistance to Civil Authorities, MACA). The Governor of Colorado can activate the National Guard as well. Colorado Springs is in the 8th Federal Region; each Federal Region retains civil support teams that can assist the local community.

In El Paso County, a Multi-Agency Terrorism Task Force meets monthly, and constitutes the framework for the EOC. Although counterparts from local military installations do participate in some of these groups and exercises, some feel there has been a decline in joint planning. However, most feel that there is excellent communication between military installations and Colorado Springs teams. The one possible weakness in cooperation identified was in resource-sharing. One community leader noted that he suspected that most emergency personnel in the community and on the bases probably don't even know that a resource-sharing plan exists; if they do know that, they might not know where it is or if it still applies.

Another pertinent observation was that continuity in planning and in maintaining lines of communication is hindered by the

frequent change in base commanders and other military personnel. It was recommended that a position on coordination with the community for emergency preparedness be created on installations, and that it be filled by a civilian who might have a longer tenure.[83] If there were to be such a position, such as a deputy commander, there would be much greater institutional memory and continuity. Every person on the medical contingency team at a military installation should know his counterpart in the community.

When asked the question "What do you worry about most in terms of a BW event," the Director of the Colorado Springs Office of Emergency Management echoed the sentiments of county officials. "I worry that the initial episode will be chaotic, and that we will have difficulty getting everyone on the same page. I worry about getting the situation organized and getting correct, and not incorrect, information to the public. I worry about panic."[84]

The City of Colorado Springs has a very active group called DR HELP (Disaster Response for Health in El Paso County Task Force and Medical Reserve Corps (MRC), created on the initiative of the El Paso County Medical Society. It serves as the planning body and lead organization to recruit and train volunteer health professionals to serve as the MRC of El Paso County and southern Colorado. It is designed to integrate health care professionals into disaster planning for the community. In the event of a crisis, it serves as the resource that will assist in activating health care personnel and DMACs. When they are overwhelmed and need to divert, hospitals would communicate with the El Paso Department of Health and DR HELP. DR HELP will be instrumental in credentialing health care workers and in setting up and manning primary and secondary DMACs, such as schools and long-term care facilities.[85] The report

outlining the role that DR HELP plays in emergency preparedness says that "(w)e will bring a greater predictability to volunteer resource capability and will be able to demonstrate that we will strengthen medical response and can reach "surge" capacity in our area. The challenge is to find financial resources in order to credential and then further educate and train health professionals."[86]

Recommendations for Base Commanders

1. Base Commanders should establish a position to be filled by a civilian to coordinate with local communities on emergency preparedness. This would provide historical memory for the base commander and would address the problem of continuity that confronts emergency planners in the community when communicating with the base.

2. Base Commanders need to know about community initiatives, like DR HELP, that may become very important in an actual crisis, but may not be readily apparent when looking at agency/government networks. Participating in these kinds of groups is very advantageous and will enhance a coordinated approach to a BW event.

PREPAREDNESS: MILITARY INSTALLATIONS AND LOCAL COMMUNITIES

It is clear that "(d)etection, diagnosis and mitigation of illness and injury caused by biological and chemical terrorism is a process that involves numerous partners and activities. Meeting this challenge will require special emergency preparedness in all cities and states."[87] It is also understood that effects of the use of weapons of mass destruction are not limited by geographical boundaries, fences, or gates. "If an attack involves terrorism or weapons of mass destruction, it doesn't stop at a fence line. Chemical and biological weapons don't discriminate."[88]

As the time period between terrorist crises lengthens, there is a tendency to lose focus and intensity. "We must recognize the possibility that a determined terrorist organization may not be

deterred, may evade detection, and may succeed in releasing an aerosol of a virulent bacterium, virus, or toxin in a susceptible target area such as an airport or stadium. Our current capability to effectively respond to such a scenario and minimize the impact is far less than needed. The US Armed Forces and the Department of Defense have the greatest capability in biologic defense, but the responsibility for dealing with the threat of biologic weapon use by a terrorist falls on multiple federal, state, and municipal agencies and the civilian health care community. Most of the organizations are inadequately prepared to deal effectively with the problem."[89] As previously stressed, "(r)obust systems must be in place for dissemination of information during and following the attack. Resilience of these systems must be well tested in advance."[90]

In responding to a BW attack, the federal government will play an important role. However, local communities will almost certainly play a far more important and immediate role as people's needs are addressed. They can react quickly to an event, and have connections with essential groups and organizations within the community that may become activated to play vital support roles.

