FUSS AND FEATHERS
PANDEMIC PANIC OVER THE AVIAN FLU

BY MICHAEL FUMENTO

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"The indication is that we will see a return of the 1918 flu virus that is the most virulent form of flu," warns America's top health official. "In 1918, half a million people died. The projections are that this virus will kill one million Americans . . . "

A quotation ripped from today's papers about an impending "bird flu" pandemic? No, the year was 1976 and the prediction of a deadly "swine flu" overshot the mark by 999,999 deaths (although dozens did die from the vaccine campaign). That's something to remember amid the current alarms. Another is that we've been here before with the identical virus over which the feathers are now flying, avian influenza type H5N1, which first hit poultry flocks in 1997. "Race to Prevent World Epidemic of Lethal 'Bird Flu,'" and "Hong Kong 'Bird Flu' Could be the Next Big Outbreak," blared the headlines then.

The world death toll from that "wave"? Six. And let's not forget the outbreak of SARS (severe acute respiratory syndrome) two years ago, which led to 750 stories in the *New York Times* and *Washington Post* – one per death worldwide, as it turned out. The 71 U.S. cases of SARS, which resulted in zero deaths, did not "Overwhelm U.S. Health System," as CNN had predicted.

None of which is to say there won't be another flu pandemic. There were three in the last century, after all. But that gives us absolutely no idea when the next will come, nor whether it will be any relative of H5N1, nor what its impact will be. Two of those 20th-century pandemics weren't particularly severe, while the other was catastrophic. (Pandemic, by the way, does not mean "deadly epidemic" – it means "worldwide epidemic.")

What we can say with confidence is that there is never such a thing as helpful hysteria. And the line between informing the public and starting a panic is being crossed every day now by politicians, public health officials, and journalists.

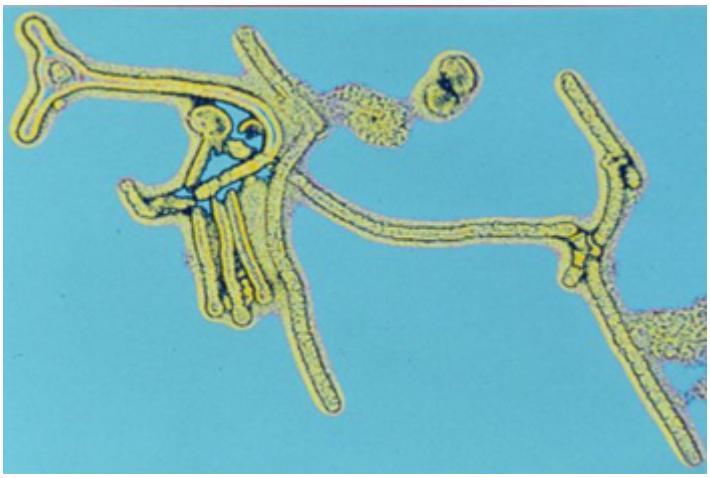
Forget about the sky falling; it's hysterical calls for killing all domestic poultry that should have Chicken Little in a panic.

Officials at the Centers for Disease Control and Prevention (CDC) have been handling numerous fearful phone calls from the public and the media, fielding questions about the safety of bird feeders and Thanksgiving turkeys. "It's been insane," spokesman Dave Daigle told MSNBC. In a recent Q&A session with Wendy Orent, science writer and author of the book *Plague*, a Nashville resident asked why "don't we just kill off all the domestic birds and poison the food on the migratory bird routes?"

Headlines like "Flu Pandemic Could Kill 150 Million, U.N. Warns" (*Reuters*) certainly haven't helped. Never mind that the figure was tossed off by a single official who provided a range of "5 million to 150 million." (Translation: "We haven't the foggiest.") Similarly, the media have generally morphed the federal government's estimate of 200,000 to 1.9 million deaths to simply "1.9 million deaths." Also not helping is the media propensity to seek out the most alarmist "experts."

