Laurie Garrett: Are We Prepared for Avian Flu?

(What's all the fuss about Avian Flu anyway? Have a read and find out why the fuss. P.E.J. Earth editor)

Interviewed by Jim Motavalli, Editor, E - The Environmental Magazine -- Aug 10/05

Laurie Garrett, the only reporter to win all three of journalism's big "P" awards (the Peabody, the Polk and the Pulitzer) is extraordinarily well positioned to tell the frightening and emerging story of avian flu. The author of two major public health books, Betrayal of Trust and The Coming Plague: Newly Emerging Diseases in a World out of Balance, she was a science correspondent at National Public Radio before joining the science-writing staff of Newsday in 1988.

Today, Garrett is Senior Fellow for Global Health at the Council on Foreign Relations. Her story "The Next Pandemic?" was published in the July/August issue of Foreign Affairs, the Council's bi-monthly magazine. In it, Garrett traces the history of U.S. pandemics, including the Spanish flu outbreak of 1918, which killed 675,000 Americans. Avian flu could be even worse. "If the relentlessly evolving virus becomes capable of human-to-human transmission, develops a power of contagion typical of human influenzas, and maintains its extraordinary virulence," she writes, "humanity could well face a pandemic unlike any ever witnessed. Or nothing at all could happen." According to the Centers for Disease Control (CDC), an H5N1 avian influenza that is transmittable from human to human could sicken 80 million people and kill 16 million.

Influenza comes from aquatic birds, including migratory ducks, geese and herons. As Garrett explains, the loss of these birds' migratory routes in China has brought them into direct contact with humans in farms and parks. In this way, influenza is spread from migrating birds to domestic birds, then to pigs and ultimately to humans. This chain of events involves veterinary science, ecology and medicine, the triumvirate studied by the science of conservation medicine.

E Magazine: How is avian flu progressing?

Garrett: It is becoming more of a danger physically, and to add to that there's been a steady

effort by the public health community to get policymakers more aware and more concerned about the situation. That is meeting with some success finally.

How does avian influenza spread?

I wish we knew the answer to that question. There's evidence of transmission via dining on the meat of animals. There's evidence [of transmission through] some very, very close contact with chickens, such as professional cock-fighting roosters. The owners of these roosters suck the blood out of the roosters' beaks with their own mouths when they start bleeding during cockfights. But it's all rather mysterious: Lots and lots of chicken handlers, chicken farmers and poultry workers are infected. And then we find infections in people who seemed to be several steps away from any chickens. So it's all quite baffling.

Americans have probably been lulled into believing we have effective vaccines for threats like avian flu.

The only diseases we have any hope of eradicating--and I'm not really sure that we're ever going to eradicate any more diseases besides smallpox--are ones that are present only in humans and are not found in animals. So smallpox was unique in that the vaccine was 100 percent effective. It was easy to spot people who were infected because they had very gross and obvious physical symptoms, and there were no animals that harbored that virus. But avian flu is not like that; it goes through dozens of different species of animals. We are the final end point on a long food chain of animals that this virus goes chopping its way through, and as it does so it constantly mutates. A vaccine that is effective against the flu strain one year may have very little, if any, effect against the flu strain circulating the next year. So influenza is just orders of magnitude more difficult to deal with.

All influenza virus seem to originate in southern China, in the Pearl River Delta region. It's a unique ecology, with a tropical climate, extremely dense human population, a booming economy with rapid Gross Domestic Product (GDP) growth and giant mega-cities sprouting up overnight. But meanwhile, there is a large peasant population still conducting traditional poultry rearing in the way they have for centuries. The Chinese predilection for purchasing live animals that are slaughtered at home means that possible routes of exposure are infinitely greater than what would be the case in the U.S.

The virus is normally carried by aquatic migratory birds, including ducks and geese, that transverse the Asian Flyway, extending from southern Indonesia all the way up into the Arctic Circle of Siberia. The largest landmass on this migratory route is China, which has really devastated its natural ecology. So the birds are unable to find many pristine natural places to land as they make their migration every year. They're landing on farms and getting into fights with domestic animals over food and water.

