

Bio Terror Bible

EXPOSING THE COMING BIO-TERROR PANDEMIC

BIOTERRORBIBLE.COM: The following propaganda was published within the calendar year of 2003. While some of the following reports may have been legitimate news stories, most if not all of them appear to be blatant propaganda with the overall goal of convincing American and the World that it is on the precipice of a bio-terror induced pandemic. The fact that this propaganda exists in mass confirms that an upcoming bio-terror attack is in the cards and may be played in a last ditch effort to regain political, economic and military control of society.

Title: US Warns That Bioterror Attack Is Inevitable

Date: January 26, 2003

Source: [UCLA](#)

Abstract: The US warned on Sunday night that a bioterrorist attack that could kill thousands was inevitable and urged industrial and developing nations to spend tens of billions of dollars more to gear up medical systems to cope with the threat.

"There is going to be an attack. Whether it is in western Europe, the US, Africa, Asia or wherever, you have got to anticipate that there is going to be a bioterrorism attack and the only way to defend yourself is by getting prepared," said Tommy Thompson, health secretary.

In an interview with the *Financial Times*, he said the wave of arrests in Britain, France, Spain and Italy, and the uncovering of terrorists' attempts to make the deadly poison ricin, made the issue more urgent. Countries were not doing enough, he said.

Mr Thompson met health ministers and officials from the G20, the leading industrialised and developing countries, at the World Economic Forum in Davos, Switzerland, on Sunday night to try to step up international efforts in research and vaccine-sharing and agree mutual assistance pacts to support a country that was attacked.

Since the [anthrax panic](#) of 2001, the US has increased measures against bioterrorism. Last year it spent \$1.1bn (£700m), and is spending \$4.5bn this year with a similar amount planned next.

It has purchased enough smallpox vaccine for the entire population, stockpiled antibiotics and other drugs at 12 sites within seven hours' reach of any community, and is seeking new vaccines for botulism, haemorrhagic fever viruses, plague and anthrax.

Mr Thompson said other countries were "light years" ahead of where they were a year ago in preparedness, but still had a long way to go. They too needed to purchase smallpox vaccines and develop comprehensive plans to gear up their health infrastructure to deal with an attack.

"The preparation is difficult, hard, expensive, but the lack of a comprehensive plan can really damage your economy as well as your population. These poisons have the capacity of killing thousands of people," he said.

An attack could come in the form of "a bioterrorism agent, a chemical dispersal or a radiological one". Smallpox was the most devastating threat because of its contagious nature, he said, but poisoning of food with ricin was a great concern.

Although attention has focused on western Europe as a potential target, terrorists could strike anywhere. "Every country is at risk. You do not know whether a suicide bomber is going to be willing to sacrifice his or her own life to damage somebody else's. It is impossible to defend against, so you have got to be prepared," he said.

Mr Thompson said the US was "by far the world's leader" in the fight against bioterrorism but was still in the process of implementing its plans. "Unless you are prepared to react, your community of citizens are going to be severely impacted by deaths and severe illnesses" ([UCLA, 2003](#)).

Title: Threats And Responses: The Bioterror Threat; Health Data Monitored For Bioterror Warning

Date: January 27, 2003

Source: [New York Times](#)

Abstract: To secure early warning of a bioterror attack, the government is building a computerized network that will collect and analyze health data of people in eight major cities, administration officials say.

The Centers for Disease Control and Prevention is to lead the multimillion-dollar surveillance effort, which officials expect to become the cornerstone of a national network to spot disease outbreaks by tracking data like doctor reports, emergency room visits and sales of flu medicine. "Our goal is to have a model that any city could pick up and apply," a senior administration official said of the plan.

Officials would not disclose the program's cost or which cities will be involved. But experts say Washington is likely to be one of the eight.

Such surveillance is now possible because of an explosion in commercial medical databases that health authorities, with permission and under strict legal agreements, are starting to mine. In ambition and potential usefulness, the health network goes far beyond an environmental surveillance system, disclosed by the administration last week, that will sniff the air for dangerous germs.

The emerging health monitoring network, officials and experts say, will provide information that could save lives if terrorists strike with deadly germs like smallpox or anthrax. In detecting attacks, a head start of even a day or two can greatly lower death rates by letting doctors treat rapidly and prevent an isolated outbreak from becoming an epidemic. A senior official said President Bush was expected to refer to these new bioterrorism defenses in his State of the Union address.

The disease centers' initiative represents a sharp swing to civilian leadership in a field the military pioneered and once dominated. But even in civilian hands, the emerging network has raised concerns that such surveillance may violate individual medical privacy rights.

Officials said concerns were initially heightened because of the Pentagon's central role in the genesis of many systems, and especially because Vice Adm. John M. Poindexter, architect of the much-criticized Pentagon computer surveillance effort known as Total Information Awareness, is in charge of the Defense Department agency that finances some of the government's disease monitoring research.

In November, as the Bush administration came under fire for Admiral Poindexter's project, White House officials ordered the military to drop plans to link four cities into a \$420 million health monitoring network and shifted responsibility for such work to the new domestic security agency. The transfer was not motivated by privacy concerns, administration officials say, but by a judgment that the military was ill suited to exploit monitoring for public health.

"We all agreed that doing this surveillance in the civilian sector was not the military's job," Dr. Anna Johnson-Winegar, a Pentagon biodefense official, said in an interview.

Experts say the prospect of war with Iraq, and the chance that Baghdad might retaliate with germ weapons, are accelerating the effort to expand and integrate scores of rudimentary disease surveillance systems being developed by cities, states and the federal government. But public health experts argue that even if the United States never suffers another bioterror attack like the anthrax strikes of late 2001, the emerging network can still help doctors better track, treat and prevent natural disease outbreaks.

"We want as much protection as we can afford," said Dr. Daniel M. Sosin, director of public health surveillance at the Centers for Disease Control and Prevention in Atlanta. Dr. Sosin is helping to expand the nation's health surveillance to incorporate the new systems.

Supporters of the emerging surveillance network insist it raises few privacy issues, saying that the data are laundered of names and identifiers. People are not tracked as individuals, they say, but their symptoms are, and often their age, sex and ZIP code as well. But computer surveillance itself has drawn criticism from the American Civil Liberties Union, members of Congress and others.

The system is needed, proponents say, because few cheap, reliable sensors exist for detecting deadly germs in such likely target areas as subways and shopping malls. Sensors are also prone to false positives, or incorrect germ identifications.

Dr. Thomas R. Frieden, the health commissioner of New York City, which has one of the nation's most highly developed rapid surveillance systems, said the emerging network could help authorities gauge the dimensions of germ attacks and reassure the public.

He pointed to a case in November in which a New Mexico man visiting New York was found to have bubonic plague, a deadly contagious disease. "We were concerned this was bioterrorism," Dr. Frieden said. "But we didn't see any signals. We didn't see any alarms. That added to our confidence to rule out bioterrorism."

Experts say most of the new systems, military and civilian, are still experimental. A critical challenge is finding needles in the haystacks of data about common ailments like respiratory infections, which can rise and fall with great suddenness in winter.

Dr. Marcelle Layton, New York City's assistant health commissioner for communicable diseases, said another challenge was ensuring that there are enough public health officials to respond to alarms that the new environmental and medical surveillance systems might sound.

"The best system will be useless if it's only a fire alarm with no firefighters to put out the flames," Dr. Layton said.

Nonetheless, expectations run high.

"We think this will be important," said Dr. Alan P. Zelicoff, a physician at the Sandia National Laboratories who helped develop a widely used surveillance method, the Rapid Syndrome Validation Project, which is now used in California, New Mexico, Texas, Singapore and Australia. "We need to get disease reporting from the 19th to the 21st century."

For decades, disease surveillance has valued accuracy over speed. Nurses, doctors and public health officers gather raw data, often using paper forms sent by mail. In the background, federal, state and private laboratories use advanced technologies to determine the causes of disease and confirm diagnoses. But the process tends to take days or even weeks.

Moreover, the system is narrow, revealing little about the nation's overall health. While the federal disease control agency has more than 100 surveillance systems, most are designed to track a single organism or condition, like heart disease or flu virus. In addition, most are independent of one another.

The system has serious gaps. While laboratories usually comply with federal rules to report certain illnesses to health authorities, physicians often do not.

The military and the national weapons laboratories, increasingly worried about germ attacks, tried a new approach in the late 1990's. To learn of impending trouble quickly, they decided to scrutinize populations for clues of diseases before they were officially diagnosed. Experts zeroed in on how clusters of such symptoms as fever, cough, headache, vomiting, rash and diarrhea could suggest -- but not prove -- the presence of particular diseases, some of them lethal. The method was called syndromic surveillance.

An early military system was the Electronic Surveillance System for Early Notification of Community-Based Epidemics, or Essence. It drew medical data from some 400,000 members of the military and their dependents who lived in the Washington area -- a major potential terrorist target, but hard for civilians to scan medically because of "the numerous city, county and state jurisdictions," according to a Defense Department statement.

After the 2001 terrorist attacks, the Pentagon's Defense Advanced Research Projects Agency put \$12 million into an experimental program, Essence 2, which tracked millions of civilians in the Washington area for signs of bioterrorism. The program now reports to Admiral Poindexter, whose Total Information Awareness program was dealt a setback by the Senate late last week, its future now in doubt. Joe Lombardo, a civilian who runs Essence 2, which is based at the Johns Hopkins Applied Physics Laboratory in Maryland, said that although Admiral Poindexter's office finances the system, Essence 2 shares no data with his computer surveillance project. Essence 2, he said, gathers electronic records from drugstore chains, hospitals and physician groups. Mr. Lombardo said about a dozen people were developing the technology and collecting and analyzing the data.

"We're not Big Brother," he said. "Our objective is to support public health. The information we receive has been sanitized by the provider to ensure that it is impossible to identify individuals."