Insights from Interviews

Lt Col Donald Thompson stressed that commanders need to fully understand that "bases are not islands."[91] Their personnel live in surrounding communities, and children, spouses, workers and supplies pass through their gates daily. In the case of the US Air Force Academy, for example, there is no longer ambulance service on USAFA, but rather a contract with AMR. Fire Departments have mutual aid agreements. There are agreements as to the use of medical personnel and facilities by the civilian community, but

these agreements may not be relevant in the event of a base lockdown.[92]

In a BW crisis, bases may be called upon to assist local communities in multiple ways; for example, contingency plans specify hospitals and clinics on bases that may be needed to augment community health facilities. Conversely, local community resources are likely to be utilized heavily by base personnel living off the base. Local emergency response teams urge that base commanders fully coordinate emergency response plans with those of the local community in which the base is located.

Lt Col Thompson noted that contact tracing in the event of an intentional infectious disease outbreak will be a critical step in controlling the spread of the disease. Because bases and communities are so intertwined, contact tracing will require extensive cooperation. This will require additional effort and resources on the part of base health personnel and community personnel.[93]

The El Paso County Emergency Task Force asked the question as to whether, if a quarantine were imposed upon the county or portions of the county, a base commander could override that decision. One hundred percent of the personnel who work at Schreiver AFB, live off base. Clear directives as to decision-making authority between state/county/local authorities and base commanders need to be established.

Another example of the importance of communication between the military installation and local health authorities was illustrated when 10,000 Ft. Carson personnel were vaccinated for smallpox. Up to six of those in contact with those vaccinated, not the soldiers themselves, had adverse reactions, and some presented at Memorial

Hospital. There was a lapse in communication between the military installation and the County Department of Public Health about these adverse reactions.[94]

The El Paso County Emergency Team continually noted the importance of continuity, practicing together, coordination, and communication between military installations and their local communities. One noted that the MAT, which consists of 60-80 people and includes military members, is "the best thing our community has going for us!"[95] This forum provides a regular venue for planning and communication between many facets of the community, and it includes representation from military installations.

Stephen Dubay, when asked what he would want base commanders to know, answered that he would stress the concept of military installations partnering with local communities and fostering good relationships with civilian counterparts. Building trust between leadership of the two entities is critical in a situation where a threat does not respect artificial boundaries. He also noted the importance of military families having a discussion about their family strategies in the event of a crisis, particularly if they are "torn apart." The base commander needs to understand the importance to his personnel of the safety of their families.[96]

Recommendations for Base Commanders

1. The nature of the interdependence between the military installation and the community needs to be understood, as it is different in each situation.

2. The base commander should seek representation on the major emergency response forums and teams in the community.

3. A multitude of agencies and organizations have stakes in emergency preparedness. Understanding this complicated and complex network of emergency response is extremely difficult,

and cannot be adequately accomplished in the climate of an actual crisis. Therefore, a flow-chart of this network should be developed and maintained before any crisis takes place.

STRATEGIES FOR ENGAGING THE PUBLIC

Although we know that the worried well will be a part of public response to a BW incident, we also know that the American people have great capacity to react with courage, compassion, and a sense of community responsibility during a disaster. However, preparedness and planning are essential to such a constructive response. Panic need not occur, nor should it be assumed by leadership that it automatically will occur.

However, we also know that people will ignore risk to get to their families in times of crises. If families are together, anxiety is reduced. The family unit is of primary importance in times of crisis. In addition, if people have a plan ahead of time, they do better. Panic behavior occurs where choices are limited, such as trampling in stadiums or in fires, where exits are few.[97]

The public can be engaged in many constructive ways to address a bioterrorist threat. Giving the public a positive role to play, assisting them with self-help measures, helping them understand the crisis, the government response, and the plan for recovery, making use of trusted local spokespersons and civic organizations to disseminate important information, treating the media with respect, and engaging the public in frank discussions about problems where civil liberties and disease control collide (such as containment and quarantine), will pay enormous dividends in public cooperation. Panic is "rare and preventable."[98]