High on the list of scaremongers is Laurie Garrett, former *Newsday* reporter and now a senior fellow at the Council on Foreign Relations. Garrett is to pandemics what Paul Ehrlich is to population growth, having amassed fame and fortune by being consistently and spectacularly wrong. Just as he became famous predicting a *Population Bomb* that fizzled, she came to prominence through a 1995 book, *The Coming Plague*. No, it hasn't come yet, but – trust her – it will.

Garrett's rise began with her prediction of an Ebola virus pandemic. This was notwithstanding the fact that Ebola is just about last on any realistic list of possible pandemic pathogens, since it's terribly difficult to transmit. But guess who won the 1996 Pulitzer Prize for Ebola coverage? Lessons like this aren't lost on other journalists.



Few lethal viruses would be worse candidates for causing a pandemic than Ebola, but when Laurie Garrett made Ebola the "avian flu" of its day she was awarded the Pulitzer Prize. There's a message in there.

Then there's University of Minnesota School of Public Health professor Michael Osterholm, who has spent the last several years trying desperately to outdo Garrett. He came up with a worldwide avian flu death toll estimate of 180-360 million simply by extrapolating the estimated death toll from the Spanish flu of 1918-19 to today's world population.

But the winner in this grim game of one-upmanship is Dr. Irwin Redlener, director of the National Center for Disaster Preparedness at Columbia University, who claimed on ABC News's Primetime on September 15, "We could have a billion people dying worldwide."

When I later questioned him on this figure, he rather sheepishly admitted he meant to say "one billion ill." Quite a faux pas. But Garrett and Osterholm were on the same show, and neither made a peep to correct the misstatement. ABC used it as part of the introduction. "It could kill a billion people worldwide, make ghost towns out of parts of major cities, and there is not enough medicine to fight it," declared the somber voiceover. "It is called the avian flu." So the billion figure is out there and, no, this single article won't succeed in pulling it back.

Yet the more serious the potential threat, the less excuse there is for running around like infected chickens with our heads cut off. If we do face a pandemic flu in the coming months or years, there are numerous actions we can take that will save an enormous number of lives, and some of the most important you probably haven't even heard about because they don't work as melodrama.

Humanity under attack by birds? Somebody ought to make that into a movie.

Let's break the pandemic issue down to its simpler parts, namely: How likely is avian flu to become readily communicable between humans? How contagious would it be? What interventions could be taken if it did become pandemic? How deadly would it be?

But first, How exactly does "avian" flu differ from "normal" flu? Every year several strains of flu circulate around the globe, usually reaching U.S. shores in late October and infecting 5 to 20 percent of the population. Flu leads to the death of about 36,000 Americans in an average year. To reduce the level of illness and death, we vaccinate. Unfortunately, flu mutates rapidly, so the antigens on the virus's protein coat change each year. This is known as "antigenic shift" and explains why we need to get new vaccines every fall – the protective antibodies we received from last year's vaccination were designed for last year's antigens. Health authorities tell us the white lie that there is no carry-over immunity from being vaccinated or infected the previous year; but actually there is some.

Nevertheless, if there were a radical "antigenic *shift*," the annual vaccine would be worthless. We would then suffer another pandemic such as the Asian flu of 1957-58 that caused about 70,000 U.S. deaths and a million globally, the Hong Kong flu of 1968-69 that caused 34,000 U.S. deaths and 1-4 million globally, and the big daddy of all modern pandemics, the Spanish flu of 1918-19, that killed more than half a million Americans and about 25-50 million worldwide. (It should be noted that some experts, such as Dr. Edwin Kilbourne, emeritus professor of immunology at New York Medical College, believe avian flu is closely enough related to flus to which we've already been exposed that we would have some natural protection.)

Lots of animals get influenza, and it often jumps from species to species. Sometimes we give it to them, and other times they give it to us. That's the worry with avian flus. They were first recognized in Italy over a century ago, but the current epidemic of H5N1 among birds wasn't discovered until 1997 in Hong Kong, when it began killing chickens and then spread to humans, six of whom died. (This prompted the first panic.)