Privacy, though a goal, is apparently not yet guaranteed. A Pentagon planning document on the surveillance effort for fiscal 2002 and 2003 said the Defense Department was working to develop "enhanced automated privacy protection methods" that will "assure the anonymity of records accessed by the data monitoring software."

Experts say that privacy can, in theory, be violated when connections are made between disparate databases -- for instance, between those of physician payment and disease diagnosis, or health and law enforcement. They also say the potential for personal identification increases as the surveillance becomes a two-way street in which not only are problems detected but physicians are notified about potential problems involving individual patients.

This fall, the military sought to incorporate the Essence 2 program into an expanded program, the Biodefense Initiative. Costing a projected \$420 million, it was to deploy environmental sensors and wire four major cities, including Washington, into a disease-surveillance network.

But after Admiral Poindexter's Total Information Awareness program came under criticism by privacy advocates, White House officials moved the Biodefense Initiative out of military hands. That step, said Dr. William Winkenwerder Jr., the assistant secretary of defense for health affairs, "just seemed to make sense." Dr. Winkenwerder added that the military has often pioneered technologies, like the Internet, that move into the civilian sector.

Privately, some military officials grumble that transferring the Pentagon's effort to civilians will be wasteful. "It could be reinventing the wheel," a senior officer said.

Administration officials say the new eight-city disease control network will deal with the privacy issue directly. "We have to satisfy the legal constraints, and also people's concerns," a senior official said.

Other civilian surveillance systems are emerging quickly. In Boston, the Harvard Medical School faculty and the Massachusetts Department of Public Health are working closely with Harvard Pilgrim Health Care, a health maintenance organization. For more than a year, the team has studied data from 175,000 people in eastern Massachusetts, and it will soon cover as many as 20 million people coast to coast.

In October, the disease control centers awarded the Harvard team \$1.2 million to expand its pilot network nationally. The expansion will not monitor cities, but will concentrate on patients calling an after-hours medical advisory service.

Health officials say civilian emphasis in the developing surveillance field will help ensure privacy and enhance routine disease monitoring.

"It's the practical stuff that's most promising," Dr. Sosin of the disease control centers said. "Whether this is going to detect terrorism is unclear. But as a safety net and for tracking an event once it's going on, it's very promising" ([New York Times, 2003](#)).

Title: CDC Chief: Bioterror Threat Remains Real

Date: January 30, 2003

Source: [UCLA](#)

Abstract: More than a year has passed since [anthrax attacks](#) kept the nation on edge, and the chief of the Centers for Disease Control and Prevention worries that people have forgotten.

"Many people have put that issue in the back of their mind. We've relaxed," Dr. Julie Gerberding, director of the CDC, said in an interview Wednesday with The Associated Press. "Complacency is the enemy of preparedness. And we really have to keep reminding people: They're still out there."

For her part, Gerberding remains frustrated and on edge that the anthrax attacks, which killed five, remain unsolved.

"I just want, so want the perpetrator of the anthrax attacks to be caught because we cannot really relax our vigilance until they are," she said. "The fact that it could happen again at any moment at any time is something that still affects all of us at CDC on a day-to-day basis."

Gerberding, who took over the CDC last summer, has spent much of her tenure developing and now putting in place a smallpox vaccination program aimed at preparing the nation should the virus return in a bioterror attack.

In the first phase of the vaccination program, the CDC had hoped to vaccinate as many as 450,000 people on smallpox response teams and in hospital emergency rooms.

But the program has met stiff resistance from several quarters, and complaints were voiced Wednesday at a Capitol Hill hearing.

Gerberding sought to lower expectations, saying she will not be disappointed if the final number of people vaccinated in the first phase does not reach 450,000. The ultimate question, she said, is, "Are you prepared?"

"That's what we will be monitoring," she said.

So far, CDC officials said, 38 states, plus Los Angeles County and Cook County, Ill., which includes Chicago, have requested 205,700 doses of vaccine for their programs, and 127,200 doses have been delivered to 22 states and those two counties. One state, Connecticut, began inoculations last week; several others are expected to begin this week.

In the end, the total is not likely to reach 450,000 people and could be significantly lower, an administration official said Wednesday.

The vaccine carries rare but serious risks. Experts believe that out of every 1 million people being vaccinated for the first time, between 14 and 52 will face serious, life-threatening reactions, and one or two will die. People who come into close contact with vaccines also can be injured.

Health care unions complain that people who are injured will get little if any compensation for their time lost from work and medical expenses, a problem that federal officials acknowledge but have not solved.

Some hospitals complain that the risks of the vaccine are too great, given that there is no imminent threat that smallpox, which was eradicated, will return. States complain they do not have enough money to run their programs without cutting into other priorities.

In the AP interview, Gerberding said she expects the numbers to grow as people learn more about the vaccine and after the administration announces a way to compensate those injured.

Gerberding, an infectious disease physician, added that she will be vaccinated when the program moves to its second phase and includes health care workers outside the emergency room and emergency responders.

The key to detecting a smallpox attack will be an astute clinician who notices the distinctive rash, she said, and her agency regularly is called by doctors who believe they may have a case. Usually, she said, experts can rule out smallpox after hearing the symptoms by phone or seeing a picture.

"Having a digital photograph sent to us over the Internet has proven to save us many trips out of the CDC in the middle of the night with our response teams," she said.

An actual case of smallpox would prompt a massive response. The CDC and the state health department would vaccinate anyone with whom the patient had come into contact. Depending on the circumstances, officials might begin a regional or national vaccination campaign for the general public.

At the height of the 2001 anthrax attacks, the CDC sent teams five or six times to investigate smallpox cases in New York, West Virginia, Florida and elsewhere.

"We regard these false alarms as a very good thing," Gerberding said. "Every one of these is an opportunity to learn something" ([UCLA, 2003](#)).

Title: Responding To Bioterror Threat

Date: February 14, 2003

Source: [Harvard](#)

Abstract: The Harvard teaching hospitals and New England's medical schools have requested \$4 million to \$6 million from the federal government to open a regional biodefense research and teaching center, part of a widespread effort by the medical community to capture fast-growing dollars to fight bioterrorism.

Academic medical centers and medical schools across the United States are rapidly developing proposals for biodefense research, a portion of the National Institutes of Health budget that could double next year to \$1.6 billion, not including money for new buildings. Growth in the rest of the NIH research budget for diseases from cancer to heart disease is expected to slow to 4 percent starting in July.

"The research community is very much like any other kind of business: If you have a lot of incentives people will turn innovation toward the problem," said Dr. Alan Ezekowitz, chief of pediatrics at MassGeneral Hospital for Children. "There is also a large sense people have, and I feel this personally, that if we have expertise we should turn our attention toward these problems. It's a national and international crisis."

As the Bush administration warns Americans about the growing threat of terrorism, medical schools and teaching hospitals are requesting federal dollars for an unprecedented range of biodefense research - a shift in priorities that also is raising concerns about whether other crucial medical research projects will be neglected.

The Harvard group, which submitted its request last month, wants to establish a regional laboratory located in Boston's Longwood Medical and Academic area that would pay for individual projects to develop vaccines and treatments against agents of bioterrorism. The money also would allow Harvard to expand its lab where researchers work with dangerous organisms. And the center would help develop careers of researchers who want to redirect their efforts away from traditional medical arenas and toward biodefense.

"We have a lot of scientific talent that can readily perform the kinds of studies that need to be done," said [Dr. Dennis Kasper](#), executive dean for academic programs at Harvard Medical School, who led the grant proposal. "The time frame until we actually see something for the public is hard to know. We hope to have some useful products coming out within two years. But we still need to figure out who will make them, who will accept liability, and how we'll test them."

Kasper expects a decision by summer, but competition is fierce. The National Institute of Allergy and Infectious Diseases will award four grants for regional labs, but has received more than a dozen applications. Across the country, requests for money have ranged from several hundred thousand dollars to more than \$1 billion. Boston University Medical Center is seeking federal grants amounting to as much as \$1.6 billion to build and run one of the nation's most sophisticated and high-security biodefense research laboratories, where scientists hunt for treatments and vaccines against potentially lethal agents ranging from smallpox to plague to anthrax.

The hospital's request is for a Biosafety Level 4 laboratory - the most secure category of labs, reserved for working with the deadliest germs and viruses known. The Harvard group's lab would be Biosafety Level 3.

West Coast hospitals and medical schools, led by the University of California at Davis, are requesting \$50 million to build a center for biodefense research. The University of California at San Francisco within the next month will request a large grant from the NIH to research the impact of terrorism on the nation's mental health and how best to treat large-scale post-traumatic stress disorder and depression. And then there are countless smaller requests, including a \$250,000 award Ezekowitz's research group won to study how flies' immune systems recognize and respond to anthrax.

He said that most researchers in infectious diseases, immunology, and cellular biology have the scientific knowledge to move into biodefense research - and many are adding on that area to their regular work. His lab studies how flies' immune systems respond to routine infectious agents, and recently expanded to include anthrax. Ezekowitz's group, the laboratory of developmental immunology at Mass General, can study only how flies respond to the outer coatings of anthrax spores, minus the toxins inside. To work with live anthrax, the group needs access to a Biosafety Level 3 or Level 4 lab.

With growth in the general NIH budget slowing after 5 years of record increases, researchers in heart disease, cancer, and other areas with less connection to biodefense are concerned about federal officials neglecting their areas. Over the past five years, the NIH budget doubles to nearly \$27 billion and Boston benefited more than any other city. The city's universities, hospitals, and businesses receive more than \$1 billion a year in NIH grants. And the five independent hospitals in the nation that receive the most NIH money are all in Boston. Any reduction in NIH money for traditional areas of medical research could have an impact on the city - unless institutions move quickly to capture their share of biodefense funds.