True panic responses (for example, where people are trampled in attempts to escape burning buildings) occur when a crowd perceives no means of escape from a dangerous situation. Many

studies of catastrophes, however, show that the response of the public can be one of "resourcefulness, civility, and mutual aid."[99] In fact, many experts suggest that "(t)he myths of irrational and antisocial behaviour in disaster are not just erroneous—they hamper the effectiveness of emergency planning by misdirecting the allocation of resources and the dissemination of information. For example, expectations of citizen "panic," often become the justification for giving the public incomplete information about an environmental threat or withholding information altogether."[100]

In a fascinating comparison between a smallpox outbreak in Milwaukee in 1894 and another in New York in 1947, the public response to government strategies is markedly different. In 1894, the outbreak precipitated urban rioting that lasted for one month. In New York, where one man brought smallpox back from Mexico, a large voluntary mass vaccination program was undertaken. The Health Department relied on case tracing, voluntary vaccination, and daily press conferences. People felt they were being kept informed, and even President Truman came to visit New York, after being publicly vaccinated. Lots of volunteer workers helped, as did other civic groups. "Public compliance was incredibly high."[101]

Public reaction to a crisis is greatly shaped by their perception of the competence and trustworthiness of government. Experts on the shielding concept note that "(i)t is the opinion of the authors that the public response will in part be conditioned by local perceptions of the federal government and the trust, or otherwise, in the state and local authorities."[102] Engendering trust and confidence needs to be given extremely high priority by public officials.

Recommendations to Base Commanders

1. Do not expect a panic response from the public. Treat the public as equal and intelligent partners in the crisis. Expect cooperation and positive civic response.

2. Try to continually build trust and confidence in government, by aggressively seeking and disseminating the truth and letting the public know your efforts on their behalf.

LEADERSHIP

What leadership styles have been shown to be effective in a disaster scenario? The importance of leadership during a crisis cannot be overemphasized. The trusted leader relates to the public with empathy, candor, and courage. He/she is visible and draws on reservoirs of public confidence that have been well-established in the past. The leader is decisive but not arrogant, confident but not falsely optimistic. The leader communicates both what he/she knows and what he/she does not know, and assures the public that the crisis is being addressed competently. Messages are simple, direct, and straightforward; leaders treat the public as intelligent, cooperative adults.

Recently, the Director of the Center for Disease Control was asked about her vision of leadership, if a BW event were to occur:

Q: "As director [of the CDC], you are going to be the focal point in a crisis. How will you reach out to Americans? How will you quell panic?"

A: "I don't have a mature answer to that. It's something that I'm practicing; it's something that I'm getting training in. I think that Mayor Giuliani is a role model of effective communications during a crisis. What I observed about his communication was that he was consistently there with news. He read the news, he told the truth, he said what he knew when he knew it, and he told people what he didn't know and what they were doing about it. He also

communicated a very strong message of empathy that came across as sincere and heartfelt."[103]

Additional observations by insiders on Mayor Giuliani's leadership style are, "He embraced that role of being a leader with confidence, but not with arrogance. His credibility for that role was strengthened by the fact that he was everywhere. He was seen, he was very visible…. Another element of his leadership was the credibility of his public statements. No doubt there is a great temptation for government leaders to put out reassuring and comforting statements to the public, but those very same reassuring statements can badly damage credibility with a loss of trust when the statements are found to be inaccurate or less than an honest assessment of their safety."[104]

In Dark Winter, the smallpox simulation conducted in 2001, it was noted that "(t)he individual actions of US citizens will be critical to ending the spread of contagious disease; leaders must gain the trust and sustained cooperation of the American people."[105] To gain cooperation of the public, there must be a perception of fairness, and a sense that emergency measures are taken for the good of the whole.

Insights from Interviews

To facilitate cooperation and an appropriate public response during times of great insecurity or crisis, trust in government, leadership, and public institutions is essential. This cannot be developed overnight; it has to be nurtured continually, so that when a crisis erupts, a reservoir of trust and confidence already exists.[106]

Recommendations for Base Commanders

1. Be visible! In times of crisis, people need to see their leaders.

2. Be visible before a crisis. During a BW event, information from trusted leaders will be absolutely critical. If they know who you are, they will look to you for guidance and trust what you say.

3. Emotional support to your personnel in a crisis is as important as the more obvious duties you will need to coordinate.

