

SUPPLEMENT TO

M A N A G E D

Care

Is Health Care Prepared For Bioterrorism? A Discussion Forum About A 21st Century Public Health Threat

Based on the Thomas Jefferson University Office of Health Policy
Ninth Annual Summer Seminar
July 11, 2003, Philadelphia

HIGHLIGHTS

- Improving Response to Terror and Infectious Diseases
- Creating a Health Care Agenda for Homeland Security
- In Response: Procedures, Programs, and Needs

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INTRODUCTION

DAVID B. NASH, MD, MBA

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Being Ready for an Insidious Threat

“**W**isdom is not so much knowing what to do ultimately as it is knowing what to do next.” Herbert Hoover wrote those words in 1958, but in reflecting on the bioterrorism events that took place two autumns ago, Hoover’s words are no less prescient today.

Those incidents were a wake-up call for the health care community. It forced a critical self-examination: Are we prepared to deal with a similar event in the future? We know what we’d like to be able to do. Do we know *what* to do?

In its annual Summer Seminar, last July, the Office of Health Policy and Clinical Outcomes of Thomas Jefferson University assembled a national and regional leadership group to discuss the health care community’s role in a bioterrorism event and its ability to respond effectively. The panelists agreed that this is a major challenge facing the health care system, with far-reaching implications. On a national level, the government has identified preparedness gaps and areas for research. On a local level, public health officials have recognized the need for better cohesion between “first responders” — policy, firefighters, and EMTs — and hospitals, clinics, and community physicians. All agree that better surveillance and less fragmentation of effort will go a long way toward implementing national readiness goals at the local level.

Look at the page facing this, and you’ll grasp the cachet of our panel. This is the ninth consecutive year we have provided this free seminar, the goal of which is to stimulate thinking among local providers about how to adapt to national health policy trends for the good of the community. While this session occurred in Philadelphia, Pa., its key take-away points are equally relevant for Phoenix, Ariz., Phillipsburg, N.J., or Philadelphia, Miss.

We would like to thank Thomas J. Nasca, MD, dean of Jefferson Medical College, and Thomas J. Lewis, CEO of Thomas Jefferson University Hospital, for their continued enthusiastic support of this program.



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REFORMING HEALTH CARE WORLDWIDE

Improving Response to Terror and Global Emerging Infectious Disease

WILLIAM WINKENWERDER, MD, MBA

Assistant Secretary of Defense for Health Affairs

William Winkenwerder, MD, MBA, is responsible for addressing the health needs of the United States military. In an age in which American forces are more vulnerable than ever to biological or chemical threats, the responsibilities of Winkenwerder's job have grown proportionately.

Winkenwerder, a graduate of University of North Carolina Medical School who received his MBA from the Wharton School at the University of Pennsylvania, provides a close-up look at the complex combination of efforts to defend our nation against the worldwide threat of bioterrorism.

At about 9 a.m. on the morning of Sept. 11, 2001, I was poised to receive a call from Washington confirming that President Bush had approved my nomination for the position of assistant secretary of defense for health affairs.

Needless to say, that phone call never came that day. In the hours that ensued, I was unable to reach anyone at the Pentagon. When, after two days, I finally got through, it immediately became clear that my assistance was needed there — irrespective of the fact that my nomination had yet to become final. Ten days after Sept. 11, I went to work at the Pentagon as a consultant — with the smoke still circulating through the hallways.

It was a bizarre experience going from where I had been mentally — the comfort of my home, surrounded by family and friends — to this new and larger world of great uncertainty and risk.

It was mid-October when, in the hearing room next to Sen. Thomas Daschle's office — and on the day before that first letter containing anthrax arrived there — the Senate confirmed my position. The following week, the anthrax issue became a top inter-

national news story. Within two days of my swearing-in, I received a call from the front office, requesting that I go immediately to the White House. "Good gracious, for what?" I asked. I was to represent the department at a news conference where Thomas Ridge (at the time, the president's special assistant in charge of homeland security) would be making an announcement.

I found myself on the primary stage before the world media, suddenly being pounded with questions about the source of the anthrax specimen. All I had seen about the incident on the previous day was that a few people had arrived to conduct an electron microscopy of those samples. Now I was being asked to characterize that experience.

We all did our best to react intelligently to something we did not understand. It took a long time to get our arms around it, let alone explain it. That is a position we never want to be in again.

Such was the nature of my first brush with bioterrorism in my new governmental role.

The threat of bioterrorism

As Americans, we face a new world in which bioterrorism is a real threat. In military parlance, the term *symmetric threats* describes situations wherein adversaries use similar combative weaponry or comparable approaches to warfare; when an adversary uses new or different approaches or weapons, the term *asymmetric threat* is used. The approaches that terrorists use are clearly asymmetric. They are not preparing to take on the United States or any other Western power with conventional military force.

At least 10 countries now have what we tend to perceive as offensive biological weapons programs.

The former Soviet Union had a massive biological weapons program until the early 1990s — a program that continued even after the fall of the Berlin Wall. Unfortunately, it's not clear exactly what happened to either the pieces of that program, such as the mass quantities of anthrax and smallpox spores produced as weaponry, or the highly paid scientists who ran it. We know now that the Soviet program was responsible for some accidents that killed a number of people but that these were covered up.

Knowledge regarding biological agents and their potential as weapons has increased dramatically in recent years. Our intelligence indicates that Al Qaeda and other terrorist groups are keenly interested in bioweapons as a mechanism for mass destruction.

Large quantities of guns, ships, submarines, and missiles can be obtained only with a lot of money. Whereas the development and production of biological agents require knowledge and expertise, they do not require excessive amounts of money. Basically, biological agents cost far less than conventional weaponry and can create an equally large impact; thus, they constitute a model asymmetric threat.

Infectious disease as a global threat

Aside from the problem of bioterrorism, globally emerging infectious diseases such as HIV, West Nile virus, severe acute respiratory syndrome (SARS), orthopox, and monkeypox pose serious threats to our nation.

AIDS. Forty two million people are infected with HIV worldwide, according to the latest figures from the World Health Organization (Avert 2002). Worldwide, there have been more deaths from AIDS since the beginning of the pandemic than from all the wars of the 20th century combined.

West Nile virus. Only a few years ago, West Nile was not on the United States' radar screen. It has since shown up in every state in the nation.

SARS. We have had approximately 8,500 cases of SARS globally to date, with about 900 deaths (WHO 2003a). Those of us watching closely were as-

tounded by how quickly the disease spread. Moreover, the impact of its rapid progression was felt not only in terms of the profound fear it generated due to high morbidity and mortality rates, but also in terms of economics. The financial consideration is likely to be what ultimately drove the leaders of China, Taiwan, and other places in the region to take aggressive action.

Malaria. This is an old disease, but at the global level, there are 300 million cases annually (Preventing Malaria 2003). Each year, this disease accounts for 1 million deaths — 90 percent of which occur in Africa, mostly in children under age 5.

In fact, in Africa, malaria accounts for 40 percent of public health expenditures, 30 to 50 percent of inpatient admissions, and up to 50 percent of outpatient visits. WHO estimates that Africa's gross domestic product would have been as much as \$100 billion greater in 2000 alone if malaria had been eliminated (WHO 2003b).