Poultry vaccines are available, and international bodies encourage their use, but compliance has varied tremendously. Vietnam appears to be making a heroic effort to inoculate all of its poultry, and other countries might follow suit, but vaccinations cost money, and the U.N. claims the West isn't forking over big enough premiums for an avian flu insurance policy. Once a flock is infected, nothing can be done but to slaughter every bird. In the meantime, migratory birds can carry it to another part of the country, or even to other continents, as we've recently seen.

As of November 9, 125 cases and 64 deaths have been reported from avian flu since late 2003, all in Indonesia, Thailand, Vietnam, and Cambodia. There have been a few cases of possible transmission from one family member to another, but that would have involved massive exposure and it could also be that the second family member got the disease directly from fowl. Nobody is saying that H5N1 is yet a threat to anybody other than bird farmers. But could it become one?

Massive poultry vaccination campaigns are underway throughout Southeast Asia and China, where H5N1 has made its home.

The Human Threat

With all flu viruses, to paraphrase a bumper sticker, mutation happens. Avian flu could randomly mutate to be transmissible between humans. But it would indeed be random, since the virus is doing just fine in the bird population, thank you very much. There is no evolutionary pressure for it to reach out and infect other species. Such mutations nonetheless come along now and then. The infamous Spanish flu, for example, appears to have started as an avian flu.

Another scenario is that somebody with human flu could contract avian flu at the same time and the two flus could "reassort" into hybrid avian-human flu. The latter two epidemics in the 20th century were such hybrids. The World Health Organization has just reported that there is no evidence this has occurred with H5N1. The best means of reducing this likelihood is to vaccinate as many people as possible (especially in Southeast Asia) against human flu, thus reducing the potential number of "mixing vessels."

The key question: What is the likelihood of either of these scenarios? Anybody who gives you an answer other than "No one really knows the risk," as Richard Webby says, is pulling your tail feathers. Webby is a virologist at the Department of Infectious Diseases, St. Jude Children's Research Hospital in Memphis.

There are no pat formulas, such as the chances of shooting snake eyes or drawing a royal flush. Nor is it just a matter of time. Indeed, one of the arguments against a human outbreak of H5N1 is that sick birds have been mixing with humans for years now without producing a pandemic.

It's practically a state secret that the discovery of H5N1 in poultry dates back not to 1997 but rather to 1959, when it was identified in Scottish chickens. Perhaps haggis had a protective effect on the farmers, but there was a terrible outbreak of the related H5N2 among both chickens and turkeys in Pennsylvania in 1983-85 (17 million birds were destroyed) that appears to have originated as H5N1 in seagulls. So H5N1 has been flying around the globe for over four decades and hasn't done a number on us yet. That doesn't mean it won't ever; but there's absolutely no reason to think it will pick this year or next.

True, you can't compare the massive flocks and tremendous human-bird contact on packed Asian bird farms with the way poultry was raised in Scotland or Pennsylvania. But at the very least, the disease has had eight years of Asian conditions to mutate or become a hybrid, and so far it has not.

The "Overdue" Flu

Still, there are those of great influence who would have us think a pandemic is just around the corner. Reassuringly, their explanations are unscientific. One is that "we're overdue" for a pandemic. Google "avian flu" and "pandemic" and "overdue," and you'll get over 40,000 hits. "In the 20th century there were three pandemics, which means an average of one every 30 years," explained one health official to the *New York Times*. "The last one was in 1968, so it's 37 years. Just on the basis of evolution, of how things go, we're overdue."

Really? It was 39 years from the first pandemic to the second, but only 11 from the second to the third. Is that a pattern, or some white-jacketed yokel demonstrating his ability to do long division? On the other hand, if you knew that this yokel was

director of the National Institute of Allergy and Infectious Diseases, Dr. Anthony Fauci, you might be justified in thinking we do have something to be worried about. Nevertheless, Fauci also said some foolish things about the SARS threat, and somehow we managed to survive that.