"This is an impact we're very concerned about," said Dr. George Thibault, vice president of Partners HealthCare, a hospital network headed by Mass. General and Brigham & Women's Hospital. "We may not be able to generate new research in areas where there's just about to be a breakthrough. And if a war went on for a long time, it could have an impact on the rate of future discoveries" ([Harvard, 2003](#)).

Title: Czech Republic Steps Up Measures Against Bioterrorist Threats

Date: February 21, 2003

Source: [RadioCZ](#)

Abstract: With the possible war against Iraq increasing security risks around the world, the Czech Interior Ministry has stepped up security measures as a precaution against terrorism, including bioterrorism. Tight security is in place at water resources and water plants and also food-processing plants. But what exactly is bioterrorism?

It is the use or threatened use of microorganisms or toxins in order to cause disease or death in humans, animals or plants. Aerosol delivery is the most likely means of spreading bio-agents, followed by contamination of water or food products. Unlike conventional weapons, bioweapons are a relatively inexpensive means of paralysing or killing humans. They are relatively easy to produce, they are quite stable, and very little quantities can affect large numbers of people.

Among the identified substances that can be used as biological weapons are for example natural toxins, such as the highly poisonous plant toxin ricin or botulinum toxin. Other potential bio-agents are the infamous anthrax, plague, viral hemorrhagic fevers, such Ebola or the Lassa or Marburg fevers and also smallpox or variola, which was eradicated in 1977, and all vaccination against it stopped after 1980. Virologist Dimitrij Slonim is one of the creators of the polio, rabies and smallpox vaccines in the former Czechoslovakia.

"The virus in the nature was fully eradicated all over the world. However, because of continuing scientific research and for some biological purpose, two strains of the virus have been and are still maintained in two places: Atlanta, Georgia, USA and the other place was Moscow."

However, it is believed that other countries might be in possession of the smallpox virus as well and that it could be available on the international black market of weapons of mass destruction. Bioterrorists could abuse the fact that younger generations have no immunity whatsoever against the variola virus.

"Practically all young people born after 1977 or 1980 are sensitive to variola infection, they are not immune at all. Other generations are not well immunised either, because, for example, in Europe variola was not a serious infection as it did not really exist there anymore before 1980. It means that some nations have the vaccination coverage on a very low degree and therefore in Europe the immunity level of the population is not high enough."

After it was declared that smallpox had been eliminated as a naturally occurring disease, many countries discharged their stockpiles of vaccines. Therefore the existing smallpox vaccine supply is limited, and in many cases only supportive care would be available to those infected. The Czech Republic, however, has a supply of several hundred thousand doses, which could be administered in the case of a smallpox alert. ([RadioCZ, 2003](#)).

Title: Terror's Dual Threats Of Bombs And Biology

Date: February 25, 2003

Source: [UCLA](#)

Abstract: Rest semiassured: guards near New York City tunnels have stopped cars with cancer patients inside; remnant radiation from their tumor-fighting therapies tripped sensors. Also, the city's existing air-quality monitors have already been retrofitted to sniff out bioterror attacks, and so far so good.

That, however, is the extent of relief available in two unsettling hours about the airborne evils that Americans have been told to await. Two separate shows, "Dirty Bomb," tonight on the PBS series "Nova," and the Discovery Channel's "Bioterror: The Invisible Enemy" tomorrow, for the most part offer dreadful insights and fodder for fear.

Each program looks at information that often flits by on television in shorter, incomplete packages. Unfortunately, the hourlong shows wind up in macabre competition, arguing which is the most lethal and immediate agent of doom. Gird yourself against deadly radiation, spread by a cesium core within a detonated explosive, or run for your life from microbes like anthrax or "hemorrhagic fevers" like Ebola virus. Some choice.

There's good science in both shows and based on that standard "Dirty Bomb" scores (and scares) big. The episode employs technically undaunted minds to explain that some radioactive elements — cesium 137, strontium 90 — are unstable, sending out electrons that upset the nuclear balance within the molecule. Those electrons might arrive with enough force to send molecules inside the human body into ionized disarray. And one bad cell can replicate wildly, turning into tumors.

Got it? If not, then you see why good science can make for less-than-good television. We get lessons that break the problem down into its invisible essence when what we really want to know is where to buy a lead-lined suit and which days to wear it. "Dirty Bomb" explains all but that with enthusiastic determination.

Its format eschews the graphics that clutter up screens, focusing instead on experts filmed grainily at odd angles. It presents artsy re-enactments and close-ups of wriggling, irregular cells. It shows old clips of little-known nuclear crises overseas. (A stray canister of strontium found in the snowy Caucasus Mountains gets stored safely by hardy souls who worked in 45-second shifts to reduce exposure.) It leavens the weighty topic with visual originality.

"Bioterror: The Invisible Enemy" has as its host Tom Brokaw, the NBC News anchor, who has himself been bioterrorized. In late 2001 his assistant (case [2](#)) opened a package addressed to him, and her subsequent lesion was thought to be anything but what it was: cutaneous anthrax. He relives this nightmare with another target, Judith Miller, who has covered bioterrorism for *The New York Times* and is co-author of "Germs." Her expertise earned her an anxious readership and an unwelcome suspicious package.

Mr. Brokaw was told by the F.B.I. that his workplace was safe when in fact it needed serious quarantining. Ms. Miller still does not know who sent her a letter containing strange powder or what that powder actually was. She does know that it was harmless and that if it had been anthrax she would have been in trouble. "There would not have been enough Cipro in the world to cure her," as Mr. Brokaw puts it. Reality check: Because of a shortage? Because of her mode of exposure? Are we talking cutaneous or pulmonary?

The producers play and replay this sound bite from Ms. Miller: "If you hate the United States, if you want mass destruction on the cheap, if you want to be able to do this without being caught, forget about nuclear, go bio." Clearly she means this not as an advisory for evildoers but as a means to build awareness — and queasiness.

The Discovery Channel special, co-produced with NBC News, relies on the standard "Dateline" formula. It recaps recent history with film clips and eerie background music. It mentions the possibility of death at every opportunity. And its scripted narration sounds too much like newsmagazine warnings that viewers have already heard about the hidden dangers of minivans and cheeseburgers.

Still, watching either show imbues some sense of confidence about how to handle any attack. On Discovery, "Bioterror" makes the useful point that panic is the most dangerous contagion. On Nova, a nuclear safety expert named Charles Ferguson covers similar ground when he says, "You'd probably have more deaths due to traffic accidents than from ionizing radiation."

Safety cannot be found in numbers, as radioactive ash and biological agents can travel in or on humans. It might help to learn that smallpox vaccinations are now ready for all Americans whose bodies can handle them. (No doses for infants, pregnant women, immune-compromised patients and those with certain skin ailments.) Radiation can be cleaned up, but buildings might have to come down, and neighborhoods could be closed indefinitely.

Each program encourages cooperation before a big event rattles victims, clouds logic and spreads antagonism. "There's no question that some day we're going to get hit," Tommy G. Thompson, the Health and Human Services secretary, says on "Bioterror." When and how are not known, but absorbing all this data could work like a vaccine: a version of the calamity itself enters the imagination and helps make viewers more prepared for the mental challenges of survival ([UCLA, 2003](#)).

Title: 'Dream Team' Of Scientists Prepares For Worst

Date: March 5, 2003

Source: [UCLA](#)

Abstract: Long before there was Code Orange, the renewal of smallpox inoculations or a presidentially decreed war on terror, Jerome Hauer and a handful of counterterrorism experts were painting doomsday scenarios.

"People would look at us like we were crazy," recalled Hauer, 52, who helped create New York City's emergency management office. "They'd look at us like we were hysterical fanatics screaming the sky was falling."

Now Hauer and his hand-picked team at the Department of Health and Human Services are paid to think bleak thoughts. And if it were not for the serious nature of their work, they might just be saying, "We told you so."

For years, this disparate group spread across the military, academia and the FBI has tried to sound the alarm. Members have the journal articles and congressional testimony to prove it.

But it wasn't until fall 2001 -- when al Qaeda and anthrax made domestic terrorism a reality -- that HHS devoted major resources to the threat of biological, chemical and nuclear attacks.

"It became apparent we were totally unprepared," said D.A. Henderson, the epidemiologist who arrived at the department a few weeks after the first [anthrax death](#) in Florida. First alone, and then joined by Hauer, Henderson started assembling what has evolved into a new Office of Public Health Emergency Preparedness. The office, which comprises what HHS Secretary Tommy G. Thompson describes as a "dream team of scientists," was established to oversee emergency response and long-range planning for protecting the civilian population from acts of terrorism, particularly biological and chemical attack.

Last summer, Henderson moved to an advisory role, and Hauer became acting assistant secretary of the office, overseeing a staff of 51. Hauer had also been responsible for the 105-person Office of Emergency Response, which moved to the new Department of Homeland Security on March 1.

"We've all had a level of commitment to this for a long time," said Robert Blitzer, 57, a vice president of Science Applications International Corp. who is consulting with HHS. "This is the first time we're in a work environment together."

Other HHS agencies play large roles in the anti-terrorism effort; the National Institutes of Health is mounting a massive research effort while the Centers for Disease Control and Prevention is coordinating response activities with state and local health departments. Hauer's team has a more futuristic feel to it.

In a windowless warren kept locked at all times, the group pores over intelligence data, constantly re-ranking its threat list and possible countermeasures -- the detection systems, antidotes, vaccines and treatments of the future. Smallpox was at the top of the list because, as Henderson said, there is no treatment, and it can be fairly easily spread.

"Right behind is anthrax," he said, "because of its availability and the fact it has been used."

It is a reunion of sorts for the group of men (there are no women on the core team) and a new perspective for a department that historically had little connection to the world of national security. Henderson, 75, and Philip Russell, 71, an Army major general, came out of retirement to join the team. Medical doctors with extensive expertise in infectious diseases, both men focus on development of new treatments and vaccines.