Tuberculosis. More than 50 million individuals become infected with TB each year; 8 million people become sick, 2 million die. To

demonstrate the seriousness of the threat, current estimates hold that between now and 2022, approximately 1 billion people will be newly infected with tuberculosis if current trends continue or if control is not strengthened (WHO 2002).

Leishmaniasis. This is a parasitic disease that is transmitted by the bite of a subspecies of the sand fly. It is found in tropical and subtropical countries around the world and in southern Europe. No vaccines currently are available for this disease, which has tremendous effects in Africa. When leishmaniasis is comorbid with HIV, mortality rates radically increase. Without treatment, this disease is 100 percent fatal.

The future. Looking ahead, with respect to genetic engineering of viruses and bacteria, it is possible to change the character of a disease or a biologic agent through genetic manipulation. As our experience in this area grows, problems that are engineered in the genetic laboratory are sure to occur. The intelligence



William Winkenwerder, MD, MBA

data on this subject indicate that while this is not an immediate or imminent problem, in 5 to 15 years, it could be huge in terms of how to create what is called *bioassurity*.

Emerging solutions

Investment in third world economies is an important step toward creating economic and political stability. This kind of support forms the basis of a sound and effective health care system, which, in turn, affects the health of the people. Exemplary changes are occurring; in Uganda, for instance, the incidence of HIV has dropped dramatically due to an aggressive campaign. Obviously, though, there have been failures; these include Afghanistan, Sudan, Botswana, and Liberia, where American and United Nations forces have been deployed to stabilize the situation. Liberia ranks as 174th out of 175 nations in terms of health; it simply has no health infrastructure.

Some answers reside in improving these countries' public health infrastructures. Effective management of these problems demands educated leadership, and at least some segment of the public must be educated about the source of their problems and the disease that occurs without the most basic services of water, sewerage control, and electricity.

This is an issue we face in Iraq right now — and a source of many of its internal problems. Much disease and malnutrition in Iraq relates directly to the lack of these basic services. United States forces will transport medicines and vaccines across the country as we build a relationship with the Iraqi medical community. After the initial groundwork is laid, our focus in this area will be on getting primary care services broadly distributed and rolling out vaccination programs.

Also, we are evaluating a "Partnership in Health for Iraq" program, in which institutions here establish one-on-one relationships with hospitals in Iraq. Hospitals there need books, journals, and other basics. At the same time, Iraqis take pride in their own capabilities, so it is important that we be culturally sensitive to such issues.

Part of the solution to the global spread of infectious diseases is a new 5-year, \$15 billion HIV/AIDS program targeted for Africa. That program generated a reaction from the American public, which

wondered why we are spending that kind of money considering the state of our economy and our own health system. While this may seem like a large sum, \$15 billion will not solve this problem. It's going to take several orders of that magnitude, and some must come from other developed countries, such as Japan and the European countries. Thanks to a challenge by President Bush, those matching dollars are likely to be forthcoming.

It is essential to move toward prevention as well as treatment; thus, some of this money will be targeted towards antiretroviral treatment, which can prevent transmission from mother to child during pregnancy. A substantial portion of this money also must go toward meeting educational needs. With respect to both prevention and treatment, it is necessary for the political leadership of the affected nation to embrace the respective challenges and take steps to meet them.

Biodefense strategies

The national biodefense strategy that is emerging functions at the federal, state, and local levels, as well as within the private sector. The Department of Health and Human Services is the lead agency at the federal level, but we at the Department of Defense play a support role to the civilian sector, in addition to attending to the military's needs. The Departments of Homeland Security, Justice, and Transportation, as well as the FBI and CIA, are beginning to think about how infectious-disease threats could manifest in the event of actual outbreaks. Whether diseases occur naturally or are deliberately spread, many aspects need to be considered.

Some progress has been made, providing cause for optimism. Almost \$11 billion has been spent on biodefense and related programs at the federal level. In the last 18 months, we have greatly improved intelligence and threat assessment. In addition, there is heightened recognition of the need to invest intelligence dollars and assets to address potential biological threats. An emerging Terrorist Threat Integration Center is being formed with support from the CIA, the Departments of Defense and Homeland Security, the FBI, and other agencies to integrate investigations into this area. We have tightened biosecurity regulations, and efforts have been stepped up to track the transport of biological agents.

As recently as six years ago, scientists in countries such as Iran could order specimens through a tissue-typing service that simply would send the selected specimens to whomever placed the order. This is not a secure way to manage distribution of extremely dangerous agents; the security of that system therefore has been tightened considerably.

Biowatch, a new and important environmental program, has continual air monitoring in key locations in a large number of United States cities to detect the aerosolized spread of about eight biological agents. These are early-warning monitors. Were there ever to be a mass aerosolized attack, we are more prepared than ever.

Relative to vaccinations, we now have adequate smallpox vaccine for everybody. Smallpox-vaccination programs for the military and civilian sectors have been initiated. We also have a stable supply of anthrax vaccine. About 750,000 military personnel have been vaccinated against anthrax.

Various other tactics are being used; \$2 billion has gone from the federal government to states for laboratories, surveillance, and enhancements in the public health infrastructure. The strategic national stockpile (formerly the national pharmaceutical stockpile) has been increased. There have been exercises, such as TOPOFF (see box at right), and operational plans are in place for responding to SARS and smallpox.

An important element of this biodefense strategy is investment in research and design, as well as in the areas of drugs and diagnostics. Currently, Congress is considering "bioshield" legislation for new medical countermeasures. If it passes, this would provide approximately \$6 billion during the next 5 years to help us acquire more anthrax vaccine, a new smallpox vaccine, and other medical protective agents.

Air travel and international commerce are concerns with respect to the movement of disease or related threats (e.g., the monkeypox virus entered the country through an exotic pet shop). Food is transported around the world, raising the need to attend to agents that could become attached to food.

TOPOFF (Top Officials)

In response to the global threat of terrorist activities, the Department of State, Department of Justice, and the Federal Emergency Management Agency (now under the Department of Homeland Security) conduct a series of realistic exercises involving top government officials. These real-time exercises, called TOPOFF (Top Officials), are designed to improve the capacity to carry out an integrated response to an actual attack waged with weapons of mass destruction. These exercises effectively train responders, gauge preparedness, and identify areas needing improvement. Each scenario that participants face forces them to produce a coordinated response to terrorism, dealing with a range of issues from infrastructure protection to medical management.

Foreign governments also participate in TOPOFF, as do law enforcement, health department, and other non-governmental officials. These exercises involve thousands of personnel and include the attorney general, the Secretary of Health and Human Services, the FBI director, and the FEMA director.

The first TOPOFF was held in 2000 in two locations. In Colorado, participants faced a simulated chemical attack, while in New Hampshire, participants confronted a realistic biological attack. TOPOFF 2, held last May, entailed the simulation of a radiological device explosion in Seattle and a covert biological attack in Chicago.

SOURCE: United States Department of State, Office of Counterterrorism. Fact sheet. Available at: [«http://www.state.gov/s/ct/rls/fs/2002/12129pf.htm»](http://www.state.gov/s/ct/rls/fs/2002/12129pf.htm). For additional information, see the Department of Justice's Office for Domestic Preparedness Web site: [«http://www.ojp.gov/odp/exercises/state.htm»](http://www.ojp.gov/odp/exercises/state.htm).