It's instructive that one reason for the 1976 swine flu panic was that "experts warned that pandemics tended to be cyclical and that another one was about due," according to the New York Times. What kind of a "cycle" can be either 11 years or 39 years long? Risk-management expert Peter Sandman correctly refers to the concept of the "overdue" pandemic as nothing more than a superstition.

"Overdue flu" is merely a superstition, albeit one spread by major newspapers and top health officials alike.

Another source of alarm is a series of reports of mammals becoming infected, including tigers and leopards. But these were zoo animals in Thailand, fed the carcasses of infected poultry. A somewhat alarmingly titled medical journal article, "Probable Tiger-to-Tiger Transmission of Avian Influenza H5N1," actually says nothing more than that such transmission is "possible."

The best surrogate for humans has long been thought to be swine. "Pigs are probably very much like humans," says Webby. "But we showed [in a recent study] that there's not a lot of [H5N1] infection going on with them. The other important factor is that when swine become infected, according to theory, [the virus] becomes better adapted to infect humans. But there's no evidence that's happening," Webby says.

When government researchers finished decoding the genetic sequence of the Spanish flu earlier this year, allowing it to be studied for the first time, some claimed that its genetic code showed great similarity to H5N1. But all influenza viruses are related. Like the avian flu, the Spanish flu had eight gene segments; all flu viruses do. They're both what are called Type A influenzas; but the main type of human flu that circulates each year is Type A. More than 99 percent of the amino acids (basic structural building units of proteins) are identical. But humans and chimpanzees share 96 percent of their DNA. What counts isn't the similarity, but the difference.

The leader of the sequencing team naturally tried to connect the Spanish flu to the avian flu. Jeffery Taubenberger, a molecular pathologist at the Armed Forces Institute of Pathology in Rockville, Md., told the *Washington Post* that of the roughly 4,400 amino acids in the avian flu, perhaps only 25 would have to mutate properly to create a new Spanish flu. "It could theoretically provide a checklist for surveillance," he told the *Post*. "You might be able to say: this strain has six of these changes; it's a worrisome virus we need to keep our eye on. Or this one has none."

The DNA of H5N1 and Spanish Flu are overwhelmingly similar, as is that of chimps and humans. What matters isn't the similarity but the difference.

That's a gross oversimplification, though. It's not as if there were a thief intelligently picking a lock with 25 tumblers one by one. When mutations occur, as one tumbler randomly falls into place, another can as easily fall out of place. And remember, those tumblers have been turning for at least 46 years, since the Scottish outbreak. Long before H5N1 becomes transmissible from human to human, it may mutate into a 98-pound weakling, capable of causing little more than a sniffle in humans. Or it may simply wait a few more years before striking, by which time we'll be inundated with vaccine and have so much antiviral medicine stockpiled they'll be giving it away in Crackerjack boxes. (See sidebar, "The Once and [Near] Future Flu Vaccine.")

Slowing the (Hypothetical) Spread

What about contagiousness (also called "virulence") if avian flu does become a human disease? We have no idea. But we do know that those who enjoy scaring us with images of 1918 have yet again pegged that pandemic wrong in a very important way. Until recently, estimates were that during the Spanish flu each victim infected 20 others. But a Harvard study published in *Nature* last December found that on average each infected person infected only 4 others. This indicates that if one insists on using 1918 as the model, an avian flu pandemic might be brought under localized control more readily than was thought.

The only mask guaranteed to protect you from flu is one that will scare everybody away.

Quarantines won't work with flu because of the time lapse between infection (and infectiousness) and the appearance of symptoms, and because some flu carriers *never* become symptomatic. People will have already spread the disease before they show any signs of it themselves. How about the surgical masks that everyone started wearing in Asian cities in 2003, and which became the symbol of the SARS scare? There's such a split of opinion on the effectiveness of masks that the contradictions appear within a single official document. "The use of surgical or procedure masks by infectious patients may help contain their respiratory secretions and limit exposure to others," says a CDC posting from August. "However, no studies have definitively shown that mask use by either infectious patients or health-care personnel prevents influenza transmission." Thanks a lot.