Though the two are pleased with the speedy production of 200 million doses of smallpox vaccine and last week's announcement of three contracts to develop a safer, second-generation vaccine, there are many other deadly agents on their "to do" list.

"Soon we'll be pushing on with products for tularemia and Ebola," said Russell, who received the Legion of Merit and Distinguished Service Medal during his more than 31 years of active duty in the military. "We're also worried about people engineering new organisms."

Edward Eitzen, former commander of the U.S. Army Medical Research Institute of Infectious Diseases at Fort Detrick, Md., said he came to HHS for the chance to work with Henderson and Russell -- "giants in their field."

A highly decorated doctor who served in Operation Desert Storm, Eitzen, 49, is devoting much of his time to managing a botulism vaccine project. He scans the research horizon for other government, academic or corporate research that might apply to terrorism agents and coordinates with the Food and Drug Administration to smooth the licensing process.

The physicians rely heavily on Blitzer's reading of intelligence data, a skill he honed in the FBI's International Terrorism Operations Section.

"I look for trends in the traffic, any pattern of activity," Blitzer said. The information he culls on an enemy's ability to produce a certain weapon of mass destruction helps the group develop a counterstrategy.

A few years ago, terrorism experts focused on chemical weapons such as sarin gas or the nerve agent VX, Hauer said. But those can be difficult to disseminate in a civilian environment, as opposed to a battlefield. "Now the greater threats are toxic industrial materials that travel the highways every day," Hauer said.

Though not a government employee, Blitzer provides a critical link to law enforcement and intelligence officials, many of whom he knows. "If we see something in the traffic, I make a call to the CIA or FBI," he said.

The personal relationships, built over decades, mean the group often circumvents governmental obstacles, Hauer said, noting, "This is a group of people that abhors bureaucracy" ([UCLA, 2003](#)).

Title: Bio-Terror

Date: April 17, 2003

Source: [UCLA](#)

Abstract: The nation has read all the headlines about bio-terrorism and watched the terrorist threat level jump from yellow to orange and drop back again.

Much of what might happen in the future will be out of our control, but experts in bio-terrorism say we can take several key steps to prepare for a stateside bio-terror assault.

Bio-terrorism refers to the release of potentially deadly chemicals, bacteria or other toxins in the air, food or water supply. Tiny amounts of anthrax or smallpox, two of the better-known agents, could kill hundreds, if not more, and cause considerable panic.

Chemical weapons such as mustard gas are instantly detectable because of their fast-acting nature and can inspire panic in the populace.

Other weapons are far less obvious initially. It may take several days, if not weeks, for people to show symptoms from exposure to smallpox.

Nerve agents, man-made poisons such as sarin and VX, typically are odorless and tasteless.

Keith Holtermann, associate dean of George Washington University's School of Medicine and Health Sciences, says the stealthy nature of some bio-weapons makes them uniquely dangerous.

The 1995 sarin attack that killed 11 in a Tokyo subway "was an in-your-face event; we know it occurred," Mr. Holtermann says. Biological attacks from, say, smallpox, would make themselves known in a different fashion.

"In a biological type of event ... we may have a couple of days or so of lag time," he says. That delay, combined with the mobile nature of American society, could spread disease far and wide before anyone realized an attack had happened.

Getting the Word Out

Government and health groups have been working for months on ways to educate the public on bio-terrorism.

Monica Schoch-Spana, senior fellow with the Center for Civilian Biodefense Strategies at Johns Hopkins University in Baltimore, says the medical community created a priority list of potential bio-weapons in the weeks following September 11.

Researchers identified 30 to 40 agents with some historical significance as potential weapons. They decided to focus their work on six agents that posed the greatest risk to the populace for their deadly nature and ease in dissemination.

These "Class A" agents are anthrax, smallpox, botulism, plague, tularemia and viral hemorrhagic fevers, a group that includes the ebola virus.

"They used those pathogens [as the basis] for building a response system," Ms. Schoch-Spana says.

She says the medical community didn't release information to the public on various bio-terror weapons until several weeks after the attacks.

"All of us ... were caught unaware by 9/11 and had to go into reactive mode," she says. The health community in particular wasn't used to dealing with instant threats like police departments routinely do.

"In the medical and public health communities," she continues, "there's a strong emphasis on being accurate on the scientific details and also to be careful not to foment fear where there's no cause to. You find a reticence to speak in black-and-white terms."

Her center created a "frequently asked questions" link on its Web site (www.hopkins-biodefense.org).

The public, too, has to come to terms with a new way of thinking regarding possible attacks.

"The answer for dealing with bio-terrorism doesn't come individually packaged," Ms. Schoch-Spana says. "We have to change our thinking to realize it's about collective protection, not individual families being prepared."

People would be well-advised to create an emergency kit to help them in case the worst should happen. J.B. Hanson, deputy director of public relations with the Maryland Department of Health and Mental Hygiene, says a practical "grab and go" kit should take all family members into consideration, even pets.

That first-aid-style kit can include traditional medicines such as aspirin as well as specific medications for family members, such as pills for diabetics. Part of the preparation must include plenty of water that can be used for drinking, cleaning, cooking and keeping pets in good health.

"Animals drink more water than people do," Mr. Hanson says.

Other crucial items include fresh batteries, about four days' worth of nonperishable foods and a small tool kit to deal with any unexpected contingencies.

Extra clothing can be important should a family member's clothes be exposed to a toxin. In that case, the person should immediately strip down and place the clothing in a sealable plastic bag. A quick soap-and-water shower should follow, which can cut down on chemical irritation and transmission to others.

Much has been made about securing gas masks for a measure of protection. Mr. Hanson cautions that this simple step could be deadly.

"You need to know how to operate a gas mask, and you need to know the proper fit," he says. "You can't just order them over the Internet." A person could suffocate if his or her gas mask were used incorrectly, he says.

No matter how well-prepared a family may be for an emergency, plans may collapse without a successful meeting plan. Parents should decide on a contact person outside their hometown whose location can serve as a meeting place, a call center or both. An out-of-state grandparent or aunt could serve such a role, allowing all family members to check in or leave messages at a single phone number.

Mr. Holtermann says parents also should work with their local school districts to make sure their children will be safe in case of an attack.

The schools "need to instill confidence in the parents that they have an action plan," he says.

Should a biological attack occur, experts say it would be nearly impossible to prepare because such an assault would be quiet and give no detectable warning signs. Should a chemical attack happen, the public should stay indoors, shut off all ventilation systems, close all doors and wait until an "all clear" signal is given via the media.

Prevention and Preparation

While people mull the best way to deal with a crisis, government officials are working on ways to prevent and prepare for the worst.

At last week's 28th annual American Association for the Advancement of Science Colloquium on Science and Technology Policy, held in the District, researchers and public officials spoke to scientists about work being done to prevent and prepare for future atrocities.

Dr. John Killen, assistant director for biodefense research at the National Institute of Allergy and Infectious Diseases at the National Institutes of Health, says progress is being made to prepare the public for a bio-terrorist attack.

Nearly \$6 billion is allotted in NIH's 2004 budget for bio-terror, a dramatic increase from the \$40 million to \$50 million set aside for the same cause in 2000.

"This is all-new money coming to NIH and the Institute of Allergy and Infectious Diseases," Dr. Killen says. Part of that funding will go to creating "next generation" vaccines that don't have the significant side effects that existing vaccines such as the one for smallpox have.

Meanwhile, researchers have found that the drug Cidofovir, normally used for HIV patients, helps reduce the side effects from the smallpox vaccine. Dr. Killen also says Harvard researchers are working on antibodies that help inhibit smallpox growth in mice.

Another looming breakthrough involves a diagnostic tool that would screen people for various biotoxins in their systems before telltale symptoms emerge.

"That's the kind of technology we're on the verge of having available," Dr. Killen says.

Complicating matters is that the current medical health system already is under considerable stress from a lack of resources and constant demand, so a bio-terror attack would have severe ramifications, Mr. Holtermann says.

Still, there is only so much that can be done to prevent or prepare for an unconventional attack.

"So much of this ... we're learning as we go along," Mr. Holtermann says. The information we have right now "is not much. But it's the only way we can empower us as individuals" ([UCLA, 2003](#)).

Title: Unprepared For A Plague

Date: April 18, 2003

Source: [UCLA](#)

Abstract: Smallpox has been on the minds of public health officials for the past year, as Americans worry about a bioterrorist attack. But the disease that has struck isn't smallpox, nor is it somebody's deliberate

attempt to spread germs. Rather, it is nature's newest surprise: severe acute respiratory syndrome (SARS). SARS has gone from a few cases of pneumonia in southern China to a worldwide infection in just four months, with more than 150 deaths so far. This should remind us about the basics of disease control.

In his State of the Union address, President Bush called for a Project BioShield. Millions of dollars in federal grants are going to researchers developing electronic "biopreparedness" systems. The Centers for Disease Control and Prevention (CDC) has opened a high-tech "war room" to keep tabs on SARS and other new infections. Many cities are setting up expensive electronic surveillance systems in hopes of better watching for bioterrorist events. But while it always sounds exciting to put cutting-edge technology to use, Americans would be better off if the public health apparatus simply dealt well with the problems we know how to manage instead of trying to foresee the unlikely ones.

Take the early-warning monitoring for bioterrorism -- what the epidemiology techies call "syndromic surveillance." Syndromic surveillance doesn't work. The first [anthrax events of 2001](#) would have escaped attention but for the savvy of a Florida clinician; databases were no help. The anthrax cases later that year happened despite the CDC's complete knowledge of the method of infection and willingness to share data to prevent it. Another example: All through the '90s, good infectious-disease epidemiologists knew that mosquito-borne disease was going to break out in the New York City area after years of poor vector control. Yet the emerging-infections surveillance system of the CDC couldn't predict the coming of West Nile encephalitis (or even identify it when it did occur) in 1999.

