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# A New Great Plague? A Timely Warning

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A powerful word of warning comes in an article by Michael Specter published in the February 28, 2005 edition of The New Yorker. In "Nature's Bioterrorist," Specter reports on the deadly avian-flu virus that has killed several people in Asia. While this may hardly look like an epidemic in the making to laypersons, medical authorities are looking at avian influenza with a wary eye.

Why? To date, only a few humans have died of avian flu, and a pandemic is unlikely—at least so long as this virus does not mutate in order to allow easy transmission among humans.

To date, forty-two people have died, and that includes thirteen Vietnamese who have died just since Christmas.

This influenza strain, like virtually all others, has its origin in birds. To date, millions of chickens have been destroyed in Thailand and other Asian nations after testing positive for avian influenza. Millions of other chickens have died of the disease, and hundreds of millions of animals in Asia have also perished, including animals as diverse as ducks and tigers.

Infectious disease experts are sounding an alarm because, as Specter reports, "No such virus has ever spread so quickly over such a wide geographical area. Most viruses stick to a single species. This one has already affected a more diverse group than any other type of flu, and it has killed many animals previously thought to be resistant: blue pheasants, black swans, turtledoves, clouded leopards, mice, pigs, domestic cats, and tigers."

Periodically, humanity has been besieged by influenza, often adding up to millions of deaths. When an epidemic of influenza occurs, the results can be nothing less than disastrous. A worldwide epidemic, known as a pandemic, is the greatest threat of all. The World Health Organization estimates that a truly severe pandemic in our times could lead to at least a hundred and eighty million deaths worldwide.

As Specter explains, "A pandemic is the viral equivalent of a perfect storm. There are three essential conditions, which rarely converge, and they are impossible to predict. But the requirements are clear. A new flu virus must emerge from the animal reservoirs that have always produced and harbored such viruses—one that has never infected human beings and therefore one to which no person would have antibodies. Second, the virus has to actually make humans sick (most don't). Finally, it must be able to spread efficiently—through coughing, sneezing, or a handshake." This strain of avian influenza, known among disease experts as "H5N1," has already met the first two conditions. Some epidemiologists believe that it is only a matter of time before this strain meets the third condition as well.

A haunting reminder of the truly tragic dimensions of an influenza pandemic comes in The Great Influenza: The Epic Story of the Deadliest Plague in History by John M. Barry. This fascinating book, just recently released in a paperback edition, is truly a frightening read. The 1918 influenza pandemic brought devastation to every land it touched, from the

United States to war-torn Europe and distant South Sea islands. In 1927, the American Medical Association estimated that 21 million persons had died. That figure is now known to be ridiculously off-target. Current estimates assign 20 million deaths to the Indian subcontinent alone. As Barry acknowledges, the upper estimates of world-wide deaths from the 1918 pandemic are in excess of 100 million persons—or five percent of the world's population at that time. A similar pandemic, if experienced today, could lead to as many as 350 million deaths.

“Influenza is a viral disease,” Barry reminds. “When it kills, it usually does so in one of two ways: either quickly and directly with a violent viral pneumonia so damaging that it has been compared to burning the lungs; or more slowly and indirectly by stripping the body of defenses, allowing bacteria to invade the lungs and cause a more common and slower-killing bacterial pneumonia.”

When the 1918 influenza hit, the medical community had few resources with which to respond. Many of the nation's best and brightest doctors had been sent to Europe with Allied forces. Before the pandemic was over, the killing fields of World War I would be littered with soldiers killed by a virus, rather than by enemy fire.

Most of us assume that the germ theory of disease has been a constant through centuries. After all, it has now become axiomatic to most of us, who fear germs and demand anti-bacterial soap at every sink. It is hard for us to believe that the generation of 1918 was among the first to understand the nature of infectious disease. That generation would relearn those lessons the hard way.

As Barry recalls, “By 1918 humankind was fully modern, and fully scientific, but too busy fighting itself to aggress against nature. Nature, however, chooses its own moments. It chose this moment to aggress against man, and it did not do so prodding languidly. For the first time, modern humanity, a humanity practicing the modern scientific method, would confront nature in its fullest rage.”

The disease first appeared among soldiers mobilizing for war in domestic encampments. The 1918 influenza, known as virus H1N1, was diagnosed by military doctors who noted with horror that the disease, unlike all viruses previously known, was especially deadly to healthy young men.