Washing your hands frequently with soap and hot water (or better yet, with alcohol) probably helps, as may keeping your immune system strong with a good diet and enough sleep. And for goodness' sake, don't shake hands with people who sneeze into their own. In other words, practice ordinary good hygiene. And get your annual flu shot to reduce the chances you'll be battling two flus at once.

One possible method of both containment and treatment would be administration of antiviral drugs called neuraminidase inhibitors. Neuraminidase (the 'N' in H5N1) is a protein on the surface of the virus that must multiply in order for the virus to create copies of itself. One such inhibitor is Roche's Tamiflu, which has already become an object of obsession within the larger hysteria. Both governments and individuals are stockpiling it, perhaps in large part as a response to a medical journal article early this year encouraging them to do so. (By coincidence the authors worked for Roche.)

Tamiflu reduces the duration and severity of acute human influenza, and work at St. Jude's has shown that H5N1 appears to express the highest level of neuraminidase of any flu since 1957. Petri dish studies also show the twice-daily oral drug strongly inhibits replication of the virus, and it appears to greatly increase survival rates in infected birds. Unfortunately, at least one study published in August in the *Journal of Infectious Diseases* – comparing the current H5N1 and that circulating in Hong Kong in 1997 – indicates that Tamiflu may be losing its effectiveness. But computer models suggest that quick administration of antivirals in a localized outbreak just might keep it contained.

The U.S. government has stockpiled enough Tamiflu to treat less than 1 percent of the population, although it plans to purchase many times more. That may seem like spit in the wind, but if Tamiflu goes to first responders and health care workers, it might still make a real difference. As part of its $7.1 billion avian flu plan, the Bush administration ultimately aims to have 20 million doses of antivirals on hand.

GlaxoSmithKline's drug Relenza, another neuraminidase inhibitor, also appears effective in reducing avian flu symptoms and death after exposure. Its apparent weakness may actually be a strength. While Tamiflu is taken either as a pill or an oral suspension, Relenza is inhaled. That's bothersome, and because it is, a lot fewer people have been using Relenza over the years, thereby giving H5N1 less chance to develop resistance to it.

Both Tamiflu and Relenza should be taken as soon as flu symptoms become evident, preferably within two days, although at least one animal study showed Tamiflu was still helpful long after what's normally considered the "window of opportunity." It's also okay to take them if it's known that avian flu is truly on the wing. But prophylactic panic-popping of Tamiflu like Chiclets, as happened with the antibiotic Cipro during the U.S. anthrax scare, could encourage viral resistance to the drugs. By the time we would need them, they might not do any good. This is but one price tab for avian flu hysteria.

Even with both antivirals combined, the current world supply would be woefully inadequate if a pandemic broke out in the next few months. But Roche announced in late October that it will license production to numerous other drug companies to make Tamiflu, and some countries have announced they plan to pirate it. Although the time to make the drug is lengthy – perhaps 10 months – in something over a year we could have a mountain of antivirals just smaller than Everest.

Further, a drug that in some animal trials has shown itself superior to both Tamiflu and Relenza, called peramivir, may come into play. In pill form it proved safe in all three phases of human clinical trials, but it wasn't effective enough for the moneyed partner of peramivir's inventor, BioCryst Pharmaceuticals, to proceed with testing injections. Of course, that was before pandemic panic. Now BioCryst says the National Institutes of Health is planning to begin human trials with injections this winter.

BioCryst claims peramivir would be far easier and cheaper to produce than Tamiflu and that with an emergency FDA waiver, it could scale up to make 10 million treatments a month.