Additional protection programs

The United States is working actively to curb the aforementioned threats in a variety of areas:

- At the Department of Defense, an important doctrine called Force Health Protection and Readiness recently emerged. This outlines definitive protective and educational measures at the individual and population levels.
- A key educational element is informing commanders of their responsibilities relative to the possible use of chemical and biological agents. Today's military leaders are much more educated than their predecessors about how to protect people, how to use an early-warning mon-

itoring system, and when to initiate antibiotic or antidote treatment.

- With respect to global surveillance, with the Centers for Disease Control and Prevention, we have established seven laboratories around the globe, where scientists collect specimens and work with host nations and local communities to gain knowledge about emerging infectious diseases.
- Finally, we are focused on reducing the potential threats that are posed by malaria and tuberculosis. The most promising candidate for malaria vaccine is now being developed in a United States Navy research lab. The benefits of such a vaccine, locally and globally, cannot be overstated.

Conclusions

We face a new nexus of threats throughout South-west Asia and Africa, which are steeped in political and economic instability. Disease drives failure and despair in these countries, where economic devastation and political instability are linked directly to high incidences of HIV/AIDS, tuberculosis, and malaria. These vulnerable areas inevitably become fertile grounds for terrorism, providing ideal settings in which terrorists' interest in biological agents as tools of destruction can take root.

These threats can be dissolved through a combination of efforts from the international community. For the United States, the focus must be on bio-defense and emergency preparedness. The greatest challenge at the federal level is to be found in coordinating our activities. We already have many of the answers. What remains to be determined is the execution of our plans, an extreme challenge when coordinating among as many as five large bureaucracies that are working across politics.

Addressing bioterrorism is truly an issue of national security and not a political issue. There also must be coordination between the federal government and states, in terms of preparedness and action. Medical leaders must embrace these perspectives and take every necessary step to improve security.

In addition, there has to be an element of public trust. Those of us who focus on the threat of bioterrorism have disturbing information at our disposal. In our public communications, we seek to be specific without divulging information that will undermine our efforts or threaten security, yet we understand the need for public discourse on how to improve security and face these and future challenges.

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THE DOMESTIC AGENDA

Creating a Health Care Agenda for the Department of Homeland Security

ERIC K. NOJI, MD, MPH

*Special Assistant to the Surgeon General for Homeland Security
United States Public Health Service*

Eric K. Noji, MD, MPH, a captain in the U.S. Public Health Service, has devoted his medical career to caring for people who have been affected by large-scale natural and industrial disasters.

Through his work at the U.S. Centers for Disease Control and Prevention in Atlanta, Noji also has been immersed in care and prevention issues related to biological warfare agents, especially since the events of Sept. 11, 2001, and the anthrax incidents that followed.

In the spring of 2000, Noji became associate director of the CDC's bioterrorism program. Shortly thereafter, because of his experience with disasters, he was called to Washington to help establish the health care agenda for the new Office of Homeland Security (now the cabinet-level Department of Homeland Security). Noji discusses the logistical challenges of this governmental reorganization from a medical perspective, as well as some of the local-response challenges DHS already has identified as likely to arise if the United States were to face a bioterror-induced epidemic.

Until the last few years, my entire public health career had involved the care of populations that have been displaced by natural and technological disasters and violence: volcanic eruptions, earthquakes, floods, industrial accidents, and civil war.

In my work in failed states such as Sudan and Afghanistan, I never thought that these countries would become breeding grounds for what we now

recognize as serious threats to national security: biological, chemical, radiological, and blast and suicide terrorism.

The domestic attacks on Sept. 11, 2001, changed the lives of us all. They certainly changed my life. They resulted in my leaving CDC headquarters in Atlanta for an assignment in Washington. At the time, I thought I would be working for one month in the Department of Health and Human Services headquarters.

One month later — on the day I was scheduled to go home — a vague rumor circulated about an incident of anthrax exposure in Florida. Few took it seriously; there had not been a case of anthrax exposure in perhaps a century. Those of us who work within the CDC's

bioterrorism program had become used to receiving hoaxes — dozens, in fact, over a six-month period.

Nevertheless, the office of HHS Secretary Tommy Thompson requested that I stay in Washington for at least another day to investigate the rumor. Unfortunately, it turned out that this was not a hoax, and so I extended my stay in Washington.

Once again, on my planned day of departure, Gov. Ridge of Pennsylvania was appointed special assistant to the president to establish a new office of homeland security. HHS asked me to serve as a medical consultant to Ridge, because at the time his office had no medical or public health focal point. This earned me another 6 months in Washington.

Washington since has become my permanent as-



Eric K. Noji, MD, MPH

signment, as I subsequently was appointed special assistant to the U.S. surgeon general for homeland security and disaster medicine. Years ago, such an appointment would have been the subject of ridicule, even at CDC; bioterrorism and intentional biological releases probably would have been viewed as threats with low to nonexistent potential. Suddenly, they became one of the highest priorities in the 60-year history of the agency.

Nevertheless, even before the anthrax and the World Trade Center attacks, Anthony S. Fauci, MD, director of the National Institute for Allergy and Infectious Diseases, made a prophetic statement. A renowned scientist, he is one of the key experts who are guiding HHS initiatives to bolster medical and public health preparedness for possible future bioterrorist attacks.

Having worked in the government for 13 years, I knew that when any government official speaks publicly (including myself), it represents something important, if not extraordinary. In my experience, most government officials are risk averse, resulting in a cautious approach about what they publicly write or say; when someone of Fauci's stature writes in a prestigious medical journal that a bioterrorist attack against Americans is inevitable in the 21st century, people take note (Fauci 2001).

Retooling the government

Today, we in Washington view bioterrorism as serious — perhaps the most serious threat to homeland security.

The National Response Plan (which is being developed at the directive of the president to replace the Federal Response Plan) focuses on domestic preparedness and protection of civilians based on an *all-hazards approach* — i.e., a natural, technological, or terrorism disaster. If this document, which will guide the delivery of federal assistance and resources to state and local governments for years to come, follows the vetting process of the FRP, it will require the signed agreement of 26 federal agencies and the American Red Cross.

The FRP has been coordinated since the early 1990s by the Federal Emergency Management Agency, which was transferred to the Department of Homeland Security (DHS) under the Homeland Security Act of 2002.

As the only physician in the DHS's disaster preparedness programs, much of my responsibility involves developing the health response within the National Response Plan. This is a complicated task that is made daunting by the administrative and logistical challenges of creating the new DHS and coordinating its resources.

DHS was officially established on March 1, 2003. It absorbed 200,000 employees from 22 agencies, each with their own cultures, computer systems, unions, and employee regulations.

This is the most significant United States government transformation since 1947, when President Truman brought together the Departments of the Army, Navy, and War to form the Department of Defense housed in the Pentagon — a tremendous consolidation that took a couple of decades to complete. Similarly, it will not be a matter of a mere one or two years before DHS is completely organized into a cohesive and well-functioning machine. Table 1 conveys an idea of the complexity of the new department and the inherent difficulties of creating it.

What are the implications for biodefense of this massive reorganization of the federal government? Numerous constituent organizations, universities, the private sector, not-for-profit think tanks, and politically powerful medical and professional societies have a strong interest in how this scenario will unfold.