The reports from medical authorities were ominous. Young men were developing influenza and often dying within hours. “Two hours after admission they have the Mahogany spots over the cheekbones, and a few hours later you can begin to see the Cyanosis extending from their ears and spreading all over the face, until it is hard to distinguish the colored men from the white,” Army physician Dr. Roy Grist explained.

The victims were often frighteningly young. President Woodrow Wilson had ordered the mobilization of all young men and boys ages seventeen and older. As the disease quickly spread among the young soldiers, the disease exploded into the general population. Bodies began to pile up by the hundreds in large cities—and soon would amount to thousands. Undertakers and gravediggers—themselves often sick—were simply overwhelmed. Bodies remained unburied as undertakers ran out of coffins. Within weeks, the virus was spreading across the globe.

“Generally in the Western world, the virus demonstrated extreme virulence or led to pneumonia in from 10 to 20 percent of all cases,” Barry reports. “In the United States, this translated into two to three million cases. In other parts of the world, chiefly in isolated areas where people had rarely been exposed to influenza viruses—in Eskimo settlements of Alaska, jungle villages of Africa, and islands of the Pacific—the virus demonstrated extreme virulence in far more than 20 percent of cases. These numbers most likely translate into several hundred million severe cases” in a world with a population less than one-third that of today.

Symptoms of the disease included coughing so violent that ribs would often crack, and headaches so severe that patients would fall into a delirium. Eventually, the patient would die quickly of pneumonia or, in some other cases, would fall prey to secondary bacterial infections. Those who survived often carried scars of the disease throughout their lives. Medical authorities now believe that the 1918 influenza epidemic may explain later cases of Parkinson's disease and other ailments.

Once a virus has invaded the body, the immune system responds with vigor. Usually, this is a positive development. In the case of young adults in 1918, the body's system for fighting disease became a deadly complication of the disease itself. As Barry explains, “The immune system changes with age. Young adults have the strongest immune system in the

population, most capable of mounting a massive immune response. Normally that makes them the healthiest element of the population. Under certain conditions, however, that very strength becomes a weakness.” In this case, the immune system of young adults did mount a massive response to the influenza virus. Unfortunately, that response “filled the lungs with fluid and debris, making it impossible for the exchange of oxygen to take place.” In other words, the immune system actually killed many young victims.

The 1918 influenza pandemic brought death and devastation to most of the world’s nations. Of course, some were harder hit than others. Stories from the era are truly terrifying. Troop ships headed for Europe would be struck by the disease, and young men headed for war would instead be buried at sea before tasting battle. The disease affected almost every family living in America at the time, with thousands of children orphaned and some families virtually wiped out.

Victor Vaughan, then dean of the University of Michigan Medical School, came to believe that the 1918 influenza virus came close to threatening the very end of civilization. As Barry notes, “By nature the influenza virus is dangerous, considerably more dangerous than the common aches and fever leave people to believe, but it does not kill routinely as it did in 1918. The 1918 pandemic reached an extreme of virulence unknown in any other widespread influenza outbreak in history.”

Before the twentieth century would end, the United States would be affected by influenza epidemics two more times—in 1957 and 1968. Those outbreaks killed multiple thousands, but were stopped before reaching anything like the scale of the 1918 pandemic.

Could it happen again? Michael Specter offers a sober warning: “Infectious-disease experts talk about pandemics the way geologists talk about earthquakes; the discussion is never about whether ‘the big one’ will hit.” Scott Dowell, director of the Thailand office of the International Emerging Infections Program of the Centers for Disease Control, warns that the avian influenza now threatening to break out of Asia could lead to a similar pandemic. “The world just has no idea what it’s going to see if this thing comes . . . When, really. It’s when. I don’t think we can afford the luxury of the word ‘if’ anymore. We are past ‘if’s.’ Whether it’s tomorrow or next year or some other time, nobody knows for sure. The clock is ticking. We just don’t know what time it is.”

John Barry’s account of the 1918 influenza and Michael Specter’s sober warning of a new and deadly avian-flu virus, should remind us that we are, after all, frail human beings living the midst of a world of deadly diseases. We place far too much confidence in the ability of doctors and medical researchers to prevent or to tame disease. Just a bit of reflection on the prospect of a new influenza pandemic should give humanity a dose of what it urgently needs—humility. After all, we can be killed by something as miniscule and deadly as a microscopic virus.

Infectious disease experts see trouble on the horizon. Let’s pray that we do not see a “perfect storm” pandemic develop out of Asia.

