Confronting **Biological Threats** to the **Homeland**

By MICHAEL CHERTOFF

One of the most important priorities for any government is to protect society from lethal threats. Part of that mission necessarily involves guarding against the havoc that biological forces are capable of wreaking on any population.

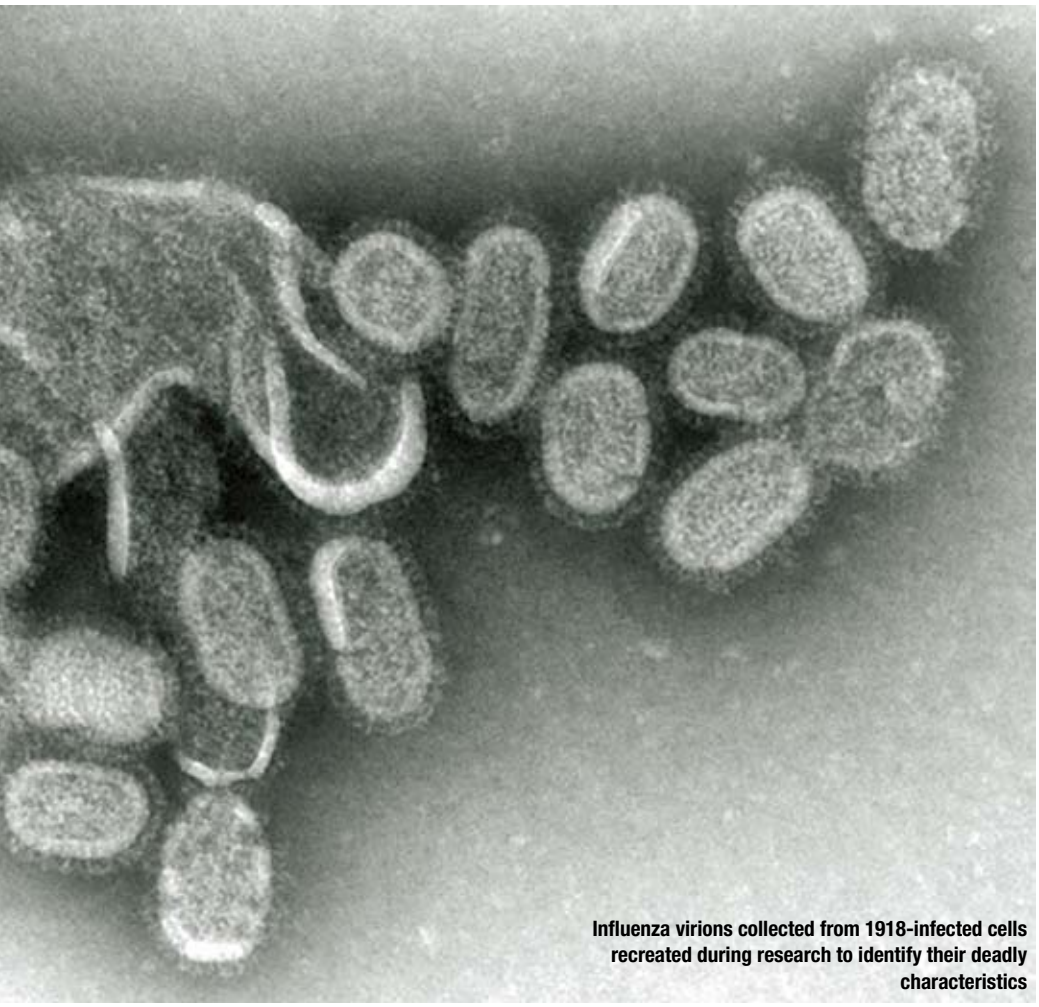
Such forces can come in the form of pandemics or very serious epidemics—deadly communicable diseases that can ravage communities and potentially threaten the fabric of society. While such diseases have surfaced throughout history in discrete areas of the world, the interdependent, global nature of today's world can facilitate their rapid spread across oceans and continents.

This naturally occurring peril is compounded by the fact that the modern wonders of science and technology enable dangerous individuals and groups to harness these potent biological forces, turning them into actual weapons of mass destruction.

While such natural threats as pandemic influenza have yet to reach fully efficient human-to-human transmission, our post-9/11 society faces a more immediate, manmade threat from individuals seeking to unleash destruction. In the wake of 9/11, we saw anthrax attacks at home, and we have since seen ricin attacks in other parts of the world.

In response to these dangers, we have taken a number of steps to help mitigate at least some of the risk. And we have begun to think seriously and in a disciplined fashion about how to plan for dealing with a major natural pandemic or biological attack. The challenge is to act decisively and effectively to minimize damage in an environment in which there will be imperfect information and potentially hundreds of thousands, if not millions, of lives lost.