Bringing scientists from virtually all research fields — physicists, engineers, public health professionals, etc. — into one department is a formidable challenge. It raises questions about how to conduct intra- and interdisciplinary work. Consider the work involved in sensing biological and radiological exposure in the atmosphere. To develop a device to do this would require the cooperation of microbiologists, experts in infectious disease, engineers, and other scientists.

When I contemplate the goal of medical research, I start with this textbook definition: "To extend knowledge in advanced technology in ways that will ultimately improve the health of patients by enhancing the medical care they receive."

I think this statement could be expanded to "...the medical care that people receive in an intentional attack on our country by chemical, biological, radiological, nuclear, or explosive events." This en-

compasses what we now call CBRNE, pronounced inside the Beltway as “seaburn” — a term that has begun to replace WMD, or weapons of mass destruction.

I believe that the establishment of DHS offers great potential to improve medical care and its delivery through increased focus, advocacy, and credible research relevant to medical practice in the event of public health emergencies. I am involved in establishing medical and biomedical research priorities that DHS should pursue in tandem with the Department of Defense, the National Institutes of Health, and Ft. Detrick, Md. (home to the United States Army Medical Research and Materiel Command).

Room for improvement

I’ve analyzed major past events, including natural disasters, industrial accidents, and terrorism incidents, in the context of the Federal Response Plan’s emergency support function matrix. The goal was to determine some of the gaps we experienced in the immediate medical and public health responses. These events included Hurricane Andrew, the San Francisco and Los Angeles earthquakes, the bombing of the Oklahoma City federal building, the 1993 World Trade Center bombing, the 2001 terrorist attacks on the World Trade Center and the Pentagon, and the anthrax incidents in the fall of 2001.

I have tried to do similar analyses for other types of natural and human-generated disasters for the

TABLE 1 Agencies integrated into the Department of Homeland Security

The agencies that were merged with the Department of Homeland Security fall under one of four major directorates: Border and Transportation Security, Emergency Preparedness and Response, Science and Technology, and Information Analysis and Infrastructure Protection. The Secret Service and the Coast Guard also are now under DHS and remain distinct entities. The departments that originally housed these agencies are listed in parentheses.

The *Border and Transportation Security* directorate brings together major border security and transportation operations:

- Customs Service (Treasury)
- Immigration and Naturalization Service (Justice)
- Federal Protective Service (General Services Administration)
- Transportation Security Administration (Transportation)
- Federal Law Enforcement Training Center (Treasury)
- Animal and Plant Health Inspection Service (Agriculture)
- Office for Domestic Preparedness (Justice)

The *Emergency Preparedness and Response* directorate oversees domestic disaster preparedness training and coordinates government disaster response. It brings together the:

- Federal Emergency Management Agency (FEMA)
- Strategic National Stockpile/National Disaster Medical System (Health and Human Services)
- Nuclear Incident Response Team (Energy)
- Domestic Emergency Support Teams (Justice)
- National Domestic Preparedness Office (FBI)

The *Science and Technology* directorate uses scientific and technological advances to improve homeland security, such as improving basic science, developing vaccines and new drugs, and working in tandem with the National Institutes of Health. The following assets are part of this effort:

- CBRNE Countermeasures Programs (Energy)
- Environmental Measurements Laboratory (Energy)
- National Biological Weapon Defense Analysis Center (Defense)
- Plum Island Animal Disease Center (Agriculture)

The *Information Analysis and Infrastructure Protection* directorate analyzes intelligence from other agencies involving threats to homeland security and evaluates vulnerability in the nation’s infrastructure, including cyber security, electrical networks, gas lines, bridges, and major transportation arteries. It includes the:

- Critical Infrastructure Assurance Office (Commerce)
- Federal Computer Incident Response Center (GSA)
- National Communications System (Defense)
- National Infrastructure Protection Center (FBI)
- Energy Security and Assurance Program (Energy)

SOURCE: DHS 2003

purpose of identifying management, logistical, organizational, and biomedical areas in which DHS should concentrate, including conducting basic bench research on novel antidotes and new vaccines; promoting universal precautions for naturally occurring diseases, such as severe acute respiratory syndrome, as well as conditions that may be initiated through terrorism, such as smallpox; and perfecting emergency room techniques for the rapid diagnosis of biological-weapon exposure, based on lessons learned during the anthrax crisis when non-standard presentations of cutaneous anthrax and X-ray appearances were noted.

With further regard to such surveillance issues, the need for clinicians to report such cases cannot be overstated. No matter how accurate a diagnosis is, if it is not reported to local and state health authorities and the CDC, we cannot know if something untoward is occurring. It may not be anything more than a naturally occurring disease — but it could be a red flag for something unusual.

How that information is reported is itself an important issue. A CDC survey of local health departments' capabilities relative to transmitting information electronically to CDC, in 2000, found that only about 40 percent of local health departments had Internet access or had used e-mail, and most still were communicating word of infectious reportable diseases to us by postal mail, telephone, or fax. Contrary to our initial expectations, we have a way to go before we have a completely electronic disease-reporting system.

We have identified several other major response problems in the United States. One problem that I identified on day 1 was the lack of a hospital-based emphasis in DHS. In a chemical attack or an earthquake, the first responders are going to be police, fire, and rescue personnel. In a biological attack, the first responders will be the medical and hospital community. Yet, not one penny of a \$600 million grant program to the DHS Office of Domestic Preparedness was devoted to the health and medical community. Fortunately, the issue of improving hospital preparedness for bioterrorism has since been addressed by a Health Resources and Services Agency grant.

Surge capacity is another issue. If the United States were to experience a mass-casualty attack, whether through bioterrorism or natural disasters,

our hospitals would have little ability to absorb the patient influx. When I was director of quality assurance for the Johns Hopkins emergency department, our analysis showed that a 1,200-bed hospital probably could handle only two chemically contaminated patients at a time.

In this country, there also is a nursing shortage. Hospitals have been eliminating beds throughout the last 10 or more years, and we now have a different system for storing medications than we did years ago. When I was a student, hospitals may have stocked a few weeks' supply of drugs and antibiotics; today, many hospitals stock only two or three days' worth of products such as ciprofloxacin. If an attack were to destroy transportation arteries into a major metropolitan area, it might become problematic to provide hospitals with medications, supplies, and equipment needed to respond to a chemical or biological attack.

We have not established good planning and response relationships between civilian hospitals and the military and Veterans Administration health care system, which could play a crucial role in increasing surge capacity. One of our major planning activities at the federal level is focused on how to improve communities' capacity to increase their resources to allow them to respond effectively to a WMD release or an attack in their community.

One area we're analyzing is how to prevent, mitigate, and better respond to suicide bombings, such as those being seen now in Israel. Unfortunately, it is probably a matter of time before this sort of attack occurs in the United States. Suicide bombers already have attacked Americans internationally, on the U.S.S. Cole and at American embassies in Beirut, Tanzania, and Kenya, and on the United Nations headquarters in Baghdad.

Medical and epidemiologic research issues identified from such an analysis include types of injuries, victim location, the behavior of a potential suicide terrorist, locations of victims, and working closely with structural engineers. Our hope is to be able to identify risk factors for deaths and injuries so we can identify appropriate life- or limb-saving strategies.

