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Heading Off the Next Pandemic

Lessons from the Swine and Avian Flu Outbreaks

For years, scientists have warned that the world is overdue for an outbreak of a new global flu infection. Pandemics are cyclical, the argument goes, and over the last dozen decades, the world experienced the Russian Flu of 1889-90, the Great Influenza of 1918-20, the Asian Flu of 1957-58, and the Hong Kong Flu of 1968-69. Although the pattern lacks the reliable punctuality of Halley's Comet or recurring cicada broods, some observers were convinced that humanity was due for another pandemic when, in the spring of 2009, swine flu—officially known as H1N1—broke out in Mexico.

General panic never materialized, thankfully, as the death toll for the 2009 outbreak was far lower than the previous ones, all of which claimed over a million victims. The 1918 virus killed a staggering 50 million; the 2009 swine flu, by contrast, killed perhaps fewer than 19,000 people. (See table below.) Though each of those deaths is a tragedy unto itself, the H1N1 virus as it has played out so far clearly does not fit with the "pattern" set by previous pandemics. By August 2010, the World Health Organization announced that H1N1 had moved into a "post-pandemic period," meaning that even though the virus might continue to cause localized outbreaks, its overall future effects will likely be comparable to seasonal flu.

So what happened? Was H1N1 part of the series of cyclical outbreaks at all? Contrary to claims from flu experts, is there actually no cycle to these things? Or was the appearance of H1N1 in fact the expected outbreak, but effectively countered by our new technological ability to attenuate a pandemic's worst effects? We have no definitive answers

to these questions, but there may be some truth to each possibility.

Although much about influenza remains mysterious, scientists have, especially in the last half century, gained important insights into its pathology and new tools for its prevention. So-called seasonal flu epidemics spread around the world among human beings; the responsible viruses are always mutating, so new vaccines must be cooked up each year to counter the strains expected to be most prominent. Meanwhile, animals harbor countless constantly evolving strains of influenza viruses—with birds being particularly susceptible to incubating the viruses and spreading them around the world. Bird-borne flu viruses sometimes mutate into strains that can infect and spread among mammals, including pigs (hence the informal name swine flu), cats, and humans, where they can further mutate and swap genetic material with other flu viruses. Any place where people interact regularly with sick birds—industrial chicken operations, small-time poultry flocks, town markets with live birds for sale, backyard coops, cockfighting rings—could potentially become a point of human infection. In recent years, Asia has for various reasons been the focus of much epidemiological concern, but the ease of international travel and trade means that a small number of human infections anywhere could, if not effectively countered, begin a global pandemic.

In 2005, the U.S. government launched a serious effort to prepare for a possible outbreak of avian flu (H5N1). There had been a number of worrisome events in the early 2000s, including the 2002 outbreak of SARS (Severe Acute Respiratory Syndrome); the anthrax mailings that came on the heels of the 9/11 attacks; and increasing reports of avian influenza devastating poultry flocks beginning in 2004, combined with a disturbing uptick in human fatalities. These developments heightened policymakers' awareness of the dangers of a flu outbreak and of biological attack, and of the need to be prepared should one or the other occur.

Pandemic	Date	Estimated Worldwide Deaths	Estimated U.S. Deaths
Russian Flu	1889-90	1 million	250,000
Great Influenza	1918-20	50 million	500,000
Asian Flu	1957-58	1.5 to 2 million	70,000
Hong Kong Flu	1968-69	1 million	34,000
Swine Flu	2009-10	18,500	8,870 to 18,300

[Table compiled from various historical and government sources. The worldwide figure for the swine flu pandemic comes from the World Health Organization, while the U.S. range comes from the Centers for Disease Control and Prevention. The odd discrepancy in the figures for that pandemic—implying that the U.S. suffered a disproportionately high number of deaths—is an artifact of those entities' different methods for collecting and analyzing data.]

