



## policy points

**Medicine Responds to Terrorism** Following the events of September 11, the federal government has ratcheted up major medical efforts to fight terrorism, including through epidemiological surveillance, pharmaceutical stockpiles, and improved communications.

BY JEFF ATKINSON



Within hours of the crash into the World Trade Center, trucks from the federal government's [Center for Disease Control and Prevention](#) were rolling into New York City carrying a “push package” of pharmaceuticals and other emergency medical supplies. This was the first time the push packages were deployed in an emergency since the National Pharmaceutical Stockpile Program was established in 1999.

The trucks arriving in New York carried 50 tons of materi-

als to help handle what the CDC refers to as “a mass casualty incident.” Push packages contain at least 84 different types of supplies, including pharmaceuticals, tablet counting machines, intravenous supplies, airway supplies, and bandages and dressings—all items that may be in short supply during a terrorism incident. The New York shipment

included 84,000 bags of intravenous fluids, 350 portable ventilators, and 250 stationary ventilators.

### **Delivery within 12 hours**

In eight locations around the country, push packages are maintained in secure, environmentally controlled storage facilities. The packages are intended for delivery by truck to

any location in the continental United States within 12 hours of deployment.

The 12-hour push packages are the first component of the [National Pharmaceutical Stockpile Program \(NPS\)](#). The second component is called the “vendor managed inventory,” which, as the name implies, is a cache of supplies maintained by manufacturers that can be delivered within 24 to 36 hours.

The CDC periodically reevaluates the mix of pharmaceuticals that should be in the push packages and vendor managed inventory. The packages include a variety of antibiotics and nerve agent antidotes. Panels of experts convened by the CDC have given

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■ **Since September 11, a major objective of the CDC is to implement its Health Alert Network (HAN) in partnership with local health officials. The network will use continuous, high-speed, secure Internet connections, fax, and broadcast communications to link local and national health organizations as well as health-care providers.**

priority to the following biological agents: smallpox, anthrax, pneumonic plague, tularemia, botulinum toxin, and viral hemorrhagic fevers. "Because anthrax, plague, and tularemia can be effectively treated with antibiotics that are immediately available, purchasing these products for the NPSP formulary was given first priority," says the CDC.

### **Treating anthrax and smallpox**

The current push packages and vendor managed inventories have enough drugs to treat two million people for inhalation anthrax. Tommy Thompson, Secretary of Health and Human Services, has directed that the quantity of pharmaceuticals in the stockpile be increased so that, by fiscal year 2002, 12 million persons could be treated.

In October 2001, the government entered into a \$95 million contract with Bayer Corporation to purchase 100 million tablets of ciprofloxacin (trade-marked Cipro). The cost of 95 cents per tablet is a 46 percent discount from the previously discounted rate of \$1.77 per tablet. The contract also gives the government the option to purchase a second 100 million tablets for 85 cents per tablet and a third 100 million tablets for 75 cents per tablet should the need for them arise.

The federal government currently has approximately 15 million doses of smallpox vaccine. President Bush proposes to spend \$509 million to produce enough vaccine to reach any American potentially exposed to the virus in a bioterrorist attack. Smallpox was eradicated in 1977, and vaccinations to prevent smallpox have not been required in the United States since 1972.

The United States and Russia keep samples of live smallpox (*variola major*) in government laboratories, but it is believed that other countries, including Iraq and North Korea, also may have samples of live smallpox which could fall into terrorists' hands. According to the CDC, the disease has a mortality rate of approximately 30 percent, and a significant proportion of those who recover have disfiguring scars or blindness.

The current smallpox vaccine (DryvaxO) has been proven to be highly effective in preventing smallpox. The vaccine also can reduce the severity of the illness, or even prevent it, if the vaccine is administered within a few days of exposure to smallpox. The incubation period for smallpox is approximately 12 days (range 7 to 17 days).

### **Promise for more research**

The U.S. government has announced that it will not destroy its remaining smallpox samples since it wants to use the samples to further study the disease and develop new vaccines. [The National Institute of Allergy and Infectious Diseases \(NIAID\)](#), which is supported by the National Institute of Health, is currently studying whether the existing 15 million doses of smallpox vaccine can be diluted and retain efficacy.

Carole Heilman, Ph.D., the director of the [Division of Microbiology and Infectious Diseases](#) at NIAID, told Congress in November that, "The results

of the study showed that the full-strength vaccine had maintained its potency, and that 70 percent of people who received a single dose of a 1:10 dilution of the vaccine mounted a sufficient immune response."

The NIAID is exploring alternate vaccines, including "DNA vaccines" which may be safer and more effective. A goal of the institute's vaccine program is to have vaccines that are safe for the very young, the aged, and immunocompromised individuals. In addition, the NIAID is speeding up efforts to study antiviral drugs that could be useful in treating smallpox and other viruses. One of these agents, said Dr. Heilman, is cidofovir, which currently is approved by the FDA for treating some AIDS-related viral infections.