Summary

The challenge before us at DHS — to optimize use of our resources to create an effective health re-

TABLE 2 Local bioterrorism preparedness checklist

Coordination and communication

- Maintain up-to-date list of key contacts at responding local, state, and federal agencies
- Hold regular interagency meetings to ensure that public health planning is integrated with other agencies' plans
- Develop response protocols for potential bioterrorism scenarios
- Conduct regular tabletop exercises and drills (include representatives from medical and lab communities)

Surveillance

- List all potential bioterrorism agents on the notifiable disease list; mandate reporting of unusual clustering
- Increase provider awareness of clinical presentation of bioterrorism agents
- Issue periodic public health bulletins on disease reporting and bioterrorism
- Train clinical microbiologists on preliminary diagnosis of bacterial bioterrorism agents
- Empower health departments with round-the-clock response capability and trained medical staff available for consultation
- Enact syndromic surveillance (see Godley presentation on page 13)

Epidemiologic capacity

- Make contingency plans for calling epidemiological staff to assist in large-scale investigation
- Create questionnaires, study protocols, and databases
- Establish guidelines for epidemiological investigations; coordinate with local/national law enforcement agencies

Laboratory capacity

- Educate clinical microbiologists on reporting criteria
- Ensure adequate capacity for health department laboratory to function as a reference lab for bioterrorism agents
- Develop protocols for rapid shipment of specimens to national reference labs

Disease management

- Develop protocols for medical management of patients with exposure to bioterrorism agents
- Develop communication infrastructure to ensure rapid distribution of protocols
- Establish medical hot line to assist clinicians

Mass medical and mortuary care

- Draft contingency plans for improving capacity at acute-care hospitals
- Draft contingency plans for rapid establishment of community-based clinics for vaccines, antibiotic, and antidote distribution; include homebound population
- Determine need for antibiotic stockpile to ensure adequate supply while awaiting federal reserves
- Prepare multilingual patient-information sheets and vaccine consent forms
- Draft contingency plans for quarantining infectious patients
- Provide guidelines to acute-care hospitals regarding preparedness for a citywide infectious-disease incident
- Draft contingency plans for improving capacity at mortuaries and safe storage and disposal of infectious corpses

Communication

- Designate primary spokesperson, in conjunction with responding agencies
- Prepare fact sheets on bioterrorism agents for the public
- Be ready to establish hot lines for the public
- Use the Internet for information and updates

General infrastructure issues

- Ensure sufficient emergency capacity regarding transportation, computers, communications devices, and protective equipment
- Eliminate redundancy among information-management systems

SOURCE: AUTHOR, BASED ON DOCUMENTS FROM THE NEW YORK DEPARTMENT OF PUBLIC HEALTH

sponse to terrorist incidents — is formidable. After spending several weeks in Baghdad and seeing all the problems that arise in establishing a new government, I found myself thinking, “This is going to take years.”

Then, when I returned to the United States, Surgeon General Vice Adm. Richard Carmona, MD, MPH, almost immediately assigned me to the new Department of Homeland Security, adding that the problems it faced were probably worse than those in Baghdad. “That is impossible,” I thought. “There’s no way this could present a greater logistical, organizational, cultural, and administrative challenge than establishing a new government in a country with no democratic tradition in its 5,000-year history!”

Within two days of my appointment to the new department, however, I recognized the accuracy of the surgeon general’s statement.

We will, however, work diligently toward our goals. During the next couple of years, a major DHS

priority will be state and local preparedness, which includes rapid identification of epidemics, improved training, the establishment of liaisons with other first responders such as fire, rescue, law enforcement, and emergency medical services teams, and implementing state-of-the-art communication, disease alert, and reporting systems.

Table 2 constitutes a checklist for bioterrorism preparedness, from a public health perspective. Local response and coordination with federal authorities and the issues inherent in these efforts are discussed in depth in the presentations that begin on the following page of this publication.

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In Response: Procedures and Programs

Following the global presentations by William Winkenwerder, MD, MBA, and Eric Noji, MD, MPH, the agenda shifted to logistical issues. The events of Sept. 11, 2001, have spurred efforts nationwide to prepare for a bioterrorist incident. Yet without a coordinated response from local officials, even the most meticulous federal planning and reliable intelligence about potential terrorist targets would be likely to prove inadequate. In this section, Joanne Godley, MD, MPH, of the Philadelphia Department of Public Health, discusses her city's role in working with national authorities to prevent a local disaster in the event of an emergency.

While officials in New York, at the Pentagon, and in Pennsylvania reacted admirably that day to horrifyingly unpredictable situations, their responses amounted largely to improvisation. A national general blueprint is needed for all local agencies to use when planning bioterrorism responses. Its creation necessitates identifying the nation's most vulnerable areas — a task being undertaken by the U.S. Agency for Healthcare Policy and Research (AHRQ). These efforts are discussed herein by AHRQ's Sally Phillips, RN, PhD.

Vivian Coates, MBA, of ECRI — formerly the the Emergency Care Research Institute — argues that standardizing emergency-response planning is imperative. Standardization, she notes here, bridges or eliminates regional variation and would reduce miscommunication and improve cohesion between national and local officials when emergency-response plans are implemented.

Bioterror Emergency Readiness: A Local Responsibility

Joanne Godley, MD, MPH

Medical Director, Philadelphia Department of Public Health

The result of a successful bioterrorist incident is an epidemic, particularly if it is a covert incident; in other words, if an event is covertly executed, it is not detected immediately and therefore not clear that an epidemic is in the making until there is illness or death in great numbers.

The response to a bioterrorism-spawned epidemic is primarily a local function. Thus, the question that everybody would ask is: Is the Philadelphia Department of Public Health — or any local health department — prepared for such an event? To answer that question, it might be instructive to review the conceptual framework developed by the American Public Health Association to address the issue of bioterrorism preparedness at the local level.

The APHA offers several considerations for local health departments when evaluating their prepared-

ness for a bioterrorist incident. These include a department's surveillance capabilities, or its ability to monitor community health and outbreaks; its readiness to investigate epidemics and to determine whether a bioterrorist event is causing them; its ability to inform, educate, and empower the necessary parties within the community; its capacity to mobilize and work with partners — such as fire and police officials, the FBI, or hazardous materials crews — should it be necessary to investigate and control a bioterrorism event; and its development of policies to guide implementation of these capabilities.

Enforcement is also a local health department issue and includes the ability to link the community to personal health care services. The local health department is charged with assuring that there is an adequate and competent workforce in case of a

bioterrorist incident. To be able to assess its level of preparedness, a department must be able to engage in research and institute continuous quality assessment and improvement of the services it provides.

Surveillance issues

The surveillance mechanism for a local health department is multifaceted. In Philadelphia, we have kept the city's notifiable-disease surveillance list current to include such conditions as Severe Acute Respiratory Syndrome, or SARS — which recently came under control internationally. In addition, the Philadelphia health code has been enhanced to include the reporting of any unusual disease or expression of illness that may not be reportable or even communicable but is a public concern nonetheless. Thus, any expression or outbreak of illness that appears to be occurring in clusters or in an otherwise unusual nature is, by virtue, a reportable event.