The crux of the problem with syndromic surveillance is that it relies on statistics instead of science. Most of the effort in establishing bioterror early-warning systems goes into estimating the probability, based on what has been seen beforehand, that some cluster of cases might occur naturally. If that case cluster seems improbable, it is deemed an "aberration" -- and it merits action. The problem is that it's only when we have seen an event before that we can calculate its probability. When we are looking for the unprecedented, probability is of no use at all. The nearly 3,000 dead in the World Trade Center disaster attest to that.

It is the syndromes we haven't thought to watch for that will signal the next plague. We should have learned that lesson a quarter-century ago. Then, smallpox had just been eradicated, and with vaccines and good antibiotics, it seemed likely the other epidemic infections were on their way to a similar fate. But along came AIDS. Who, back in the early '80s, thought that uncommon infections in a few otherwise healthy young men were the first signs of what was to become the global pandemic of HIV/AIDS? Maybe SARS will be the new plague, or maybe it will be something we can't yet imagine.

Besides chasing the chimera of the unforeseeable, biopreparedness systems are based on an erroneous premise. Our public health authorities presume that bioterrorism is a serious threat to public health. They're wrong. The number of deaths attributable to willfully produced epidemics, ever, pales by comparison with the toll taken by natural ones. In 1918-19 an influenza pandemic killed more people in just 16 months than World War I had killed in six years. Smallpox killed 10 times as many people in the first half of the 20th century as did both world wars combined. Even today malaria kills 2 million people each year; so does tuberculosis. By contrast, deliberate epidemics in the past 100 years, mostly through the actions of armies at war, have been responsible for only a few thousand deaths.

So what is to be done? Public health officials should stop tinkering with electronics and get down to basics. What America needs is not more people mining more data, but better public health. We already know how to do this: Provide good primary care, track disease outbreaks by counting cases, run effective preventive programs, vaccinate, and keep the food safe, the air breathable and the water drinkable. We can make people healthier and save more lives if we resist the lure of databases. And if we succeed at maintaining good public health, we can protect ourselves against most eventualities better than if we waste time and resources looking for "aberrant clusters" ([UCLA, 2003](#)).

Title: Responding To Biological Terrorist Incidents: Upgrading The FEMA Approach

Date: May 2003

Source: [Homeland Security](#)

Abstract: The Federal Emergency Management Agency (FEMA) uses the Federal Response Plan “all-hazard” approach to coordinate federal emergency resources in responding to natural disasters. The bioterrorist threat, however, is unique. FEMA needs to enhance its ability to effectively respond to this threat.

U.S. intelligence, law enforcement, and military planners were surprised by the type of terrorist attacks carried out on 11 September 2001. There had been no scenario training or exercises appropriate to responding to the tactics the terrorists used. Nor was the United States prepared for the subsequent anthrax letter attacks. These illustrated the absence of adequate local, state, and federal preparedness and response plans for such novel threats. Continuity-of-government operation plans and other emergency plans existed to delineate roles and responsibilities in responding to a terrorist threat involving weapons of mass destruction. However, most of these plans were inadequate—disparate, disorganized, and lacking frequent testing and evaluation.

Until recently, public health officials, domestic preparedness planners, and counter-terrorism experts were almost unanimous in their agreement that a biological threat was a low-probability, high-consequence event. The anthrax attacks in the United States and the discovery of a plot by al-Qaeda operatives in Europe to use ricin indicate that a biological attack is more likely, and there is a new sense of urgency on the part of local, state, and federal governments to formulate effective, forward-looking bioterrorism policies, plans, and procedures.

The Biological Threat

The biological threat is very different from the threat posed by chemical or nuclear weapons in terms of needed preparedness and response actions and in terms of appropriate research and intelligence requirements.¹

Notable differences between biological agents and their chemical and nuclear counterparts lie in the areas of identification and detection, surveillance, epidemiological investigation, laboratory identification, description of general characteristics, type of biological agents, production and engineering, dissemination of agents, and medical requirements specific to biological responses.

An explosion or the release of a chemical agent results in a visibly dramatic event, usually with casualties. It requires the “sirens and flashing lights” type of intervention by emergency medical service, firefighters, and law enforcement personnel. They are needed to evacuate the wounded, to decontaminate, and to secure the site.

Release of a microbial aerosol, on the other hand, would almost certainly go unnoticed. It would be silent, invisible, odorless, and tasteless. Days to weeks later, persons ill with the disease—be it smallpox or plague or anthrax—would begin appearing in emergency rooms and doctors’ offices. As increased numbers of cases were recognized through surveillance systems and physician reporting, public health officials would be interviewing cases, tracking case contacts, investigating the source of disease exposure, and instituting control measures to interrupt disease spread. The first responders would not be fire and police personnel but physicians, nurses, and public health officials.

An attack with an agent such as smallpox could pose threats to large populations because of the potential for person-to-person transmission, enabling the disease to spread to other cities and states and quickly culminating in a nationwide or international emergency. The control of such an epidemic requires a coordinated effort of the entire public health community.

Control of the epidemic also depends on how the agent was disseminated, and this in turn depends on many uncertain factors—for example, in the case of aerosol dissemination, the method used, meteorological conditions, the type of the agent dispersed, the medium, and vectors for dissemination.

A biological terrorist attack may not occur in a single jurisdiction. This would fit al-Qaeda's modus operandi of conducting simultaneous, geographically dispersed attacks. Disease clusters are likely to emerge in several locations before an actual bioterrorist event is recognized and confirmed.² In the event of multiple cases with similar symptoms or the occurrence of cases that are temporally clustered, local and state health authorities would contact the Centers for Disease Control and Prevention (CDC) in Atlanta for further diagnostic, treatment, and investigation recommendations.

Medical experts contend that a biological attack should be considered a public health crisis of the greatest magnitude and therefore that local medical responders, in consultation with the CDC, should have the lead in responding to the crisis, with the assistance of local public health officials, clinicians, and first responders. Local public health experts—physicians, nurses, and other medical personnel—would use their epidemiological tools to detect, identify, and investigate a suspected biological agent and formulate proper decontamination procedures.

Depending upon the biological agent released, a bioterrorism event may be considered an epidemic.³ Anthrax and other biological agents might create a more containable epidemic.

A wide array of federal assets may be necessary to resolve the event if the local and state governments are overwhelmed by the crisis.

Although numerous biological agents could be released, the medical community believes that the threats posing the most danger to the public are anthrax, smallpox, tularemia, botulism toxin, pneumonic plague, and viral hemorrhagic fever.

Detection

A covert bioterrorist attack would likely come to attention gradually, as physicians recognize unusual patient symptoms or atypical demands for health care services. The speed and accuracy with which physicians, laboratories and public health officials detect and verify a contagious disease can determine the resultant numbers of ill individuals and rates of mortality.⁴

Identification and detection of a biological terrorist attack against the U.S. citizenry would be difficult for several reasons. First, the latest trend in terrorist warfare is not to claim attribution for an attack, or even claim that an attack has occurred, so it will take time before an actual attack is uncovered. Second, to date, there is no accurate, reliable device that can detect the numerous biological agents and that could be cost-effectively distributed within the United States.

Because initial detection of bioterrorism will most likely occur locally after victims have incubated the disease, it is essential to educate and train the members of the medical community in both the public and private sectors who may be the first to examine and treat the victims. State and federal epidemiologists must be trained to consider unusual or rare threat agents when suspicious outbreaks occur and must be prepared to address questions relating to transmission, treatment, and prevention.

Through cooperative agreements, grants, and other mechanisms, the CDC is providing states and selected large metropolitan health departments with tools, training, and financial resources for investigating local outbreaks and will help develop rapid public health response capacity at the state and local levels.

A crucial area in mitigating the bioterrorist threat is to accurately diagnose the disease at earlier stages—that is, the local laboratories must identify the disease and its cause and rapidly forward their findings to the state and federal laboratories. In addition, local health agencies should form partnerships with

frontline medical personnel in hospital emergency departments, hospital care facilities, poison control centers, and other facilities to enhance detection and reporting of unexplained injuries and illnesses as part of routine surveillance mechanisms for biological terrorism.⁵

Dissemination of Biological Agents

The principal dissemination techniques for biological agents are:

1. Low-technology threats
2. Aerosols
3. Vectors

Low-Technology Threats.

The most viable threat that terrorists can perpetrate against U.S. citizens, and the easiest to carry out, is the low-technology threat. An example was the contamination of restaurant salad bars by the Ranjneeshee sect in Oregon in 1984. Hundreds of people became sick. The sect was trying to influence a county election by incapacitating citizens and keeping them from voting.

Aerosols

Dissemination of biological agents that affect people externally or through inhalation may be carried out with aerosols. Terrorists might use different aerosol distribution methods, such as the bomblets designed to distribute biological agents that in the past were tested at Dugway Proving Grounds, Utah, or an airplane with aerial bombs that can release spray tubes with the biological agent. Many rogue countries are capable of using ballistic missiles to disseminate a biological agent in the United States.

Vectors

Vectors are carriers of disease. Releasing insects with sufficient range to infect people can pose a major danger. Fleas are an ideal conduit for a biological agent. Rift Valley fever has infected animals and humans in Africa. It is transmitted by mosquitoes and possibly fleas.

Existing Response Mechanisms

Federal Funding for Bioterrorism Preparedness

In June 2002, President Bush signed the Public Health Security and Bioterrorism Preparedness and Response Act of 2002, authorizing \$1.1 billion for bioterrorism preparedness, with the bulk of it, \$930 million, to be parceled out among the states for public health improvements. In contrast, the previous year's budget for bioterrorism preparedness was a mere \$100,000, most of which came from the CDC. The asymmetric threat of bioterrorism requires dramatic federal funding increases, as well as new emergency management approaches in preparation and response.