The key to meeting the challenge is to approach it in a systematic, comprehensive way. We must fully examine the biological threats we face, address the capabilities we must continue to build in order to mitigate them, and consider the complex legal and ethical issues that will arise during a biological calamity if ever we have one.



CDC (Cynthia Goldsmith)

Influenza virions collected from 1918-infected cells recreated during research to identify their deadly characteristics

The Need for Planning

Since a biological outbreak, such as pandemic influenza or a major anthrax attack, is one of the most catastrophic scenarios that this country could face, advance planning and preparation are critical. We must work hard today, before disaster strikes, to determine who should be doing what should a disaster happen tomorrow. If we fail to plan, we plan to fail, risking a worst-case outcome. A plan at least provides a running start, as will training and exercising.

Planning must involve an understanding of the full dimensions of a public health emergency—natural or manmade. Inevitably, each profession views calamity through the lenses of its own discipline. Thus, medical and public health personnel believe it is all

Michael Chertoff is Secretary of the Department of Homeland Security.

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about medicine and public health. They seek to cure, vaccinate, and alleviate suffering. Yet that is only one part of what must be done during such a crisis.

A biologically induced catastrophe could impact every aspect of society. Issues of scarcity could develop, from emergency room capacity to distribution of medicine. Beyond that, absenteeism across the economy could ensue because of the number of people who would become ill, fear exposure to illness, or stay home with their children if schools close.

When enough people stay home, then without a plan, the powerplants cannot run and food will not arrive in supermarkets, which could be closed if no one is there to open them.

The results could be cascading problems producing a ripple effect across society, magnifying the damage already inflicted by the underlying disaster.

Compounding these difficulties is the fact that biological disasters arrive not with a bang but a whimper. It can be hours or days before the full impact begins to dawn on society. Moreover, our ability to study or predict the course of the epidemic or pandemic will depend profoundly on how accurate we are in deciding whether it is a natural or a manmade incident.

Our public health models presume we know how ordinary diseases spread and circulate. But if a person is carrying an aerosol tank, spraying it in different locales, such behavior will confound the model. Correctly determining whether the problem is natural or manmade is essential.

Finally, since a biological event would not typically involve an explosion, it would not be initially experienced by most people as dramatic.

To sum up, if our society continues to avoid sufficient planning, training, exercising, and stockpiling in response to this threat, then if we are ever faced with an efficient human-to-human transmission of pandemic flu or a full-scale anthrax attack, we will not have time to deal with it. If there is one lesson that the 7 years since 9/11 should have taught, it is that advance planning is the only way to respond to a major threat to safety and security.

This is certainly true regarding the threats posed by the prospect of naturally occurring contagious diseases migrating here and proliferating. It is at least equally true with respect to the risk of biological agents being weaponized and circulated by terrorists.

In the late 1990s, al Qaeda began to focus on developing a biological weapons program. After the invasion of Afghanistan, we determined that there was a low-tech facility in Kandahar, which was aimed at producing anthrax as a weapon. Fortunately, the United States disrupted that laboratory. Moreover, our ejecting al Qaeda from safe havens made it harder for its members to convert chemical or biological substances into weapons of mass destruction. But the increasing development of safe havens along Pakistan's border with Afghanistan and elsewhere is worrisome precisely because they can become sites for reconstituted laboratories for weaponization.

Moreover, al Qaeda has made it clear that it has no moral qualms about using such weapons once they are made. In 2002, it claimed a moral license to kill millions of Americans in response to imagined mistreatment by the West, and it has since reiterated that claim. Given its barbaric use of weaponry it already possesses, there is no reason to believe that al Qaeda would not use chemical and biological weaponry—such as aerosolized anthrax, our chief bioterrorism concern—given the opportunity and a fully developed capability.

A Strategy

So what is our strategy for dealing with these dangers?

It is based on Homeland Security Presidential Directive (HSPD) 10, "Biodefense for the Twenty-first Century," which identifies three key areas of focus: threat awareness and detection, prevention and protection, and response and recovery.

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Threat awareness addresses the need to identify and, if possible, incapacitate a threat before it occurs. In the case of pandemic flu, that means identifying and addressing a problem area affected by a possible mutation that allows human-to-human transmission so the threat can be contained. The dilemma arises when other countries fail to disclose that they have a problem area, fearing it would harm their ability to travel and conduct business across the globe. That is

Air Force (Taylor Marr)

Airmen conduct biohazard readings during antiterrorism/force protection exercise

why, in order to detect such areas, we must be prepared to deploy our intelligence tools.

This is all the more true if the threat is manmade.

Thus, when it comes to threat awareness, we have to operate on a number of levels.

First, we must search for signs of laboratories across the globe that could be poised to weaponize materials. That requires old-fashioned intelligence work, so we can get the information we need to determine if there is a biological attack being planned against us or our allies. In a very real way, then, intelligence is a critical element in promoting public health in the 21st century.