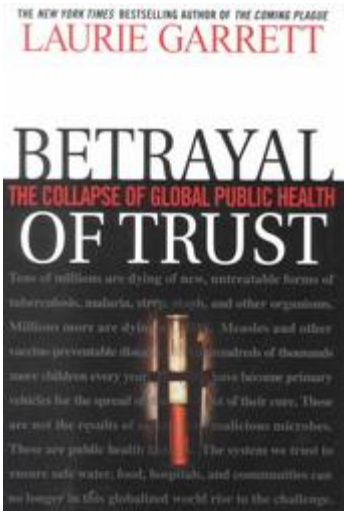
Ira Longini, a professor of biostatistics at Emory, has created with his colleagues a model of a 3,500-square-mile-area containing half a million people in rural Thailand where, if there is a pandemic, it's likely to start. He thinks health officials would have two weeks to a month to intervene with antivirals before the disease broke out of the cordon, because people in such areas don't tend to jump on jets to JFK.

By hitting the outbreak at the source and not disseminating the drugs across a country, much less a planet, "We are putting the drug where the transmission is and not wasting it," Longini told *USA Today*. Unfortunately, the countries where the pandemic is most likely to emerge are not the ones stockpiling the drugs. By the time a pandemic reached the drug-rich countries, the mountain of pharmaceuticals might do nothing more than take the edge off the disease. "Several million courses sent to Thailand would be more effective than hoarding for nearly 300 million people" in the United States, Longini told the paper.

How Lethal?

One panic button now being pushed repeatedly is that half of all persons contracting H5N1 die. "Right now in human beings, it kills 55 percent of the people it infects," Laurie Garrett told ABC's Primetime, on the same show that featured Redlener's billion-death prediction. By comparison, the Spanish flu is believed to have killed 2.5 percent to 5 percent of its victims. The typical flu death rate is less than 1 percent.

The cold-hearted reaction to these reports, paradoxically, is one of relief. A virus that kills its hosts so efficiently cannot easily propagate. (This is one of the reasons Garrett's predicted Ebola pandemic never materialized.) But in fact the reported mortality rate is problematic because of two types of "sample bias."



Laurie Garrett has made a career of betraying her readers' trust.

First, all avian flu deaths so far have occurred in countries with medical systems that are dismal compared with ours. Would you choose a Cambodian hospital to treat your flu? Second, that more or less 50 percent death rate comes from those ill enough to require medical attention – the sickest of the sick. Our experience with normal influenza is that many who become infected have no symptoms at all, nary a sniffle. So we know the numerator, but without the denominator it's useless.

We do know, however, that there are millions of Asian farmers in constant contact with the saliva and feces of countless birds where the virus has been prevalent. Indeed, blood samples collected from rural Chinese in 1992 indicate that millions had already been infected with H5N1, yet there was no reported outbreak of human disease. An analysis was also conducted after an H7N7 avian flu outbreak in the Netherlands two years ago. It found infections among half of persons who either had contact with the birds or were family members. Were something like that rate to hold true for Southeast Asia, H5N1's mortality rate among infected humans would turn out to be no higher than for human flu.

Certainly there's nothing special about bird flus to make them deadlier. Since 1997, four strains of avian flu have been confirmed in humans besides the notorious H5N1. One, H7N2, occurred in Virginia, causing 44 infections and no deaths. The 2003 Dutch outbreak infected 89 and killed one; H7N3 infected two Canadians, killing neither; H9N2 infected three people in Hong Kong and killed none. "With minimal medical intervention," says Emory's Ira Longini, meaning no flu vaccine, avian flu pandemic "mortality will probably be on the order of between 1 in a thousand to 1 in ten thousand." That's a far cry from 500 in 1,000.

Ultimately, without an effective vaccine, the number of infections in the next pandemic will probably be along the same lines as that of the last two pandemics. (The U.S. government has already purchased over $150 million of vaccine, but it won't be ready until late next year at the earliest.) Deaths, however, would be vastly lower because we have so much better access to medicine. The World Health Organization estimate for deaths from an avian flu pandemic is a reasonable one: "between 2 million and 7.4 million people." Taking into account world population growth (a doubling from 1960 to 2000), that's in the same ballpark as the Asian and Hong Kong pandemics. Nothing to sneeze at, certainly, but neither does it evoke images of men pushing carts of corpses through city streets ringing bells and crying, "Bring out your dead!"