In November 2005, President Bush announced a $7 billion strategy to combat an influenza epidemic, which included investments in vaccines, antivirals, domestic preparedness, and international cooperation. The plan highlighted four key aspects of preparedness: first, rapid diagnosis of the phenomenon, at both the individual and the societal level; second, antimicrobial treatments to address the condition; third, making the vaccine available to promote prophylaxis; and fourth, the ability for public health officials to quarantine carriers. This last is the most difficult in a free society, but there have been instances of semi-voluntary quarantine in the guise of social distancing—the agreement within a community to refrain from large-scale interactions such as parties, community events, and even school—in order to reduce the spread of an infection. According to medical historian Howard Markel, these types of non-pharmaceutical interventions have been remarkably effective at controlling disease outbreaks. In the 1918 epidemic, for example, St. Louis employed social distancing while Philadelphia did not; Philadelphia consequently suffered a much higher death rate.

President Bush pledged to work with Congress "to remove one of the greatest obstacles to domestic vaccine production: the growing burden of litigation," and succeeded in this pledge. Under the Public Readiness and Emergency Preparedness (PREP) Act of 2006, the government gained the authority to issue "PREP Act Declarations" granting liability protection to manufacturers whose products were used in public health emergencies. When I served at the Department of Health and Human Services (HHS) in 2007 and 2008, the government issued a series of such declarations for the manufacture of influenza vaccines and pandemic antivirals, as well as anthrax, smallpox, and botulism products. These declarations, however, took place only after significant effort from the political leadership (this author included), and in the face of much quiet but persistent bureaucratic opposition. The Obama administration has since issued PREP Act declarations to widen liability protections to some H1N1-related products, but this remains a tool that could and should be used more expansively.

Although the Bush administration was most concerned with H5N1, the administration's "all-hazards approach" was intended to strengthen the U.S. ability to respond to a range of exigencies. This approach paid off in 2009 when, in the Obama administration's early days—at a time when not one of its top twenty HHS appointees had yet been confirmed by the Senate—it dusted off the Bush flu plan to address the swine flu outbreak. This plan, which included a robust communications strategy to hold off panic, a stockpiling of 50 million courses of antiviral drugs, and a mechanism for accelerated vaccine production, helped keep the H1N1 outbreak under control.

Still, there were some hiccups. For starters, public health officials were

somewhat slow to identify the threat. Veratect, a Seattle-based company that has an early detection system, identified a problem in Mexico as early as April 6, 2009. More than two weeks passed before the Pan American Health Organization (PAHO) and the U.S. Centers for Disease Control and Prevention (CDC) issued public alerts. Earlier identification of the threat by the Mexican government, PAHO, and U.S. agencies could have lessened the spread of the disease.

Another problem arose on the public-relations front. Vice President Joe Biden said on the *Today* show that he "wouldn't go anywhere in confined places now." This statement threatened to drive people away from air travel and public transportation, until White House press secretary Robert Gibbs walked back the remarks by claiming that Biden meant to tell already sick people to avoid confined places. Although this explanation was not supported by the video of Biden's remarks, Biden's notoriety for misspeaking helped mitigate his error, as apparently few people took him seriously as a spokesman for administration policy on the issue. By contrast, acting CDC head Dr. Rich Besser was so effective and ubiquitous on the issue that he parlayed his newfound fame into a position as senior health and medical editor at ABC News.

In addition, the Obama administration overpromised and underdelivered when it came to vaccine availability. In July 2009, the government projected having 160 million available doses of H1N1 vaccine by the fall. Yet those predictions did not come true, and HHS officials had to lower the estimates a number of times. When word of the vaccine shortage got out, it also emerged that the government had known for at least a month that the projections were wrong before notifying the public. This was a serious mistake, as trust in government is essential in a public health crisis: it reduces panic and increases the chances that the public will obey the instructions of public health officials.