The ecology of this virus is very much about what's going on right now in China. And then it's compounded by rising GDP growth, which means that more Chinese people can now afford to eat protein on a regular basis. So a family that just as recently as 10 years ago would slaughter a chicken only on a special occasion can now afford to have a chicken every week. And soon most Chinese may be able to afford to have chicken or pork every day, just as we can. And that is going to dramatically increase the number of livestock being reared in China, with very dire potential outcomes. So all of this means we're hastening the probability of the emergence of a truly lethal flu strain.

Has the appearance of avian flu led to changes in Chinese agricultural practices?

China's agricultural practices have not change appreciably in any of the peasant areas. And, of course, the majority of China's population is still peasant, even though the society is experiencing this overall boomtown economy. Purchasing live chickens and other animals, then taking them home and killing them is still very much a cultural tradition that's deeply embedded across much of Asia, and not just China. You can see it in Vietnam and all up the way up into Singapore and all the way down towards parts of India. This is about culture, and it will not change overnight.

You were describing a process by which migratory ducks and geese have been forced out of natural areas. Doesn't that make this a good example of what is known as conservation medicine?

West Nile virus, it's ecology, and how it was behaving in New York in 1999 was understood by a very complicated host of medical professionals, including veterinarians and people dealing in wildlife management. But at that time we really had no respectful mutual lines of communication between those protecting human health and those protecting animal health and those dealing with ecology. And so vital clues that might have slowed the spread of West Nile were overlooked because people in the traditional public health community weren't listening to

veterinarians or people dealing with wildlife. We would hoped that all of this would have been sewn up by now, but we still see the same sort of snobbery and the same professional niche way of thinking operating in infectious diseases all the time.

Even now there's not a real smooth operating relationship between the World Health Organization, the World Organization for Animal Health and the UN Food and Agriculture Organization. So those agencies in the UN system that deal with animals and agricultural are not as neatly plugged onto the World Health Organization, and vice versa, as one would hope. And the same is true here in the U.S. institutionally. Our U.S. Department of Agriculture and Department of Health and Human Services are not exactly good bedfellows. Agencies that traditionally deal with agriculture tend to have as their mission statement the defense of the agricultural industry. So they're very tied into the economic side of agriculture, whereas health agencies tend to view that with suspicion, and to be tied into a whole different kind of economy. So it creates a kind of natural tension between these forces, and it filters all the way down to the average doctor, the average veterinarian, the average wildlife scientist or ecologist. So the bridges haven't been built at the institutional level or at the personal level.

But some organizations like the Wildlife Trust are trying to build those bridges.

Well, they can keep on trying (laughs).

Some of our modern transportation systems also have helped spread disease. I understand, for instance, that it would be very easy for a single mosquito infected with West Nile to travel to Hawaii on board one of the frequent flights.

Right after the World Trade Center attack, Hawaii was contending with the fact that the country was in a panic about anthrax. Hawaii was being deluged with claimed anthrax samples, and at the very same time dengue hemorrhagic fever had arrived in the form of mosquitoes that had hitchhiked their way from Asia into Hawaii. And, of course, the latter was a much more serious problem for the state of Hawaii, but its resources were sorely taxed at that time. And so several people did end up getting dengue fever on the island of Maui.

What is the likelihood of mass human-to-human transmission of avian flu?

If we could say what the odds were, we could immediately advise policy makers on what they ought to do. But we don't really know what genetic change the virus has to undergo to become a rapid human transmitter, and therefore we can't really tell how close it is. It's not fully understood how the virus makes that change. It may have at least three different ways of doing it--one of which involves recombining in a host that's dually infected with a normal human flu virus and then the H5N1. It may be that the H5N1 is constantly undergoing mutation, and we certainly see that--it's known as antigen drift--in flu viruses all the time. There may be a third process that involves a more active genetic mechanism inside mammalian cells--particularly in pigs--and so it's fairly complicated.

The actual biology is not well enough understood to be able to make a prediction. One aspect we don't really understand is this: If the virus makes the genetic change to become human transmissible, does it give up its virulence in the process? We hope so, but we don't know, actually. So, there are many factors that play into trying to map it out. Imagine if you had a supercomputer and you were trying to do a future forecast about what might happen with this epidemic. The number of input factors is just enormous and several of them are unknown.

Do you think the CDC is doing what it should be doing in terms of preventative action?