### **Epidemiology surveillance**

The events of September 11 and the months that followed have increased the government's willingness to spend funds on epidemiology surveillance. Currently there are 42 federally funded Epidemic Intelligence Service officers in 24 states. In a request for funding, Secretary Thompson told the House of Representatives Committee on Energy and Commerce, "Let me reiterate my conviction that every state should have at least one federally funded epidemiologist who has been trained in the [CDC's Epidemic Intelligence Service training program](#)." The cost of that program would be approximately \$20 million. In addition, the department seeks funding of least \$15 million to increase the capacity of 78 or more laboratories in 45 states.

At the CDC's national laboratory in Atlanta, there have been rapid shifts in staffing since the anthrax attacks. Prior to the anthrax outbreaks, there were 10 laboratory scientists working full-time

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on issues pertaining to bacillus anthracis. In November 2001, there were 80 people working full-time on anthrax, twenty-four hours per day, seven days per week. The CDC also has sent laboratorians to Florida, New York, Washington, and New Jersey.

Food safety is another area gaining increased attention. [The Department of Health and Human Services](#) wants to increase the quality and frequency of inspection of imported foods and modernize the Food and Drug Administration's data system to improve detection of tainted food.

### Communications

In fighting infectious diseases, hours can make a difference and delays will increase the number of people and the geographic areas that are exposed to disease. The CDC has helped establish "sentinel disease detection systems" to recognize and track unusual infectious diseases. The detection systems include networks of emergency departments at hospitals in large U.S. cities, travel medicine clinics in the United States and overseas, and more than 500 infectious disease specialists throughout the country.

Since September 11, a major objective of the CDC is to implement its [Health Alert Network \(HAN\)](#) in partnership with local health officials. The network will use continuous, high-speed, secure Internet connections, fax, and broadcast communications to link local and national health organizations as well as health-care providers. Communications from the CDC will include early warning of health threats, response plans, and the CDC's diagnostic and treatment guidelines.

When necessary, the CDC also will use its communication system to exchange information with the [World Health Organization](#) and health ministries in

other countries. In addition, the Health Alert Network will provide distance-learning programs via satellite and web-based technologies.

### Veterinary assistance

People aren't the only individuals in need of special care in special circumstances. The federal government has a system in place for meeting the health needs of rescue dogs. In the week after the collapse of the World Trade Center, 300 rescue dogs were on site. Most rescue dogs were German Shepherds, but there also were Golden Retrievers, Rottweilers, and mixed breeds. To serve the dogs were 13 veterinarians from the [Veterinary Medical Assistance Team \(VMAT\)](#). VMAT is part of the National Disaster Medical System of the Department of Health and Human Services.

The veterinarians worked twelve-hour shifts, providing round-the-clock coverage from a mobile trailer "MASH" facility about three blocks from ground zero. The trailer included X-ray and anesthesia equipment. The rescue animals were treated by the veterinarians for injuries such as lacerations, smoke and dust inhalation, eye irritation, torn nails, dehydration, and exhaustion.

"These dogs are being pushed hard and we need to be attentive to their needs to keep them healthy and on the job," said VMAT team leader Dr. Barry Kellogg, a veterinarian who has practiced 35 years in Massachusetts and Florida.

The federal government's plans for responding to a disaster, including acts of terrorism, were in place for many years prior to September 11, 2001. As a result of the events of that date and the biologi-

## Web site resources

### Web sites related to biological and chemical terrorism

- ✓ Description and treatment of biological diseases and chemical agents that might be used in terrorism: [www.bt.cdc.gov/Agent/Agentlist.asp](http://www.bt.cdc.gov/Agent/Agentlist.asp)
  - ✓ Articles and summaries of conferences on bioterrorism: [www.medscape.com](http://www.medscape.com) (under "Profession" sites, go to "Medscape Today." Then under "Special Resource Center" click on "Bioterrorism.")
  - ✓ Links to sites on the medical, legal, and psychological aspects of bioterrorism: [www.kaisernetwork.org](http://www.kaisernetwork.org) (Click on "View Health Casts," then "Browse by Topic." Then under topics, choose "September 11 Aftermath.")
  - ✓ Responses of the U.S. Department of Health and Human Services: [www.hhs.gov/hottopics/healing/biological.html](http://www.hhs.gov/hottopics/healing/biological.html)
- Note:** To link directly to the Web sites mentioned, go to [www.uoworks.com](http://www.uoworks.com) and download this article or click on "Career Resources."

cal threats that followed, the government will commit substantially more resources to preparing for potential disasters in order to decrease losses that otherwise might occur in case of future attacks. ■

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