Misunderstanding the Spanish Flu

Panicky people forget that in 1918 antibiotics and antibacterial vaccines that could prevent the deaths caused by secondary infections were still decades away. Panic-purveyors want you to think it doesn't matter. In "The Next Pandemic," her oh-so-spooky *Foreign Affairs* article this summer, Laurie Garrett declares that while "most strains of the flu do not kill people directly" the Spanish flu "was a direct killer," adding, "Had antibiotics existed, they may not have been much help." She couldn't be more wrong. "Even in 1918, there was a window of opportunity so that if they had had drugs they could have made a major difference," says one of the nation's top virologists, Dr. Frederick G. Hayden of the University of Virginia. "It would have been susceptible to both antibiotics and antivirals." John Barry, in his landmark 2004 Spanish flu book, *The Great Influenza*, states that without modern drugs "even in the face of this pandemic, doctors could help. They could save lives. If they were good enough, if they had the right resources, if they had the right help, if they had time."

True, no retelling of those horrible days is without anecdotes of apparently healthy young people simply dropping dead, such as the man who boarded the trolley car feeling fine only to leave in the company of the grim reaper. But even these probably didn't die from a direct attack of the virus, writes Barry. Rather, "victims' lungs were being ripped apart . . . from the attack of the immune system on the virus."

That explains in great part why an extraordinary number of young people died – they have stronger immune systems. Another apparent reason is that older people had previously been exposed to related strains and acquired immunity, which also explains why isolated populations of aboriginals were slammed the hardest and often enough wiped out. Further, the virus had incubated where an extremely high number of victims were packed together – namely, young soldiers at the Western Front or en route. There was no black magic about Spanish flu that caused it to pick on the young, as we're often led to believe.

What is more, some of the victims who suddenly dropped dead clearly died of pneumonia caused by secondary bacterial infections. Barry explains: "Often influenza victims seemed to recover, even returned to work, then suddenly collapsed again with bacterial pneumonia." In any case, most people died in the usual fashion of subsequent flu epidemics and pandemics. "Autopsy records from New York City found that most of the deaths [from Spanish flu] occurred at the end of the first week and beginning of the second," the University of Virginia's Hayden told me.

Researchers at Stanford have assembled a website that quotes from the medical journals of the time. The principal danger of an influenza infection was its tendency to progress into the often fatal bacterial infection of pneumonia, according to the *British Medical Journal* of July 13, 1918. Sick soldiers at Ft. Lewis, Washington, had sputum and other samples taken and grown in the lab. Commonly found bacteria, according to the April 12, 1919, issue of the *Journal of the American Medical Association*, were *pneumococcus, streptococcus, staphylococcus*, and *Bacillus influenzae* (today called haemophilus influenzae).

Comments the Stanford site, "It was this tendency for secondary complications that made this influenza infection so deadly." Writes Barry, "Most deaths almost certainly did come from secondary bacterial infections." In fact, the bacterial infections were so common that even years after the pandemic, many researchers believed the causative agent was bacterial and not viral.

All flus, avian or not, Spanish or not, kill primarily through secondary bacterial infections. Why aren't our health authorities putting more emphasis on this and less on antivirals that are difficult to make and still greatly in short supply?

Further reassurance that avian flu isn't something you would catch and drop dead from in the course of a trolley ride comes from medical reports of H5N1 victims, both living and dead. A World Health Organization analysis published in the September 29, 2005, *New England Journal of Medicine* finds that the virus tends to develop more slowly in avian flu victims "than for other known human influenzas." In other words, there is time for medical intervention.