I think the CDC is doing a lot. But what I keep trying to get across to people is that flu starts in Asia. We're a lot better off if we can stop it in Asia than if we wait until it is here and try to figure out some means to minimize the damage. And that means a whole lot more multinational agreements, more working on the international level, and this is difficult at a time when our Congress is full of members saying really terrible things about China all the time. It's China with whom we need to be collaborating on this. And it's hard when you have some members of Congress who still think of Vietnam as the enemy, as if we were still fighting the Vietnam War. Vietnam is another crucial partner if we are going to deal with flu at its source, rather than waiting.

In a recent study published in Nature, a team at Oxford University did a computer model just simply asking if it possible to stop pandemic flu. And the good news is their answer is yes, it is possible, but the bad news is only if you identify it when there are only 30 human cases. Well, we're not going to spot those first 30 human cases before it spreads to hundreds or thousands of people of people unless we have a much better infrastructure of public health, vigilance and surveillance in poor countries like Vietnam, Cambodia and Laos, and in countries with more money but completely lacking in sophisticated public health infrastructure, like China.

Those countries are not going to be able to make the necessary changes overnight. They are going to require a lot of assistance, a lot of expertise, a lot of money, a lot of support. Now, the CDC is doing some of that, but we're not ramped up on an urgent basis. We're still operating as if we have a lot of time, and we don't know how much time we have.

Is one of the problems that we're distracted by the war on terrorism to the exclusion of everything else?

I think that can be blamed for other things, but not for this. The problem is that at a higher political level it has to do with how our government perceives its role in the world and how it deploys resources. We tend to prefer as Americans--and particularly with this administration--to operate on a bilateral or unilateral basis. We like to go it alone or we like to forge very intimate alliances with particular countries we tend to get along with. We're less happy working with big multinational mechanisms, with the UN system, with other big umbrella organizations. We tend not to give a lot of money to such organizations and we tend to try to stay away from them. It's hard to work with partners that come from different political systems and cultures. It takes a lot of patience and it doesn't always work out the way you want it to. But I don't think we have much choice in the context of pandemic flu.

One thing that is woefully lacking is really detail-level strategic planning by communities and states--thinking about what we will do. What if pandemic flu is in Oregon and I'm the governor of California? Do I threaten to cut the border between Oregon and California? We really haven't planned sufficiently, and some parts of the country haven't done it at all for pandemic flu. Most political leaders will do things that are ultimately destructive, but will in the short term appear to be responsive. They have to do something, so they will try quarantines and closed borders, they'll try slaughtering millions of chickens or shutting down the whole poultry industry. And in contrast, many of the hardball things that might make a difference won't be thought of or addressed. You have to prepare in advance and go through this thought process, so that a governor, a state legislator, a state or city health commissioner, has some kind of guide to work from. Fortunately, the CDC just released in the last 30 days a detailed flu response cookbook, if you will, for the federal level. But I still think we have a long way to go.

Does the threat of a pandemic also have military and strategic implications?

Yes. In World War I, the 1918 flu drastically affected the conduct of the war. At one point, the French army literally had no spare soldiers to fight--everybody either had the flu or was tending

somebody with the flu. For the U.S., our shipments of soldiers were literally death ships. By the time the ships had reached their destinations, huge percentages of soldiers had died of the flu onboard. We're involved in war in more than 60 countries right now. We're involved in peacekeeping operations or direct warfare and conflict all over the world. We have an enormously difficult and very intense military situation in Iraq, one in which our soldiers are hunkered down. They're often in gridlock positions, not all that different from the situation in World War I. They're fighting in very close contact with civilians and with the insurgents. I think that there needs to be a whole lot more thinking and a whole lot more planning about how we conduct our national security operations in the context of pandemic virulent flu.

I understand that malaria was a huge problem in the Pacific theater during World War II. My grandfather came down with it on Guadacanal, for instance.

In World War II in the Pacific, DDT, antibiotics and chlorofin were all introduced into military medicine for the first time.

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Laurie Garrett's article in Foreign Affairs http://www-dev.foreignaffairs.org/20050701faessay84401/laurie-garrett/the-next-pandemic.html

Wildlife Trust www.wildlifetrust.org