Treating Terrorism: The Bioweapons Threat

DESPITE EFFORTS TO STOCKPILE DRUGS, MONITOR OUTBREAKS, NO LONG-TERM VISION FOR PROTECTING NATION HAS TAKEN HOLD

BY CHRISTOPHER F. CHYBA

The U.S. government is expert at presenting well-honed Pentagon briefings describing American military action. Decisions are made regularly about how much detail the military believes can be presented without endangering U.S. troops. But only late last week -- after two weeks of anthrax scares in the United States -- did we begin to see similarly professional efforts to inform U.S. citizens about the domestic threat they faced.

Too much of what the public learned about anthrax in recent weeks has come from secondhand quotes or leaks, rather than directly from knowledgeable public officials. Responding to a biological threat is new for most of our leaders, and the administration has struggled to present good information without either causing panic or downplaying real dangers.

So how prepared is the government for more serious attacks? The good news is that by 1999, the Clinton administration had created the Bioterrorism Preparedness and Response Program (BPRP) within the Centers for Disease Control and Prevention.

In the years since, the program established the National Pharmaceutical Stockpile, which includes ``push packs'' of antibiotics and other supplies that could be shipped to any location in the country within 12 hours. Other initiatives included improvements in disease surveillance, and providing assistance to local and state governments for increasing their readiness to respond to an attack.

But the bad news is that in 2000, the BPRP's total budget was $155 million. It was difficult to justify high levels of spending on hypothetical attacks when people here and abroad were dying of diseases for which money was lacking. Now, Sens. Ted Kennedy and Bill Frist, as well as President Bush, have proposed spending up to $2 billion in the coming year alone to increase U.S. preparedness for biological attacks. Other senators have proposed increasing that by billions of dollars.

By the mid-1990s, there was clear cause for concern. We had learned that the Soviet Union and Iraq had conducted large-scale biological weapons programs. We discovered that the Japanese Aum Shinrikyo cult had repeatedly tried, but fortunately failed, to spray anthrax throughout downtown Tokyo in 1993.

We also saw the first attempt to bring down the World Trade Center. But without a dramatic biological attack on U.S. soil (for some reason the 1984 food-poisoning attack by a religious cult
that sickened 750 people in Oregon didn't seem to count), the threat could always be portrayed as exaggeration and hype.

Then, starting one week after the destruction of the World Trade Center and the attack on the Pentagon, anthrax bacteria began to be mailed to newsrooms. Soon, a letter bearing anthrax microbes arrived at the U.S. Senate as well.

We do not yet know whether Osama bin Laden's Al-Qaida network is responsible for the anthrax attacks, although that possibility must be taken seriously. If so, it is possible that Al-Qaida acquired the anthrax from the Russian mafia, or Iraq or one of several other nations that may have covert biological weapons programs. It is also possible that a domestic terrorist group could have obtained such material.

**Clear threat**

Whatever the case, the threat is now clear and continuing. Given that, it is important to know what we have and haven't done to prepare for further attacks.

Scientists and medical professionals have done a great deal of preparation in recent years, although this has not been sufficiently communicated. For example, it has been widely reported that the National Pharmaceutical Stockpile currently contains enough ciprofloxacin to treat 2 million victims of anthrax.

But the Journal of the American Medical Association in August 1997 listed Cipro, doxycycline and penicillin as drugs recommended to treat anthrax. Indeed, contradicting Health Secretary Tommy Thompson's congressional testimony Wednesday, the FDA has since stated that doxycycline and penicillin had been approved to treat anthrax for the past half century. Those facts could help calm concerns about the size of the Cipro stockpile.

Without that kind of knowledge, it is natural for concerned citizens to wonder whether they should purchase gas masks or begin self-medication with antibiotics. The problem with a gas mask is that by the time you put it on, it will probably be too late, because biological attacks can come without warning. And antibiotic self-medication in the absence of anthrax exposure carries its own risks, including the creation of the sort of antibiotic-resistant bacteria that kill many more Americans every year than anthrax.

It is also important to know that the government is quickly improving readiness for anthrax. President Bush's proposed $20 billion emergency-relief budget includes more than $600 million to expand the National Pharmaceutical Stockpile to include enough antibiotics to treat 12 million people against anthrax exposure.