The health department also maintains *active surveillance* projects. For instance, during the flu season, we monitor several laboratories to look at viral specimens. We have an active Varicella rash surveillance project. Surveillance extends to the medical examiner database, where deaths that are reported daily from the medical examiner's office are assessed to determine if there is any unusual geographical clustering or an abnormal surge in a specific cause of death.

There is *stimulated passive surveillance* as well, which means that a health advisory could be issued to alert the provider community of particular infectious diseases. This surveillance system also is used to ask practitioners to report such diseases to the health department.

Another aspect of surveillance is *syndromic surveillance*, which is a fairly new technique. In this system, hospital emergency rooms send us daily triage reports of certain types of complaints; cough and fever, gastrointestinal conditions, and meningitis, for instance, are reported to the health department. This information is tracked both temporally and spatially, which means that it is mapped and re-

viewed for evidence of clustering among the emergency rooms that are being surveyed.

Surveillance abilities constitute an extremely important set of services and responsibilities in evaluating a local health department's readiness to respond to disease outbreaks or a bioterrorist event.¹

Investigation and coordination

In the Philadelphia Department of Public Health, the division of disease control has the authority to investigate epidemic outbreaks and to establish a hypothesis as to the cause of an outbreak. The division works in conjunction with the FBI and the police to determine the source of an epidemic and to establish whether it is the result of bioterrorism.

If such an incident were to occur, the department would follow the incident command structure. The city health commissioner is the incident commander. If bioterrorism were suspected, we would alert the state, which in turn would alert the Centers for Disease

Control and Prevention, so that additional epidemic investigators would be sent to the city.

Local/federal coordination

In Philadelphia, numerous partners work in conjunction with the health department in planning for potential bioterrorist events and their control. That list includes the Office of Emergency Management, the fire department (including emergency medical services), the hazardous materials team, the police, the American Red Cross, and the city Departments of Public Property, Streets, and Recreation. We also have established liaisons with the public health departments, hospitals, and veterinary hospitals.

We meet with representatives of these groups and agencies monthly. In addition, the department has



Joanne Godley, MD, MPH

¹ A General Accounting Office report (GAO-03-1176T), released on Sept. 24, 2003, indicated that serious gaps remain in state and local surveillance systems. The GAO also noted significant workforce shortages in state and local health departments and a lack of regional coordination among states regarding disease outbreaks or a bioterrorist attack.

established annual tabletop exercises with these partners and others to continue to inform, educate, and share experiences and to keep response skills among our partners sharp.

The hospitals are the first responders in any bioterrorist event. It is the Philadelphia Department of Public Health's responsibility to keep hospitals current by assisting them in planning for potential bioterrorist events and by keeping the lines of communication open. In 2001, when the department had to plan for a possible anthrax event in the city, the emergency operations center established a desk for hospitals so that there could be a citywide bed count each day to determine whether hospitals could meet the demand in such an event.

The Philadelphia Department of Public Health connects with emergency rooms in a number of ways. For instance, we have a connection with the CDC via a communication pathway called EPI-X, which stands for Epidemic and Information Exchange. It is a secure communication pathway that alerts health departments and public health officials to outbreaks of bioterrorist events, and it is available

only to public health officials. A person must be state certified to receive this information. Through our health advisory network, we are able to communicate with medical providers, emergency room personnel, infection-control personnel, and infectious-disease personnel in hospitals.

Another way the health department interacts with hospitals is through monthly meetings with representatives from the Delaware Valley Healthcare Council, a regional hospital and health care system alliance. A number of regional bioterrorism organizations meet to share information regarding planning taking place in their venues.

Conclusion

The takeaway message: Local health authorities should examine their preparedness for a potential bioterrorist attack and routinely review coordination issues with agencies that would be called on to respond. Readiness can be determined by reviewing American Public Health Association guidelines and then, to the extent that resources allow, taking concrete steps to meet them.

Setting Research Priorities For Disaster Preparedness: The Role of AHRQ

Sally Phillips, PhD, RN

*Director, Bioterrorism Preparedness Research
U.S. Agency for Healthcare Research and Quality*

The goal of the Department of Health and Human Services' bioterrorism preparedness program is to ensure public health and medical readiness in our communities against bioterrorism, outbreaks of infectious disease, and other public health threats and emergencies. Within the department, the Agency for Healthcare Research and Quality works closely with the Office of the Assistant Secretary for Public Health Emergency Preparedness, which is focused on coordinating and directing the department's emergency preparedness and response programs, including anti-bioterrorism efforts. AHRQ also works closely with two other HHS agencies, the Health Resources and Services Administration (HRSA) and the Centers for Disease Control and Prevention (CDC) to set its research agenda.



Sally Phillips, PhD, RN

Response to events of Sept. 11, 2001

The Office of the Assistant Secretary for Public Health and Emergency Preparedness was established in HHS as a result of the events of Sept. 11, 2001, and the subsequent anthrax scare. The Office's forerunner, the Office of Public Health Preparedness, was created in November 2001 by HHS Secretary Tommy Thompson. In June 2002, President Bush signed the Public Health Security and Bioterrorism Preparedness and Response Act, which established the Office of the Assistant Secretary for Public Health and Emergency Preparedness as a permanent part of HHS.

Funding for antibioterrorism efforts in HHS of-

ficially began in January 2002, when President Bush signed legislation providing \$3 billion for public health preparedness. That same month, more than \$1 billion of that \$3 billion was channeled to states

and selected major cities to create bioterrorism-response programs. On June 6, 2002, Thompson approved roughly another \$1 million for states and municipalities.

Much of this money was initially targeted for state and local public health initiatives. Hospital officials recognized that they were being asked to participate in numerous new activities related to emergency preparedness without receiving additional funding for their participation. As a result, \$918 million of the \$1.1 billion disbursed in fiscal year 2002 was targeted for public health

through CDC, while another \$125 million in grant money from HRSA was dedicated for hospital preparedness.

Three early initiatives

AHRQ received its first appropriations for bioterrorism preparedness research during fiscal year 2000. This was before Sept. 11, 2001, or the anthrax incidents, but it was on the cusp of Congress recognizing the true nature of the emerging threats to this country.

That year, John Eisenberg, MD, AHRQ's director, convened an expert panel and asked, "What should we do with this money? What should be AHRQ's

² A complete listing of AHRQ research relevant to bioterrorism preparedness can be found at «www.ahrq.gov/news/focus/bioterror.htm».

unique role?” The expert panel proved prescient in forecasting national needs. A research agenda came to fruition, products were developed, and the final reports started coming out in September, October, and November 2001.

Some of these research projects were designed to help clinicians and health care systems to respond to bioterrorist incidents.² One instrument developed by Booz Allen Hamilton was a hospital assessment survey that was to determine what was needed to prepare physicians, nurses, community health workers, and others to respond to rare public health events, particularly bioterrorism, and to manage survivors appropriately.

Weill Medical College of Cornell University, in New York City, was asked to determine what would be entailed in mass distribution of antibiotics in the event of a bioterrorist attack and to project the requirements of a potential smallpox vaccination program. Keep in mind that this was in 2000.

Weill Cornell teamed with the New York City Department of Health and the Mayor’s Office of Emergency Management to develop a computer staffing model for antibiotic dispensing and vaccination campaigns, which was to be field tested on Sept. 12, 2001. Of course, this model received more than a field test; about three weeks later, after the anthrax incidents, authorities used it for the distribution of antibiotics. The final support tool, which incorporates lessons drawn from the mass distribution related to the anthrax incident, as well as from large-scale field tests in New York City and Arizona, was released in June 2003.