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The value of this kind of intelligence was vividly demonstrated in London this spring, at the trial of those suspected of plotting to blow up transatlantic airliners two summers ago. Based on diligent intelligence gathering, we learned about the elaborate efforts made to manufacture explosive devices concealed in sports drink bottles.

There simply is no adequate substitute for good intelligence that can help us detect the initial emergence of dangerous biological pathogens or their appearance in our country. For the 91 million people who come to the United States by air, or the 411 million who arrive by land each year, we can screen for incoming nuclear or radiological devices, but it is pure fantasy to imagine medically testing all of them as well.

Of course, if we have reason to believe there is illness afoot, then we can begin testing some individuals. If we had credible information about a pandemic brewing elsewhere in the world, we could redirect flights and aircraft from the affected region and screen their passengers more intensively. So screening can be of value, but not without the intelligence that lets us focus on those individuals who might pose a genuine risk.

In other words, to a large degree, detection depends on intelligence. And when it comes to countering biological threats, speed of detection is crucial. It enables us to discover the dimensions of the problem and prepare an efficacious response. A delay of just 1 day in detecting an anthrax release would delay treatment accordingly, triggering thousands of deaths. To ensure detection, we need to fuse three types of information. One is traditional clinical data. That means relying on the public health community to gather information about people with symptoms that could suggest the presence of something like anthrax or a plague. The problem with this information alone is that by the time symptoms appear, society is already behind the curve. The disease is already upon us.

A second type of information is available to supplement this data. This information concerns pathogens in the air itself. Fortunately, we have a BioWatch program with pathogen detectors around the country to help us locate and warn of the presence of airborne pathogens. In some instances, I have been present when an alarm was triggered from one of these detectors. And depending on the number of detectors in the location and the nature of the pathogen, Department of Homeland Security authorities immediately phone local health officials and our counterparts at the Centers for Disease Control or the U.S. Department of Health and Human Services (HHS). On such occasions, we try to analyze whether we are dealing simply with a naturally occurring pathogen (such as tularemia) or hints of something worse.

And the final type of information we use to facilitate detection is nonmedical intelligence about enemy threats. For example, a little over a year ago, a case was reported from a hospital that appeared to involve anthrax. We were able to determine that the patient had traveled from a part of the world where anthrax occurs naturally on the skin, and so the matter was resolved and the patient treated.

But let us suppose that in addition to obtaining that clinical information, we had received intelligence that terrorists were about to launch an anthrax attack against the United States. That information would have immediately altered our approach to the patient. We probably would have surged biological detection capability into the area to see whether there was evidence of anthrax spores. And then our ability to use detection tools on location and across the Nation would have come into play, enabling us quickly to characterize the nature of the incident and formulate our response.

To integrate these three types of information—clinical, detection, and nonmedical intelligence information—we have a program under way to create a national biosurveillance integration center, which is now up and running and will be fully operational later this year. By fusing the clinical data, the regular intelligence information, and ultimately the BioWatch data, including next generation sensors, we can ensure that

Airman administers anthrax vaccine during operational readiness inspection, Kunsan Air Base

Air Force (Barry Loo)

decisionmakers have an early, immediate, and comprehensive picture of the kind of pathogens that are out there so they can characterize them.

Besides threat awareness and detection, the second of our three areas of focus in dealing with biological threats concerns protection. As we respond to a medical threat, we must work with the business community and use some of the government's tools to prevent disruption in food, water, the power supply, and other necessities while dealing with the hours, days, or even weeks and months of a pandemic or some comparable biological attack.

Part of this is a planning issue. It involves ensuring close coordination between people who operate critical infrastructure and medical personnel with on-the-ground facts about what constitutes appropriate treatment. It also involves ascertaining the actual fear of contagion and the appropriate countermeasures and restrictions that belong in place to ensure that people can come to work with a minimal risk of contracting an illness.

And finally, in addition to awareness and detection, and prevention and protection, we must address the matter of response and recovery with respect to biological threats. It is clearly a complex undertaking. There is obviously the provision of medical care, which lies within the domain of the public health authorities including HHS. They must not only develop and stockpile medicines and vaccines, but also be able to distribute them. In many ways, we and our state partners would be the arms and legs of that distribution.

In the case of a manmade attack as opposed to a natural occurrence, the Department of Justice would play a critical role. If we believed that people possessing the pathogen were moving around the country, finding and arresting them would be an obvious matter of urgency. The ability to limit the damage and need to respond would be a direct result of our ability to intercept the culprits and prevent their carrying out further attacks.