4. Recognize the validity and importance of mental health issues. Don't allow them to be ignored; weigh in against stigmatization of those who suffer psychologically during a crisis.

5. Recognize the importance of families to base personnel. Military personnel will only be able to function effectively if they have confidence that their families are safe.

6. Be decisive, but not arrogant. Be open and honest with your personnel. Treat them as part of the solution to any crisis. Enlist their support and cooperation. Don't be afraid to be human.

CONCLUSION

The problem of the worried well and mental health consequences in the event of a BW crisis deserves serious attention. However, it cannot be addressed adequately simply in terms of health facility capacity and patient surges or emergency preparedness. Understanding how populations might react in an actual crisis is important. Populations will worry about their health and may present with or without symptoms of various kinds when they become aware of an attack. Many will experience heightened fear and anxiety, and this will lead to health consequences. Short- and long-term mental health will be implicated for many.

The question of how base commanders and other base leadership should respond to mitigate these effects cannot be looked at in a vacuum. Because the threat will undoubtedly not be limited to the base exclusive of the surrounding community or vice versa, the answer to an effective mental health response has to be looked

at within the context of the relationship of the military installation to the community in emergency preparedness.

Perceptions of community leaders in El Paso County show that cooperation and coordination with bases is highly desirable. Cooperation has increased since September 11, but there are still some areas where it could be improved. Because communication and information are such critical components of emergency response, coordinated messages and open lines of communication need to be assured.

Psychological distress and the anxiety of the worried well is most effectively addressed through early, straightforward, and simple communications from trusted spokespersons. Guidance on options and education on risk are essential. The public needs, and should be trusted with, knowledge of the incident and its potential impact on themselves and their families. They should be supplied with plans that can be actualized. Preparedness on the part of the public should be encouraged; messages that empower individuals and families, and assist them in intelligent planning, will mitigate negative psychological consequences. Leadership and communication skills become paramount in a crisis, and attention should be paid to training in these skills prior to a crisis. Finally, networks and cooperation between local communities and military installations are essential components of an effective response to a crisis.

While acutely ill patients have to be prioritized in the event of a BW attack, attention must also be paid to the worried well and others affected psychologically. Long after the immediate crisis is over or an infectious disease runs its course, a community/base will experience mental health consequences. "How do we reconstruct a

belief in justice and safety in the wake of a mass terrorist attack? Without attention to mental health, i.e. the 'psychological side of terrorism,' we run the risk of rebuilding a nation without a spirit, without vitality, without a sense of humanity."[107] The manner in which the issue of the worried well and psychologically traumatized is handled during a BW attack matters; it will have significant implications for the long-term mental health of our nation.

NOTES

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[17] Becker, "Are the Psychosocial Aspects of Weapons of Mass Destruction Incidents Addressed in the Federal Response Plan," 1810.

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[43] Benedek, Holloway, and Becker, "Emergency Mental Health Management in Bioterrorism Events," 402. Loved ones may include friends, children, and pets!

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Richard F. Pilch, MD, Scientist in Residence, Center for Non-Proliferation Studies, Monterey, CA, May 28-June 4, 2003.

Lt Col Donald Thompson, Office of the Surgeon General, Northern Command, Sept. 15, 2003.

Stephen Prior, Potomac Institute for Policy Studies, Critical Incidents Analysis Group, telephone interview, Sept. 19, 2003.

Stephen Dubay, Director Office of Emergency Management, Fire Department, City of Colorado Springs, September 23, 2003.

Charles C. Benight, PhD, Associate Professor of Psychology and Director of UCCS Trauma Center, September 25, 2003.

DR HELP (Disaster Response for Health in El Paso County), observed monthly meeting, September 23, 2003.

Arnie Lavelett, Commander Emergency Services Division, El Paso County Sheriff's Office; Larry Schaad, DVM, MPH, Chief, Health Systems Development, El Paso County Department of Health and Environment; Jim Mesite, Emergency Program Manager El Paso County Sheriff's Office; and Jim Reid, Assistant Fire Marshall, Emergency Services Division, El Paso County Sheriff's Office—Group Roundtable Interview, September 25, 2003.

Maj Mike Bailes, USAF Academy Medical Readiness and Plans, September 26, 2003.

Sandra Knight, PhD, President of the Mental Health Association of the Pikes Peak Region, October 3, 3002.

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