Another initiative was the role of information technology in bioterrorism preparedness. AHRQ has been involved in developing decision-support tools that clinicians and public health officials would need in the event of a bioterrorist incident. An evidence report funded in FY 2000 and released in June 2003 synthesizes information from a comprehensive review of the information needs of first-responder clinicians in the event of a bioterrorist attack and the role of information technologies and decision support systems to assist in the rapid diagnosis and management of disease resulting from such an event. Another research team developed a prototype database and Web site to facilitate clini-

cian reporting of trends that might reflect bioterrorist events. AHRQ funding also supported the development of “Real-time Outbreak and Disease Surveillance” (RODS), a system designed to detect outbreaks of diseases using regional emergency room data.

Subsequent projects

Since those early initiatives, AHRQ has been able to expand the scope of several existing programs to include a bioterrorism component. The Agency’s Partnerships for Quality program is designed to accelerate the pace at which research findings are translated into improved quality of care and the health care system’s ability to deliver that care. The Agency awarded supplemental funds to support partnership projects that focus on improving the quality of the health care system’s preparedness in the event of a bioterrorist event. AHRQ’s Primary Care Practice-Based Research Networks (PBRN) are groups of primary care practitioners who are affiliated with each other to investigate questions related to community-based practice. AHRQ awarded additional resources to PBRNs to enhance their infrastructure for surveillance and communication with each other and with public health agencies. AHRQ also has a number of projects related to emergency room overcrowding and diversion, both of which address the issue of surge capacity in the event of a bioterrorist incident. The Agency has numerous collaborations with other partners, professional associations, policy makers, and stakeholders, focusing on the key issues that should be addressed when developing a comprehensive plan for preparedness.

AHRQ has a major commitment to the dissemination of products, tools, and information to local policymakers and key stakeholders. The Agency’s User Liaison Program cosponsored a three-day Web conference with CDC in April and May 2002. The conference highlighted what was occurring through CDC relative to public health and emergency preparedness, as well as AHRQ’s research initiatives and the portfolio of products described above. Approximately 1,800 people per day viewed the conference.

Looking ahead

This fiscal year, CDC will distribute \$870 million

to public health agencies for education and training, and HRSA will award \$498 million in grants under its National Hospital Bioterrorism Preparedness program. Beyond its base budget, AHRQ funding this fiscal year includes \$7.1 million from the Office of Public Health Emergency Preparedness and another \$3 million from HRSA. HRSA has highly specific ideas about the kinds of tools people at the state and local levels need, and asked AHRQ to take a major role in supporting that endeavor.

AHRQ also received a \$5 million appropriation from Congress to support activities related to countering potential biological disease and chemical threats to civilian populations. Congress gave us an extremely specific directive on how to use these funds.

AHRQ determined that there were issues that either have not been addressed or are not being addressed well. The funds were targeted to solicit researchers to whom we could direct questions such as, “What are you thinking about? What are you working on? What are your innovative ideas? Where are the gaps and what needs further study?” Congress concurred, and the following areas were identified as lacking in solid research:

Priority populations. HHS has recently released a report that deals with the effects of terrorism on children. CDC convened a group and developed recommendations on how to address the special needs of children in such a situation. Beyond the focus on this particular group, however, research has not really touched on the unique needs of certain populations, such as minorities, the elderly, or the disabled. AHRQ has heard the cry, “Most of the models don’t apply to us,” and the agency is targeting these areas more.

Psychosocial consequences of terrorism. Insufficient funds have been allocated to address bioterrorism-related mental health needs.

Needs of institutions beyond hospitals. What if a

bioterrorist event were prolonged? In the early stages, the emergency rooms would take the hit, but eventually, what other resources would we have to tap? If, for instance, we had 500 people on ventilators, what would be the downstream effect of that? Where is it going to hit — home health care or long-term care? These post-event issues have been studied only sparsely.

Information technology. Communication networks have emerged among public health officials, hospitals, and emergency responders, and these conduits are working well. While money is flowing there, little of it is oriented toward taking the next important step—involving community providers. AHRQ is developing projects to help bridge that gap.

Training strategies. Are traditional training strategies working for community clinicians? Are these optimal or are there more novel and effective ways to provide education and training vehicles to health care professionals in the community?

Linkages with community. The need to improve linkages among hospitals and public health agencies finally is getting attention, but little has been done to include community clinicians and primary care physicians in this effort. This is an area in which AHRQ can assist.

Conclusion

AHRQ has been fortunate that, in HHS’s new strategic plan, the Agency has a defined role in developing new knowledge in the area of preparedness. Our overriding goal in the new bioterrorism preparedness grant research is to address the key issues facing our nation in this area: surge capacity, risk communication, psychosocial consequences, alternative care sites, and the health care workforce. AHRQ looks forward to working with our colleagues within HHS and the research community to disseminate the results of our important research in bioterrorism preparedness.

Health Care's Counterterrorism Efforts: What's Being Done and What Isn't

Vivian Coates, MBA³
Vice President, ECRI

ECRI, formerly the Emergency Care Research Institute, is a not-for-profit health services research agency. An evidence-based practice center for the U.S. Agency for Healthcare Research and Quality, ECRI is the contractor that maintains two Web-based clearinghouses sponsored by AHRQ: the National Guideline Clearinghouse and the National Quality Measures Clearinghouse. In addition, ECRI's Center for Healthcare Environmental Management (CHEM) interprets legislation, regulation, and policy for administrators and medical leaders in hospitals, and advises them on plan implementation based on these analyses.

Guidelines represent scientific consensus on a process of care. Such processes are implemented most easily when their elements include some degree of standardization. Similarly, in the case of a terrorist event, response implementation is improved when all parties are speaking the same language. To that end, ECRI has evaluated local, regional, and national planning for a potential terrorist attack and related response capabilities, analyzing what appears to be working and what could be improved through interagency coordination and standardization.

Bioterrorism preparedness guidelines

Several evidence-based clinical practice guidelines related to bioterrorism preparedness exist in the NGC. These are primarily management guidelines regarding care of patients who could be af-

³ The author thanks ECRI's Luke A. Petosa, MSc, HEM, director of CHEM, for developing much of the material presented here.

ected by smallpox, anthrax, tularemia, hemorrhagic fever, plague, or botulinum toxin.

In addition to making summaries of these guidelines available online (www.guideline.gov), NGC monitors alerts about these and other conditions

and provides links to these documents, even if guidelines do not yet exist. This is done based on the reasoning that evidence-based guidelines for managing responses to terrorism can take years to develop; in an emergency, some information from credible sources can be better than none at all.

The other AHRQ clearinghouse, the Quality Measures Clearinghouse (www.qualitymeasures.ahrq.gov), includes links to many evidence-based quality measures. At present, however, there are no measures in this database concern-

ing the implementation of responses to terrorist threats. Development of nationally accepted measures is not an insurmountable task, but this, too, will take considerable time and resources.⁴

What's working?

In the absence of national guidelines, hospitals and local health agencies are developing their own response plans. This analysis of that process is based on CHEM's experiences with thousands of hospitals in the United States and throughout the world.