Among the few successful medicines doctors used during the Spanish flu were privately made vaccines for bacterial pneumonia. Today we have something called the pneumococcal polysaccharide vaccine. One injection protects against 23 types of pneumococcal bacteria for a lifetime, so you don't have to wait until you're ill or even until there's a pandemic to be inoculated. Bacteria never develop resistance against it, as they do with antibiotics, and it will provide protection against any strain of flu, be it human or avian. A computer model in the Netherlands found that giving this vaccine to just 17 percent of the population prevented 3.5 percent of expected deaths directly and fully a fourth of all hospitalizations. Beds would be scarce during any pandemic and freeing them up would translate into better care for the sick and even more lives saved.

Faced with a sudden shortage of flu vaccine last year caused by a bad batch, the Department of Health and Human Services prevailed upon Merck & Co. to triple its production of its pneumococcal polysaccharide vaccine from 6 million to more than 17 million doses. "It could make a real difference to get this vaccine out to people," says Hayden. Chances are excellent this is the first you have heard of the pneumonia vaccine. Somehow this common sense measure has barely been mentioned in the voluminous coverage of flu pandemics – no doubt crowded out by the predictions of hundreds of millions of deaths.

For all the talk about how H5N1 is mutating and what kind of animals it's infecting, if it did become pandemic neither of these would matter nearly as much as the world into which it was launched. The swine flu virus of 1976 really was antigenically quite similar to the Spanish flu virus; the "problem," if you want to call it that, was that 1976 had little in common with 1918. There are certainly scary "what-ifs" concerning H5N1. But what truly propels the more hysterical scenarios is the specter of a repeat of 1918-19. Hard to believe that until recently this flu was known as the "Forgotten Epidemic." Today, you can't get through the day without hearing about it. On the other hand, people have been predicting another Spanish flu practically since the first one died out; so this is an old sport.

Yet in addition to realizing there have been astonishing advances in medical knowledge since 1918, it's important to realize that worldwide conditions then provided unique circumstances for increasing both the deadliness and the contagiousness of any type of influenza.

There was a war going on, remember? Not just any war, but history's worst war of attrition. He who throws the most bodies at the enemy wins. And it was a war of trenches. As University of Louisville biologist Paul Ewald observes in his brilliant 1994 book *Evolution of Infectious Disease*, it's the mildest strains of flu that tend to survive and spread, because those are the ones that live long enough for their hosts to communicate to lots of other people. The virulent strains that kill quickly, by the same token, are least likely to be transmitted and to prevail. They quickly get buried with their victims. Trench warfare, he says, flipped this on its head.

At first, as is well documented, the prevailing influenza was indeed mild. But by late summer in France it was turning vicious, because soldiers with mild strains stayed in the trenches and nursed their aches while the sickest ones were packed onto crowded trains and trucks, then squeezed into hospitals already packed with casualties and soon to be bursting at the seams with flu victims.

We have no such disease factories today. Indeed, the only close parallel we have today is – the packed chicken farms of Asia. H5N1 intensified and spread among birds as the Spanish flu did among humans.

Bottom line? We *are* all going to die. But from various causes. There probably will be another pandemic, but nobody knows when or what its origin will be. We do know that with every month that passes, we'll be better prepared. Unless the current panic, having failed to materialize, makes us overly complacent. *That's* a real possibility. In 1976, swine flu went from "next pandemic" to laugh line on Saturday Night Live in record time. And as for those anointed experts, public health officials, and reporters whose wall calendars always read "1918" – it's time to buy a new one.

The development of antibiotics, an anti-pneumococcal vaccine, and antivirals is hardly the only difference between 1918 and now.

A pandemic can happen when a disease spreads between countries and continents. They often involve a new virus to which people are not immune.Â Swine flu and bird â€” or avian â€” flu, refer to viruses that were common in pigs or birds, but not in humans, until an antigenic shift occurred. In recent years, there has also been concern about viruses that have been linked to camels (causing Middle East Respiratory Syndrome, or MERS) and monkeys (Ebola).Â Faster communication increases the risk of panic, and the chance that people who may be infected will travel in an attempt to escape the disease, potentially taking the virus with them. It can take months or years for a vaccine to become available, because pandemic viruses are novel agents.