The holder of the Cipro patent in the United States, Bayer AG, is stepping up production and considering contracting with other companies to produce the drug. Undoubtedly, Canada's decision to override Bayer's patent on the drug and order the tablets from another company provides Bayer with strong motivation to find creative ways to boost output.
The existing stockpile could handle attacks far worse than the United States has seen so far. The planned increases mean that we will be better prepared one month from now, and much better prepared in a year.

**The smallpox nightmare**

But anthrax is just one of many biological agents that could be used by terrorists with the right know-how. Another is smallpox, which has long been considered a very unlikely but especially nightmarish possibility for bioterrorism.

Viruses like smallpox are more difficult to produce in large quantities than bacteria. (The anthrax organism is a bacterium.) However, smallpox is a highly contagious and quite deadly disease -- killing one in three infected -- and Americans have not been vaccinated against it for decades because the United Nations World Health Organization eliminated this terrible disease in its natural form.

Health Secretary Thompson has requested half a billion dollars from Congress to produce enough smallpox vaccine for everyone in the United States; currently, about 15 million doses are available. It is not known whether terrorists have access to smallpox microbes, but the former Soviet Union produced tons of such material, in violation of its obligations under the Biological Weapons Convention. Other nations, including Iraq, possibly maintain their own stocks.

A quick buildup of the vaccine is needed because smallpox is in many ways more dangerous than anthrax, which is not contagious. A typical person would need to breathe some 10,000 anthrax spores to come down with inhalational anthrax; the body's natural defenses fight off lower doses. And if the anthrax bacteria have not been genetically engineered to resist antibiotics (the anthrax pathogens being used in the current attacks have not been), infection can be treated effectively with standard antibiotics, provided that treatment begins early enough.

**Highly contagious**

By contrast, the smallpox pathogen is a virus and therefore immune to antibiotics; it is also highly contagious. Exposure to perhaps as few as 10 organisms is thought to be sufficient to contract the disease. The disease has a two-week incubation time, so infected individuals could travel widely before symptoms are clear.

A look at a modern-day outbreak -- and the success in halting it -- gives a sense of what is needed to fight this scourge effectively. In 1972, a religious pilgrim returned to Yugoslavia from Iraq, infected with smallpox. The pilgrim spread the illness unwittingly in Yugoslavia. To contain the outbreak, the communist government quarantined more than 10,000 people and vaccinated more than 20 million in less than two weeks.

The current U.S. smallpox-vaccine stockpile of 15 million doses is substantially smaller than that needed by Yugoslavia in an epidemic caused by one person in 1972, in a far less mobile society. The U.S. stockpile, which would cover only the equivalent of the population of Florida, clearly is not sufficient.
Improving our ability to respond to a smallpox emergency was made a priority of the BPRP in 2000, but with limited funds the plan was to produce 40 million new doses by 2004. Now, a far more rapid expansion of the vaccine stockpile is needed, and should be in place within a year. In the meantime, experiments with volunteers are already under way to see if the existing stockpile can be effectively spread as much as five times farther by simply diluting the vaccine.

**A long-term strategy**

After the United States and its allies have dealt with the immediate bioterror crisis, they must turn their attention to a comprehensive strategy for biological security.

The right strategy must address the threat of emerging natural disease outbreaks, as well as that of man-made ones. Preventing an attack is better than dealing with its consequences, but we must also be ready should attacks continue to occur. Since disease incubation times often exceed international travel times, improvements in both domestic and international disease surveillance and response are required. A domestic response alone cannot be sufficient as a long-term strategy.

We should also recognize that bioterrorism hoaxes are also instruments of terror. Those responsible for anthrax hoaxes, including at least 80 in recent weeks against women's health clinics, are piggybacking on the foreign terror of Sept. 11, and making it even harder to respond to real attacks.

At the same time, there may be a kind of biological race unfolding, in which biotechnology must be used to devise new ways to protect ourselves against genetically engineered organisms faster than designer germs can be created to sidestep our defenses. This is a grim vision of what the future holds, and I hope it is wrong, but the scientific community must discuss these possible futures, and its own responsibilities, in earnest.

Looking ahead, we can draw some lessons from a half century ago. When the United States devised the strategy of containment of Soviet communism in the late 1940s, it recognized that the struggle could last for decades or even generations.

The National Security Council was created to coordinate the key agencies of the U.S. government. Universities and foundations trained a new generation of specialists with detailed knowledge of the Soviet Union and the relevant languages.

Our response to terrorism after Sept. 11 must be just as long-term in vision yet even broader, because there is now no single threat to be contained.

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