What is working and what needs improvement?

The Strategic National Stockpile program. Formerly called the National Pharmaceutical Stockpile, the SNS program was established in 1999 to en-

⁴ The Joint Commission on Accreditation of Healthcare Organizations is developing a draft set of measures.



Vivian Coates, MBA

sure the availability and rapid deployment of life-saving pharmaceuticals, antidotes, and other medical supplies and equipment necessary to counter the effects of nerve agents, biological pathogens, and chemical agents.

Managed jointly by the Department of Homeland Security and CDC, the SNS program works with both governmental and nongovernmental partners to upgrade the nation's public health capacity regarding a response to a national emergency. The success of this initiative hinges on the ability to receive, stage, and dispense SNS assets at federal, state, and local levels. Hospitals must develop a strong community-based plan to facilitate this process.

Health Resources and Services Administration (HRSA) grants and state funding for hospital preparedness. As Sally Phillips, RN, PhD, discussed earlier in this section, this funding can be effective. Nevertheless, the criteria that health care facilities use to prioritize the funding they receive are questionable. Health care facilities often lack the expertise needed to create an effective strategy for developing and implementing the required services or for evaluating and purchasing the necessary monitoring equipment and protective gear for decontamination.

Moreover, HRSA and state grants for hospital preparedness are open-ended; they merely require that the funding be used for equipment or training but offer no guidance on what to buy or whom to turn to. Not every health care facility needs to buy everything. In large cities, for instance, two or more hospitals in proximity could initiate a coordinated program to avert spending valuable financial and personnel resources in duplicate.

Community-based coordinated efforts. As evidenced by the efforts underway in Philadelphia that were described earlier by Joanne Godley, MD, MPH, some areas have taken a comprehensive approach to event planning. Yet CHEM's experience is that, throughout the United States, much more coordi-

nation needs to occur at the local level. Health care providers and institutions, especially, must increase their level of involvement with community-based law enforcement and emergency response groups.

To facilitate institutional involvement, better legislation is needed. Current Good Samaritan laws that protect health care professionals don't protect hospitals adequately. Fear of liability, in effect, often negates mutual-aid agreements and regionalized response efforts.

The Environmental Protection Agency mandates the existence of local emergency planning committees, which include the local fire, law enforcement, public safety, and emergency medical services personnel. These groups originally were devised to respond to such incidents as chemical spills and to provide related services like decontamination, but they also have expertise that can be applied in response to many different terrorist scenarios. Hospitals should strive to place at least one representative on these local emergency planning committees; otherwise, it will be difficult to implement an organized response to a terrorist event.

CHEM also recommends that these committees conduct communitywide mock emergency drills on a regular basis. No amount of training and planning can replace what can be learned from these kinds of drills.

TABLE Proposed Florida overhead paging codes

RED	Fire
BLUE	Cardiac/respiratory arrest
PINK	Infant/child abduction
BLACK	Bomb
ORANGE	Hazardous material/ bioterrorism
GRAY	Violence/security alert
WHITE	Hostage
YELLOW	Lockdown
GREEN	Mass casualty incident

SOURCE: AUTHOR/ECRI, PERSONAL COMMUNICATION

A wish list

An important aspect of terrorist-response planning that we at ECRI strongly recommend is standardization. Elements of standardization might include incident command, terminology for communicating about events, identification vest styles and colors, personal protective equipment, and decontamination and training requirements.

With respect to incident command, the Joint Commission on Accreditation of Healthcare Organizations mandates the use of some sort of hospital incident-command system for emergencies. A prominent example is the Hospital Emergency In-

cident Command System (HEICS), developed by the San Mateo (Calif.) County Emergency Medical Services Agency with support from the California Emergency Medical Services Authority (online: «www.emsa.ca.gov»). HEICS provides for a predictable chain of management, prioritized response checklists, accountability, documentation, a common language, and cost-effective emergency planning.

HEICS, first developed in 1992 and updated periodically based on real-world experience, is a generic disaster-response plan that is in effect in 56 percent of hospitals in California and also in Vancouver, British Columbia (HEICS 2003). It features a flexible management organizational chart that allows for a customized hospital response to the crisis at hand. Nevertheless, HEICS is a comprehensive blueprint that can be not only time-consuming, but also costly to implement. For smaller hospitals, then, such a program may be impractical to implement in its entirety.

There are also standardization issues regarding seemingly small but important administrative matters: forms, operations manuals, and terminology for event coding, to name a few. Florida, for instance, has recognized this and has proposed public address paging codes (Table). Currently, there is no consistency at the local, state, regional, or national level for event coding, which poses a critical communication issue. Although communication between police, firefighters, EMT crews, and health care facilities works well at the local level, there are significant gaps on a regional and statewide basis.

Figure 1 depicts an example of a job action sheet. Presently, job descriptions for key personnel involved in a coordinated response to terror vary widely among institutions and from locality to locality. It is important to standardize job titles, as well

⁵ NFPA (National Fire Protection Association) 99, "Standard for Health Care Facilities," covers criteria to minimize the hazards of fire, explosion, and electricity in health care facilities; chapter 12, "Health Care Emergency Management" relates to operations during an emergency. NFPA 1600, "Standard for Disaster/Emergency Management and Business Continuity Programs," establishes minimum criteria for disaster management and provides guidance to the private and public sectors in the development of a program for effective disaster preparedness response and recovery. Joint Commission Environment of Care standard 1.4 requires hospital leaders to develop an emergency management plan and requires their facilities to assign specific roles to staff during emergencies.

as job descriptions, duties, and responsibilities, to ease joint national, regional, and local planning and implementation.

Many useful standards exist (e.g., NFPA 99, NFPA 1600, Joint Commission EC.1.4)⁵ — but to a large extent, these have not been implemented in hospitals in an integrated way that specifically addresses a terrorist event. ECRI's CHEM recommends regional adoption of training, protocols, and equipment in such a way that bioterrorism is treated as an infectious disease outbreak and chemical bioterrorism as a hazardous materials incident.

The lack of a consistent approach is exemplified in the variability with which health care facilities now treat decontamination. Some hospitals use trailers, others use tents, and some use mobile facilities. Individual hospitals use many different cleansing agents, which may seem like an unimportant detail, but even minor variability can slow attempts at coordination in the event of an actual terrorist attack.

Conclusion

ECRI believes that a terrorist event affecting a large portion of the population commands a large coordinated response effort. Planning for this necessitates drills that, in turn, implicate the need for consistent organized actions to measure comparative effectiveness from locality to locality.

Earlier in this section, Joanne Godley discussed the concept of syndromic surveillance. ECRI believes this type of surveillance is important because it has the potential to detect an outbreak in less than 24 hours, relying on real-time data. We need to establish reasonable expectations, however, for collecting and reporting public health surveillance data. If data-collection requirements become too burdensome, they will not be met.

Finally, ECRI supports the development of a repository for evidence-based counterterrorism tools, such as those sponsored by AHRQ and those that ECRI has developed through CHEM. We believe that the federal government has a role to fund a clearinghouse to collect best practices in this area.

Reference

HEICS (Hospital Emergency Incident Command System). HEICS III. Available online at: «<http://www.emsa.ca.gov/dms2/heics3.htm>».