The Environmental Protection Agency would play a vital role in making sure that once the problem was stabilized, we would understand what was needed to clean up and render the affected area safe for reentry. The Department of Agriculture would ensure there were no untoward effects on our food supply. And the Department of Defense would bolster our efforts by putting boots on the ground to perform critical functions pertaining to security and treatment should a surge be necessary.

This indicates the range of departments that must be integrated, brought together, and coordinated through the interagency system in the event of a biological attack. The paramount goals would be to prevent further damage, steer medical supplies and lifesaving items to people, ideally within 48 hours, and provide the public clear direction so their actions do not make their own situation worse.

And that brings us to the core of what we must do to prepare. We must get people to understand how to evaluate messages in the aftermath of a disaster, what personal preparedness plans they must have in place in terms of medicines and other items that they and their loved ones need, and where to go on the Internet to obtain further information that they and their families may need.

One of our most formidable challenges is how to distribute vaccines or medicines among millions of people in a 48-hour, "make-it-or-break-it" environment. Should we, for example—as we are currently considering and experimenting with—actually distribute prophylactic medical kits around the country or allow people to purchase those kits for their medicine cabinets? How do we make sure that people do not abuse them?

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And then how do we deal with the fact that, in any mass distribution, there will not likely be enough doctors to provide the checkups that normally precede administering pills for the enormous number of potentially affected people within the 48-hour span? Do we distribute medicines given the knowledge that some people will experience negative side effects, in some instances severe? If we believe that taking this risk with a small number of people is justifiable in order to avoid a certain hazard to a far greater number of people, then what is the liability for the manufacturer? Will the manufacturer or distributor be willing to provide medicines if the Government cannot assure them that they will not be sued? This is hardly an academic issue. Consider the Foreign Intelligence Surveillance Act issue and what happened to businesses that cooperated in good faith with the Government on security matters following the 9/11 attacks.

Simply stated, if Government's message to the business community is "cooperate with us during a national emergency, and then when it has passed we will change the rules and hold you liable," then we will get scant cooperation. A possible consequence would be that companies would not distribute enough antibiotics because they would be forced to wait for legal opinions before releasing them. In this case, it would be too late to fix the problem.

In summary, the threats posed by biological material are real enough, and we must confront them with a strategy that is comprehensive and a mindset that is clear-eyed and forward-looking.

During Operation *Enduring Freedom*, U.S. forces discovered low-tech facility aimed at producing anthrax in downtown Kandahar

1st Combat Camera Squadron (Ricky A. Bloom)

Legal Challenges

I would be remiss if I did not lay out some of the more challenging legal issues that could arise with the onset of a biological catastrophe. As with other aspects of this problem, it is essential that they be discussed and deliberated upon before, not after, a national emergency arises.

Questions concerning such issues as restrictions on movement and how to control infection fall within the jurisdiction of the states. We need to ask whether the Federal Government should be able to trump the states in these areas. If a New Jersey Governor were to decide that due to an outbreak in New York, no New Yorker could come into New Jersey, would that be acceptable? What if that made it harder to track down the perpetrators of the attack, or to ensure that adequate food was reaching the afflicted area?

Should we be able to regulate the bandwidth of our communications during a public health crisis so that employees can telecommute without disrupting the Nation's cyber systems? Should we ask broadband providers to restrict access for high-consumption, low-productivity devices such as video games so that we can use the bandwidth for more important things?

What are the limits on Government's ability to quarantine and isolate? Can people be prevented from doing the 21st-century equivalent of shouting fire in a crowded theater, providing deliberate or negligent misinformation on the airwaves that could cause the death of thousands of people who were misled about what to do during a medical emergency?

These are excruciatingly difficult questions with no perfect answers. The more thoughtful deliberation we have about them in advance, the better off we will be.

We must live with the consequences of our answers. If we decide that we must leave matters of quarantine in the hands of the states, we must understand that this will render the Federal Government incapable of forcing a state to institute a quarantine. Should a day come when a quarantine becomes a medical necessity, it will be too late to turn back the clock and do the decision over.

And returning to the liability issue, if our society is unwilling to hold companies blameless for distributing drugs to protect millions of people during a national emergency, it will do no good to blame them when not enough drugs reach the people who need them.

Clearly, the time to have thorough, candid, and public conversations about these issues and tradeoffs is today, before anything happens tomorrow. This is not only true of legal matters, but also of every aspect of the threat and how we should respond.

For those who insist that this is fear-mongering about the unthinkable, they need to recall how before the morning of September 11, 2001, it would have seemed unthinkable that we could lose 3,000 American lives in a single day.

Preparing by word and deed for the unthinkable is hardly a pleasant exercise, but if we engage in it today, we can prevent far greater harm from befalling us tomorrow. If we plan for the worst, we just might avoid some and maybe even all of it. **JFQ**

Public health technician prepares mosquitoes for examination as part of disease control program

Air Force (Ashley Sorrels)