While disaster experts may have effective emergency management predictive tools for assessing the probability and frequency of natural disasters, such as hurricanes, floods, and earthquakes, it is virtually impossible for these same experts to forecast with any precision the number and frequency of terrorist attacks that are likely to occur in the United States, especially attacks involving biological agents. In addition, while the existing emergency policies, plans, and procedures for nuclear and chemical threats in the United States have been well defined and tested and verified through exercises and operational requirements, preparedness for the biological terrorist threat is more problematic.

Emergency Planning and Exercises

The Clinton Administration promulgated two major executive orders pertaining to U.S. preparedness for and response to bioterrorism: Presidential Decision Directive 39, U.S. Policy on Counter-terrorism (21 June 1995), reinforced by Presidential Decision Directive 62, Combating Terrorism (22 May 1998). Both directives provide statutory authority for the federal government to promulgate emergency plans, policies,

procedures, and exercises to protect the health and safety of U.S. citizens against a future attack using weapons of mass destruction.

After the formulation of these executive orders, Congress mandated that the FBI, the lead federal agency for crisis management for terrorism incidents, supported by FEMA for consequence management, hold annual counter-terrorism exercises to test and validate their existing emergency capabilities. The first was designated as Top Officials Exercise (Topoff), and Topoff 2 was held in May 2003.

The first Topoff exercise, a bioterrorism scenario in Denver, delineated roles and responsibilities for responding to a terrorism event—*who*, *what*, *where*, and *when* in response to a bioterrorist incident.

The Nunn-Lugar-Domenici Defense Against Weapons of Mass Destruction Act

“The Domestic Preparedness initiative was formed under the Nunn-Lugar-Domenici legislation that provided funding for the Department of Defense to enhance the capability of federal, state and local emergency responders in incidents involving nuclear, biological and chemical terrorism,” according to the U.S. Army Soldier and Biological Chemical Command fact sheet on homeland defense. This command “was the lead DoD agency charged with implementing this objective through training, exercises, expert assistance and an improved response program.”

The Domestic Preparedness program consists of first responder training and expert assistance (section 1412 of the Nunn-Lugar-Domenici legislation); a nuclear, chemical, and biological emergency response program (section 1413); and exercises and preparedness testing (section 1415).

Definitional Ambiguities

Some gaps and shortfalls in the Defense Against Weapons of Mass Destruction Act are that the definitions of weapons of mass destruction are vague and that terrorism threats are treated as homogenous rather than unique.

For example, according to the act, “The term ‘weapon of mass destruction’ means any weapon or device that is intended, or has the capability, to cause death or serious bodily injury to a significant number of people through the release, dissemination, or impact of—

- (A) toxic or poisonous chemicals or their precursors;
- (B) a disease organism; or
- (C) radiation or radioactivity.

In essence, the threats are generic under the statute; the Nunn-Lugar-Domenici legislation does not treat a biological incident differently from a chemical or nuclear incident; however, the incidents are quite distinct in their effects and the needed response capabilities. Public health experts should be given the lead in a bioterrorist incident so that they can diagnose the disease and treat the victims effectively and efficiently.

The FEMA Office of National Preparedness

In May 2001, President Bush directed FEMA to establish an Office of National Preparedness for the consequence management aspects of antiterrorism planning. The office became a major component of the Emergency Preparedness and Response Directorate of the White House Office of Homeland Security, coordinating the development and implementation of a comprehensive antiterrorism planning strategy with approximately 22 federal agencies, including FEMA.

Notification for Bioterrorist Incidents

There are several routes for notification involving nuclear, biological, or chemical terrorist events. In some cases, local police or poison control can call state authorities, which will in turn notify the federal

authorities. Federal authorities will assess the facts of the situation and consult with local authorities to determine whether the terrorist threat is credible.

Based on the federal assessment of the incident, appropriate federal assets—for example, the FBI Hazardous Materials Response Team—will be dispatched to the scene along with local police resources.

Depending on the magnitude of the terrorism incident, the full range of federal assets can be used to mitigate the event. Over 40 federal agencies can be deployed to provide an operational response. Roles and responsibilities for federal assets are clearly spelled out in the Justice Department's Concept of Operations and FEMA's Federal Response Plan Terrorism Annex.

Surveillance and Epidemiology

In a covert bioterrorism event, local health care providers (clinicians and medical staff) and disease "sentinel" surveillance systems will be the first to observe related morbidity and mortality. State and local epidemiologists, infectious disease specialists, and laboratories will be among the first to detect that there is something out of the ordinary; public health professionals also lead the effort to identify the causative agent and conduct the epidemiological investigation.

Bioterrorism threats fall into three categories: (1) bacterial (anthrax, plague, foodborne pathogens); (2) viral (smallpox), and (3) toxins (botulinum toxin, *Staph enterotoxin B*, ricin, and *Tricothecene mycotoxins*).

Two surveillance systems exist for detecting a bioterrorism attack; FEMA needs to interface with them to enhance their effectiveness:

Health Alert Network

The Health Alert Network is a nationwide system developed by the CDC to provide a more sophisticated health infrastructure system that is designed to support the public health response to bioterrorism and other health threats. The essential organizational capabilities for this responsibility are surveillance, laboratory practice, and disease investigations. Within this structure, the Health Alert Network will have communication and information, workforce development, and organizational capacity.

Syndromic Surveillance System

The Syndromic Surveillance System identifies usual and unusual disease outbreaks. It will facilitate local and state health departments' monitoring and analysis of the epidemiological situation. Epidemiological analysis of initial victims may be critical in determining where the attack occurred, who is at risk, and who requires prophylactic treatment. The Syndromic Surveillance System will expand to regional and metropolitan areas throughout the United States. This disease surveillance taxonomy will be based on algorithms and will serve as an early warning system to detect a potential bioterrorist incident.

FEMA's Response Plan

The underlying domestic assumptions concerning a bioterrorism event in the United States are that it will overwhelm the local and state governments. FEMA uses the Federal Response Plan, in particular the Terrorism Annex, as the framework for consequence management response to a bioterrorism event. This annex delineates the general roles and responsibilities for federal agencies in the event of a bioterrorist threat.

Gaps and Shortfalls of the Terrorism Annex

Because of the unique nature of a bioterrorist incident, the Federal Response Plan Terrorism Annex should include a separate, specialized section focused on the unique operational response to bioterrorism. This section could be an Infectious Disease Appendix to the plan, or it could take the form of a memorandum of understanding between FEMA and the Department of Health and Human Services for

dealing with a bioterrorist incident. In essence, this attachment would provide more specific information pertaining to federal roles and responsibilities in the event of a bioterrorist incident.

Federal agencies will be extremely reliant on the Department of Health and Human Services to provide health information. Health officials will be responsible for identification, surveillance, and mortality counts of the biological agent. Another role for health experts will be to distribute pharmaceuticals to individuals who may have been exposed to a biological agent.

Recommendations

1. FEMA should assist the FBI with threat analysis—where and when terrorists might attack the United States and what types of biological agent they might use; this needs to be performed to update the list of critical biological agents that threaten the population and identify the areas that are most vulnerable.
2. FEMA should enhance its working relationship with the Department of Health and Human Services for carrying out Emergency Support Function 8 (Medical) of the Federal Response Plan and use the National Disaster Medical System and the Metropolitan Medical Response System to respond to a bioterrorist incident.
3. FEMA should formulate an annex to the Federal Response Plan for infectious disease for a bioterrorist incident that can be segmented into pre-incident, trans-incident, and post-incident phases.
4. FEMA and the Department of Health and Human Services should assist local and state governments with expanding detection, epidemiological diagnosis, and disease surveillance technologies.
5. FEMA and the Department of Health and Human Services should assist local and state governments with prophylactic and logistics support, including evacuation planning in response to a biological attack. There should be a review by FEMA and the Department of Health and Human Services of the city, county, and state written plans to respond to a biological threat ([Homeland Security, 2003](#)).

Title: 'UK Not Ready For Bio-Terror Attack'

Date: May 15, 2003

Source: [Daily Mail](#)

Abstract: Scientists have warned of a "significant deficiency" in resources to cope with a biological terrorist attack in Britain.

MPs on the Commons science and technology committee heard that Chancellor Gordon Brown's allocation of £330 million for fighting terrorism in this year's Budget was not enough.

Dr Mike Crumpton, of the Academy of Medical Sciences, said: "There is a significant deficiency in terms of resources we would have available to address a terrorist attack, especially in terms of an infective agent."

There was a "serious deficiency" of specialists in biological research and in veterinary expertise, Dr Crumpton said.

Vets had to be brought from overseas to cope with the foot-and-mouth epidemic, he said.

The committee was also told that vetting procedures to detect potential terrorists studying or working at universities were only being adhered to by a handful of institutions.

Since 1994 the Foreign Office has operated a "voluntary vetting scheme", where universities with microbiology departments are asked to refer applications from "countries of concern".

Applications are cross-checked against 11 countries, including Iraq, Iran, Libya and Algeria, where terrorists might exploit research for the development of biological weapons programmes, and against 21 areas of academic study.

David Allen, registrar of the University of Birmingham, who was representing administration chiefs of universities, said only four institutions, which he did not name, had referred applications in the last six months.

Between them they had referred 500 to the Foreign Office in that period ([Daily Mail, 2003](#)).

Title: Outbreak: What A Real Bioterrorism Incident Would Look Like

Date: May 17, 2003

Source: [EHS Today](#)

Abstract: The first day of a bioterrorism event would look like any other day. So would the second, and probably the third and fourth as well.

It might take a week or longer for the first symptoms to show. And because the early stages of many bioterror agents look like the flu, the true nature of the disease may go unrecognized. A community may not realize it is under siege until hospitals start filling up and patients begin dying.

First responders, used to manning the front lines of any emergency, would find their roles changed. Doctors, nurses and EMTs would be in the thick of any crisis. Fire and police would find themselves providing support. Fire crews may find their station houses converted into clinics, and those with EMT training pressed into medical service. Police may be asked to guard medical supplies from looting, or to enforce quarantines.