Unfortunately, as the *New York Times*'s Andrew Pollack and Donald McNeil Jr. wrote in October 2009, the government found its credibility "undermined by overly rosy projections that did not take account of the vagaries of vaccine production." Government officials were aware in September 2009 that the vaccine amounts they were promising would not be available, yet waited until the next month, in the face of obvious shortages and people being turned away from clinics, to lower their estimates from 40 million available doses to 28 million. When the vaccine did arrive, much of it came after it could be of any use: it arrived too late for some who needed it, and more generally, it arrived well after the projections of doom were clearly not materializing. In the end, the government had to discard millions of expiring doses of the vaccine.

The government faced another credibility problem, this one not of its own making, with respect to the question of vaccine safety. Dr. Andrew Wakefield's now-discredited claims linking the

MMR (measles, mumps, and rubella) vaccine to autism awakened a wider discomfort regarding vaccine safety. This anxiety affected the public perception of the H1N1 vaccine, even though the seasonal flu vaccine was widely considered to be safe, and the swine flu vaccine only differed from the seasonal flu vaccine in that it included the H1N1 strain. The problem was exacerbated by media figures from both the left and the right who recklessly told their audiences not to get vaccines. One of the worst offenders in this regard was liberal talk-show host Bill Maher, who called people who get flu shots "idiots." On the right, Fox News personality Glenn Beck directed listeners of his talk-radio show to ignore the Department of Homeland Security's recommendations on the pandemic, saying, "If somebody had the swine flu right now, I would have them cough on me. I'd do the exact opposite of what the Homeland Security says."

Another irresponsible critique, leveled by journalist Michael Fumento, was that swine flu was all a "hoax." Fumento claimed that concerns about H1N1 were overstated and that public health officials, especially at the World Health Organization, used the swine flu outbreak to maintain their credibility in the face of repeated predictions of an avian flu outbreak that did not arrive, and to justify previous high-cost investments in pandemic preparedness.

While Fumento is right that the swine flu pandemic of 2009-10 turned out to be milder than expected, he is wrong in ascribing nefarious motives to public health officials. It is not in their interest to overhype disease scares that turn out to be wrong, as they know that their voices will be ignored if they are seen as having cried wolf too often. In my experience both in the White House and at HHS, U.S. health officials, regardless of party, are concerned with protecting the populace and making sure that we are ready should we face a biological threat, be it natural or man-made. While the H1N1 outbreak was limited, a more serious one could have significant consequences. According to the CDC, a medium-level outbreak in the United States could potentially cause 89,000 to 207,000 deaths, with the cost ranging from $71 to 167 billion. Some economic estimates are even higher, such one from WBB Securities predicting a one-year loss to the U.S. economy of $488 billion. Given this deadly and costly potential, the government will need to address the lingering perception problems—about overhyping, about the safety of vaccines, and about matching vaccine availability with public need—if we are to be ready for the next event.

Overall, while the federal government handled the swine flu crisis well, there were clearly some areas in need of improvement, especially in communications. In the first place, the government absolutely must be forthright about its projections, both of the seriousness of potential diseases and of the government's own capabilities. The miscommunication regarding vaccine availability led to consternation among

those who wanted the vaccine in the fall of 2009 and to the waste of extra vaccine in the spring of 2010. The consequences could have been worse had the outbreak been more severe. In addition, the government needs to recognize public concerns about overhype and not dismiss critics out of hand, but rather to attempt to address complaints with a serious communications plan. Third, the government must continue to encourage new technologies and countermeasures—such as improved detection systems, diagnostics, antivirals, and vaccines—via strategic investments, accelerated approvals when appropriate, and liability protection for essential products. These strategies, combined with our existing plans, should put us on a better footing in the future. The government needs to maintain its preparedness efforts as if the threat remains, while doing its best to use limited resources efficiently and to avoid losing its credibility in case of future emergencies.

—Tevi Troy *is a senior fellow at the Hudson Institute and at the Homeland Security Policy Institute. He was Deputy Secretary of the U.S. Department of Health and Human Services from 2007 to 2009, and before that directed the White House Domestic Policy Council under President George W. Bush.*