Disease and Terror

By D. A. Henderson

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The swine-flu outbreak caught health officials completely by surprise — just as a bioterror attack would.

A complacent America, growing ever less concerned about the threat of pandemic bird flu, was startled last week by the sudden appearance of a major epidemic of swine flu in neighboring Mexico. Cases were soon reported from New York, California, Texas and Ohio, as well as France, New Zealand, Canada and Britain. So far, the apprehension and confusion about what to expect resembles the early days of the anthrax attacks of 2001, when a fine powder of weaponized anthrax bacteria showed up in the U.S. mail. Then, as now, health authorities were taken completely by surprise, and the public panicked out of all proportion to the actual threat.

The similarities between the flu and biological terrorism are not coincidental. In recent years the world has changed in ways that have made the threats of natural and man-made epidemics more and more alike. As we deal with the increasing prospects of a bioterrorist attack, we are also struggling with the challenge of emerging diseases: AIDS, pandemic strains of influenza and the "mad-cow disease" that terrified Britain only a decade ago. The way these threats unfold — and the responses they call for — are becoming ever more similar.

The central driver is the increasingly interconnected world we live in. Even the most remote areas of the planet can now be reached in less than 48 hours. Diseases now plaguing those in refugee camps, heavily populated and growing slums or the most remote tropical rainforests can, without warning, show up in far-flung towns and cities. A devastating hemorrhagic-disease epidemic in Africa or South America could rapidly become the hemorrhagic epidemic of Boston or Bordeaux. Even good clinicians rarely have the knowledge to diagnose and treat exotic tropical diseases. Until a month ago, our attention was focused on Asia — the source of the last two influenza pandemics, in 1957 and 1968 — as the likely source for the next one. And yet it appeared in Mexico while we weren't looking.

A revolution in biology and medicine has recently given us powerful new tools to fight infectious diseases. It has also given us bioterrorism. The potential for terrorists to develop, grow and spread biological weapons has increased rapidly with the proliferation of knowledge and laboratories. As we discover the secrets of the cause and spread of disease, we are also finding ways of engineering a virus or bacterium to be more virulent or perhaps to evade antibiotics or vaccines. It's difficult to overstate the threat. As disastrous as the explosion of an atomic weapon would be, the strategic use of biological organisms such as smallpox, anthrax or plague could be even more devastating.

It is virtually impossible to stop or interdict terrorists bent on using biological weapons. The bioagents can be made in inexpensive labs, and are light and easily transported across borders without detection. A powder of anthrax or smallpox organisms would float as an invisible, odorless cloud, driven by breezes. Those unfortunate enough to inhale it would be unaware of the infection for days — and then suddenly develop a severe, disabling disease wholly unfamiliar to local physicians. As cases mount, health workers would isolate victims and distribute antibiotics or vaccines. The risk of panic would be great. In 2001, only 11 people inhaled anthrax and five died, but widespread fear of almost any powder led to the evacuation of hundreds of office complexes. What if hundreds had died?

The only way out of these potential catastrophes is to sharpen our health-care response. Rapid diagnosis and response are critical. We need to foster a greatly expanded international network of epidemiologists (so-called disease detectives) and laboratory scientists who continually investigate new outbreaks and look for better methods to diagnosis and treat diseases, wherever they might be occurring. States and communities play a pivotal role and are the basic foundation for combating major catastrophes, whether due to bioterrorism or pandemic influenza (or hurricanes or earthquakes, for that matter). Community organization and planning are key to success. Mayors, public-health authorities and hospitals need to

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plan how they will care for large numbers of patients and provide needed vaccines or drugs. Voluntary organizations such as the Red Cross must be part of the effort. The threat of a swine-flu pandemic is a good excuse to better organize and strengthen emergency plans. Other, even less pleasant surprises are in our future.

Henderson led the campaign at the World Health Organization to eradicate smallpox in 1980 and worked to address the 2004 bird-flu outbreak. His book "Smallpox: The Death of a Disease" will be published in June. He is currently professor of medicine and public health at the Center for Biosecurity at the University of Pittsburgh.

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