It's a chilling scenario. Although experts repeatedly underscore the difficulty of using disease as a weapon of terror, any intentional release would have the potential for great damage. What would such an event look like? What roles will first responders play? How should we prepare? Here are some answers:

The Threat

The Centers for Disease Control and Prevention (CDC) lists anthrax, smallpox, botulism, plague, tularemia and hemorrhagic fever as Class A bioterror threats. They are easily transmitted, have high mortality rates and might spark public panic.

Smallpox has attracted the most attention. It incubates quietly for 9-14 days before its distinctive lesions appear and it becomes contagious. Before 1977, when it was eradicated, it killed about one-third of its victims. Today it would enter a world where no one has natural immunity. Several nations likely retain samples of the virus, including Iraq, North Korea and France.

Just how a terrorist would release a virus is an open question. Worst-case scenarios visualize weaponized germs, highly potent viruses or bacteria treated so that they disperse readily in air. A terrorist could release them into the heating or cooling system of a stadium, convention center, auditorium or office building. This would infect thousands, who would spread the disease without knowing it.

Fortunately, weaponizing germs is not easy. Japan's religious cult Aum Shinrikyo, which killed 12 in a nerve agent attack on the Tokyo subway in March 1995, tried to do this. Despite a team of scientists and physicians and millions of dollars in equipment, it could not isolate, aerosolize or disperse bioterror agents.

This does not rule out the success of others. Terrorists might buy weaponized agents on the black market. They could disperse them through the mail like anthrax, or infect suicide volunteers to walk through crowded stadiums or airports.

Fortunately, bioterror diseases are usually treatable. But first, doctors have to correctly diagnose them.

Discovery/Diagnosis

Most biowarfare diseases look like the flu. They cause high fever, weakness, muscle pain, nausea and headaches. Victims are likely to take aspirin and stay in bed. Those who seek medical care may not raise a flag because doctors used to dealing with everyday cases are unlikely to look for or recognize nonspecific bioweapon symptoms.

Doctors might, for example, mistake smallpox for chicken pox. "The distribution, type and location of lesions, and their look and feel at different stages distinguish smallpox," says Dr. Howard Schwid, an anesthesiology professor at University of Washington (Seattle).

"If a first responder could tell symptoms at a glance, that would be very valuable," he continues. "If I saw someone with a characteristic smallpox rash and high fever, I would immediately ask for a vaccination myself. I would have about three days after first exposure to receive that vaccination."

Schwid helped Anesoft Corp. (Issaquah, Wash.) develop software that trains health care workers to recognize and treat bioterrorism symptoms. Even so, he suspects that physicians would not diagnose an agent of terror until the first death.

One reason for delays is that doctors rely on laboratory tests to identify diseases that resist conventional treatments or cause unexpected deaths. These tests do not screen for bioterrorism threats. It may take days or even weeks before someone runs the right tests and understands the true nature of an outbreak. By then, those with the infection may have spread it to hundreds or thousands more.

The CDC and several states and cities hope to recognize a crisis earlier by monitoring EMS traffic, hospital admissions and patient symptoms. New York City, for example, samples flu-like symptoms and diarrhea cases at a series of "sentinel" hospitals and nursing homes for unusual upswings. Unusually heavy EMS traffic, a spike in school absences or even an increase in dead animals may also raise flags.

Statistical methods could provide a warning in the earliest phases of an outbreak, when only a handful of cases have appeared at each of a city's hospitals. Otherwise, health workers may not see the big picture until the sick and dying overwhelm them. Then it will become a race against time to contain the disease.

Plague

Experts have tried to understand how a plague would unfold by simulating bioterrorist attacks. Operation Topoff, a U.S. Department of Justice simulation held in Denver in May 2000, assumes a covert attack of aerosolized plague (*Yersinia pestis*) on 2,000 people at a concert.

Within four days, 16 city hospitals report 783 cases and 123 deaths. Two days later, this rises to 3,700 cases – at least 780 transmitted by those initially infected – and 950 deaths. Cases appear in at least six states outside Colorado.

Plague's short incubation time overwhelms local hospitals. So do demands for treatment from the walking worried; healthy people who fear they have symptoms. Although federal authorities send vaccines and antibiotics, the distribution system in Denver breaks down. The governor decides to use remaining stocks to treat health care workers rather than close contacts of infectious cases.

In the end, assessors conclude that Denver would require 2,000 outside medical personnel within 24 hours to keep its health care system from collapsing. Otherwise citizens, some plague-infected, would start to leave Denver to seek help elsewhere.

One year after this simulation, the Johns Hopkins Center for Civilian Biodefense Studies (Baltimore) held Dark Winter. It simulated the 13-day spread of smallpox after aerosolized release at shopping malls in Oklahoma City, Philadelphia and Atlanta.

The Dark Winter scenario assumes that 30 grams of smallpox causes 3,000 infections, and that each victim infects an average of 10 others. The first 20 cases are diagnosed nine days after exposure. By the end of the 13-day scenario, hospitals in 25 states report 16,000 smallpox cases – 14,000 in the past 24 hours – and 1,000 deaths.

Experts predict that 17,000 new cases will emerge over the next 12 days, leaving 10,000 dead. But this assumes successful mass vaccination and disease containment. A breakdown in the system could catapult the number of dead to 100,000 or more.

Medical Response

Once the first case has been diagnosed, the clock starts ticking. The community has to find enough medicine, hospital beds and health care professionals to treat the ill and vaccinate the well.

Everything starts with retaining medical personnel, says Amy E. Smithson of the Henry L. Stimson Center, a Washington, D.C., national security think tank. In her landmark report on U.S. bioterrorism preparedness, she interviewed several physicians who said that half their staff would "run for the hills" if an incident occurred. She advocates first immunizing doctors, nurses, EMTs and other health professionals – and their families – so they will feel safe enough to remain on the job. Police and fire should also receive preventive antibiotics so that they remain at their posts.

Bringing in outside medical help is more problematic. Military doctors are a possibility, and several organizations are seeking ways to create a voluntary response team of physicians and nurses that would fly to emergencies.

Until help arrives, stricken areas must fend for themselves. Tucson fire battalion chief Les Caid, who helped organize a bioterrorism exercise in Arizona in November 2002, expects to draft EMTs, pharmacists, veterinarians, and student nurses and doctors. Oklahoma State EMS director Shawn Rogers, who participated in the April 2002 Sooner Spring bioterrorism exercise, expects to use police and fire fighters with EMT training to dispense medication in an emergency.

Cities are also likely to run out of beds. Even seasonal flu outbreaks overtax the capacity of many hospitals, Smithson points out. A bioterror incident would quickly strip hospitals of their ability to house and isolate contagious patients.

To cope with the onslaught, hospitals must share the burden, Smithson continues. Some facilities must remain open and uncontaminated for ordinary medical emergencies. Others will need every available bed to treat disease. Some preexisting patients must be evacuated, while others will be too sick to move. Cities may need to quickly transform schools, heating/cooling centers and fire stations into clinics.

It will take a well-practiced plan to move fast enough to head off the crisis. "Most communities still don't have a collective game plan for burden sharing," says Smithson. "The front lines will be all around them, and in the midst of disaster there is no time to exchange business cards."

The Stockpile

Communities will also need enough medicine and supplies to treat the sick. Most hospitals now stock only a few days' supplies. They will vanish within hours as hospitals inoculate their staffs, first responders and their families. Local warehouses will empty nearly as quickly.

The National Pharmaceutical Stockpile was created for that contingency. It consists of three 94,000-lb caches of palletized, ready-to-ship pharmaceuticals and medical equipment in Denver, Los Angeles and Winston-Salem, N.C. (A fourth cache remains in Washington, D.C.)

Although the system relies on 35-member volunteer medical teams, it is designed to roll within 4 hours. "It takes 18 to 24 minutes from the time we arrive to receive the first patient," says Robert Cornish, who manages the program for the U.S. Office of Emergency Response.

However, plenty of things could go wrong during deployment. Arizona's exercise moved the stockpile to a warehouse without a loading dock. It took half an hour to unload each of the 18 trucks transporting the cache. Nor did the warehouse have the Internet connection needed for logistics control.

Vaccinating the public will also take logistics planning. In its bioterror exercise, Arizona opted for collection points where people boarded buses to dedicated dispensing sites. Sooner Spring authorities took over local drive-through restaurants. "We expect cars to line up for blocks and blocks, so this allows the easiest flow of traffic," says Shawn Rogers.

Control

Any emergency plan will call for rapid, highly coordinated responses from many different agencies. Lots can go wrong, and each new difficulty puts pressure on the system. "The health care system could collapse under pressure from the exposed and walking worried," says Smithson.

What would a collapse look like? "Hospitals shutting their doors because they can't treat any more patients," she replies. "People leaving the area in search of health care services in other areas. People breaking into pharmacies to get drugs. Panic."

That means a high police profile at hospitals, clinics, drug dispensing centers and even pharmacies. "Police will need to identify sites where citizens might go to take things into their own hands if things got bad," says Smithson. "Imagine how a panicked community would react if some reporter got on the air and said, 'You can get this at your local pharmacy.'"

Caid agrees. "There are going to be thousands of very anxious folks lined up at dispensing centers," says Caid. "What if someone starts a rumor about lack of medication? By the time it got to the back of the line, people would be going crazy. The potential for problems at dispensing sites is huge."

During Arizona's exercise, police manned clinics and dispensing stations. They also secured the National Pharmaceutical Stockpile landing site and warehouse, as well as routes used to distribute pharmaceuticals. "Pharmaceuticals would be more valuable than gold," says Caid. "We wanted to know who would be in charge. Local police? State? We wanted our plans to be really specific so we had no miscommunications."

"It's not just about manpower, but appropriate use of force," adds Smithson. "If someone breaks down a hospital door, what level of force do local police use? Are we talking about a bull horn? Pepper spray? Rubber bullets? Lethal force?"

Quarantines and Communications

Any discussion of quarantines raises similar questions. Oklahoma's Rogers is adamant: "You can't quarantine a city – it's not realistic unless you ring a city with troops and shoot to kill."

This raises sticky issues for first responders. Police would have to enforce any restrictions. Police, fire fighters and EMS would also have to enter the same isolated areas to provide food, medical care and other essential services. How would they fare in a city that spent its last supplies of medicine to treat first responders, then sent them into neighborhoods where disease was rampant?

Issues of force will cause many communities to shy away from quarantines. Others claim that modern forms of transportation make quarantines almost impossible to enforce. "You don't have enough police in an entire state to quarantine certain city areas," says Smithson.

Instead, governments must convince citizens to stay at home, says Michael Mair, a senior research assistant at Johns Hopkins Biodefense who participated in Dark Winter. "We think people are normally calm, rational and work together in these situations," he explains. "We always get a better response when we use the least restrictive means possible that prevents spread of disease. That shows more respect for people's civil liberties."

Public communication often takes the backseat in a crisis. A bioterror event would demand an extraordinary amount of clear communications. Citizens need to hear a single message so there is no doubt what steps they must take to keep the disease from spreading.

"The ways and speed at which information is communicated may be a major factor in limiting a terrorism attack," says John Sorensen, director of Oak Ridge National Laboratory's Emergency Management Center. He notes that the anthrax scare did not cause mass hysteria, and that people tend to be more apathetic than responsive. "People have a tendency to deny that something will happen to them, and think that it will happen to other people," he explains.

Yet he also admits that no one really knows how a city will react to a large-scale bioterrorist attack. His advice: Provide lots of information. Do not withhold information. Acknowledge where there are uncertainties and why they occur. Never cover up or sugarcoat things.

He also suggests engaging a wide variety of people, from scientists to community leaders, to discuss the situation. "Multiple sources of information are the key to reaching even impoverished areas without social support networks," he says.

Addressing this, Smithson suggests getting out early with frequent updates and making sure everyone is on the same page. Contradictory statements cause confusion and panic. Given the number of different local, regional, state and federal organizations that will be working together for the first time, this may be difficult.

The End?

What happens next? Assume for a moment that one or more U.S. cities have been attacked. We have identified the disease. We fly in the National Pharmaceutical Stockpile and press anyone with medical training into emergency service to treat and vaccinate the public. Everyone does a good job of communicating. Most people stay indoors, and EMS comes to get them if they call in sick.

What then?

The scariest thing about most simulations and exercises is not just the numbers, which are terrifying enough. It is that simulations are designed to last only a certain number of days. When they end, the disease is still spreading. Thousands are infected. Not all of them know it.

How does it stop? When does it stop?

No one knows the answer because nothing like this has ever happened before. And, because bioterrorism is so difficult to practice, it may never happen.

Meanwhile, the best option is to remain alert. Learn the symptoms. Look for unusual statistics. And know and practice the plan before we need it ([EHS Today, 2003](#)).

Title: Are We Ready?

Date: July 13, 2003

Source: [UCLA](#)

Abstract: Post offices have been cleaned, and many mailrooms are better protected. But how much has the U.S. medical establishment really learned from the [anthrax attacks of October 2001](#)? If anthrax -- or smallpox, or a newly engineered disease -- were to break out tomorrow, would hospitals and public health departments be prepared?

Part of the answer is deeply unsatisfying: At least at some level it is impossible to say, because no federal agency has published the results of a full investigation into what went right and what went wrong. The Department of Health and Human Services says it has conducted its own investigations but will not publish the results, for security reasons. That leaves everyone else to rely on the work of private scientists.

Their conclusions, some recently published, indicate that the medical response to the anthrax attacks was flawed. After extensive discussions with those involved, three scientists from Johns Hopkins University and the ANSER Institute for Homeland Security found, for example, that the work of doctors dealing with anthrax patients was significantly hampered by the poor distribution of information. Hospitals in Florida, New York and the Washington area were compiling evidence about anthrax cases but weren't receiving timely medical advice in return. Whereas the Pentagon held daily news briefings after Sept. 11, 2001, health professionals got their information about the spread of anthrax from CNN. An electronic system designed to link public health departments with the Centers for Disease Control and Prevention (CDC) in Atlanta worked poorly, and a public CDC Web site crashed twice. In any case, neither was dispensing pertinent medical information directly to hospitals and doctors who needed it.

HHS says much has improved. The department, along with many communities across the country, has begun conducting mock disaster drills, furthering the integration of public health officials with hospitals. Money has been spent on computers and cell phones, as well as safety shoes and surgical masks. Scientists are trying to develop a new anthrax vaccine. HHS says it can get antibiotics to any part of the country within hours -- though it isn't clear, at the local level, how they would be distributed after that.

Is it enough? Some think not -- and they usually point to personnel problems. Another report, issued last week by the Partnership for Public Service, points out that federal biodefense agencies may actually lose qualified staff in the next few months. Despite claims by Tom Ridge, the secretary of homeland security, that "a new human resource management system" is one of his top priorities, and although HHS says it has hired "hundreds" of public health officials, starting salaries for public health workers are still far lower than those in the private sector, and academia still offers scientists more stable careers. Others, both inside and outside government, point to a shortage of medical personnel as well: The nation's hospitals are already overstretched, and they have very little "surge capacity." After creating a computer model of the effects of a major anthrax attack in New York City -- and concluding that 120,000 people might die -- Stanford University business professor Lawrence M. Wein concluded that the nation needs a medical SWAT team, specialists who could fly to an emergency from cities across the country, set up tents and start caring for patients.

Both the administration and its critics agree that coming to clear conclusions is difficult, if not impossible. They generally agree that the nation is better prepared than it was, but also that if an attack took place tomorrow, many people still might die. Worse, substantial resistance remains at many levels to the very idea of preparing for a bioterrorist attack -- as we will discuss in editorials tomorrow and Tuesday on the experience of smallpox vaccinations and on biothreats of the future ([UCLA, 2003](#)).

Title: Uncertain Threat

Date: December 15, 2003

Source: [Scientific American](#)

Abstract: "Biological terrorism is our future, and smallpox is a serious threat," insists Ken Alibek, who headed the former Soviet Union's biological weapons program. Now vice chairman of Advanced Biosystems, based in Alexandria, Va., Alibek was one of 200 epidemiologists and tropical disease experts who gathered in Geneva last October to discuss how nations should prepare for an outbreak. The U.S.

has already outlined its plan--a voluntary regimen that aims to vaccinate a total of 10.5 million people in phases.

Some scientists, however, see little data to support such widespread vaccination. The plan is partly based on mock scenarios and mathematical models that attempt to predict the magnitude of an outbreak. One major problem is that they must use data on smallpox transmission gathered from pre-1977 Africa, where the last smallpox case occurred. The virus might behave completely differently in today's unvaccinated cosmopolitan societies. And all models rely on assumptions that by their nature are inaccurate.

The most grave outbreak scenario is "Dark Winter," to which U.S. Secretary of Defense Donald H. Rumsfeld has referred a number of times. It predicts that simultaneous attacks in three shopping malls could balloon to as many as one million dead and three million infected.

But many scientists find the scenario too extreme. What is most contentious is the infection rate. Dark Winter assumes that each infected person will transmit the virus to 10 others and even to descendants for several generations. This is not, however, what epidemiologists have observed in the field. Rarely was smallpox transmitted to more than two or three people, if at all, says J. Michael Lane, former director of the smallpox eradication program at the Centers for Disease Control and Prevention, and most were infected by prolonged exposure. What is more, the virus is not transmissible until physical symptoms appear. By that time, Lane states, the person usually feels "so awful" that they are bedridden. And even though the virus may not behave the same way today, Dark Winter assumes that the sick are not effectively isolated, which is "totally unrealistic," he adds.

So instead of vaccinating millions, Lane would prefer to vaccinate a core group of first responders--around 40,000 people--and then to vaccinate only people who come into contact with an infected person (the vaccine is also effective for up to four days after infection). His plan more closely reflects what has actually transpired in terms of vaccination numbers [see "Spotty Defense," News Scan; Scientific American, May 2003].

Proponents of mass vaccination also cite a few exceptional cases in which smallpox spread easily. In 1970 a young engineer returned to his home in Meschede, Germany, after spending some time in Pakistan. Soon after, he checked himself into a hospital with flulike symptoms. Doctors quickly diagnosed him with smallpox, but during his stay 19 other people also became ill. The most bizarre case was the infection of a person who had briefly walked into the hospital lobby, discovered he was lost and left. The sick engineer had a cough, a highly unusual symptom but one that nonetheless made the virus highly transmissible. No one knows whether the smallpox strain was unusually hardy or the patients uncharacteristically weak.

Another outbreak occurred in 1963 when a young man, who had spent some time in India, came down with smallpox on returning to his home in Poland. By the time health authorities figured out he had smallpox several weeks later, 99 other people became ill. To contain the outbreak, authorities vaccinated eight million people, even though the population had been vaccinated as infants. (The illness tends to be less severe in vaccinated people, however.) Scary as they are, these stories are isolated cases and clearly do not represent how the virus behaved in the majority of outbreaks. "Surveillance and containment strategies were key components of the smallpox eradication program," Lane notes. "We must not lose sight of that."

But supporters of more widespread vaccination are sticking to their guns. Although everyone agrees that an attack is unlikely, any outbreak, however small, would be "economically and psychologically devastating," Alibek states. In his view, widespread vaccination would help preempt the chaos likely to follow. (His company, Advanced Biosystems, conducts research on therapeutics to counter biological weapons.) Countries hoping to defend against a smallpox attack, it seems, will have to strike the balance between science and fear ([Scientific American, 2003](#)).

