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Flu strain alarms experts

Rare Hong Kong virus could bring worldwide epidemic, CDC says

M.A.J. McKenna / STAFF WRITER,

The number of cases in the Hong Kong flu outbreak has risen to 10 and includes three people in the same family, sparking fears that the virus may have acquired the dangerous ability to pass from person to person.

Officials at the Centers for Disease Control and Prevention in Atlanta and on site in Hong Kong said Tuesday that two new cases, a 2-year-old boy and a 3-year-old girl, are cousins of a 5-year-old girl who is already hospitalized.

"This is the first time we have seen any link between cases, " said Dr. Brian Mahy, director of the CDC's division of viral and rickettsial diseases, who is coordinating the flu effort from the CDC's Atlanta headquarters.

Scientists around the world have been watching the Hong Kong situation tensely, waiting for evidence that the virus has mutated enough to be communicable between people. That would increase the possibility of the virus' causing a global epidemic, which could threaten tens of thousands of people.

Though Tuesday's news was deeply unnerving, Mahy said officials still aren't convinced that this flu virus can spread from one person to another.

"(The cousins) spent quite a bit of time together in an apartment with their grandmother, " he said. The cause of the infection "could be common exposure to the same environment. It doesn't really get us clear evidence of human-to-human transmission."

The outbreak now includes a potential 10 cases: seven that have been confirmed by genetic analysis at the CDC, including two who have died; one who is strongly suspected of having had the virus, but has recovered; and an additional two cases whose blood samples are awaiting analysis.

In a press conference with CDC officials Tuesday, Dr. Margaret Chan, director of health for Hong Kong, said that 65 Hong Kong residents who had contact with the victims have reported flulike symptoms. Lab tests determining whether they were sickened by the so-called H5N1 virus --- named after two proteins, hemagglutinin and neuraminidase, on the virus's surface ---have not been completed, she said.

Tests conducted so far by the CDC and other international flu labs confirm that the virus originated in birds and remains unique to them and to humans. Influenza typically originates in waterfowl and passes through other animals ---often pigs ---before infecting humans, but genetic analysis shows no evidence that it infected other mammalian species before triggering this outbreak, something that flu experts previously thought impossible.

On Tuesday, the Hong Kong government announced a slate of public health measures, such as increased surveillance of chicken farms and markets to ferret out birds smuggled from southern China. It has begun public service announcements on radio and television and started a 24-hour telephone hotline, which received almost 350 calls in its first 24 hours. There have been reports of residents abandoning pet birds of all species at animal shelters and jamming emergency departments to ask for flu tests; one hospital has created a 20-bed isolation ward in anticipation of more cases.

There is still some suspicion, Mahy said, that an additional unknown animal vector may be playing a part in this outbreak. "The general argument is that since we are not seeing this flu in poultry handlers, poultry-market workers, chicken butchers, we perhaps should be looking at some other possible reservoir of infection," he explained. "The theory would be that the virus goes from birds into another species ---a rodent, a cat, something of that sort ---and humans get infected from that source. But we have no evidence of this."

According to the CDC, the Hong Kong flu outbreak meets two of the three conditions necessary to be called a pandemic: It is a brand-new infectious organism that has been let loose in a susceptible population. Despite Tuesday's news, it has not yet met the third condition: an outbreak that grows enough to cross national borders or jump between regions of the world. That condition was added after the 1976 "swine flu" epidemic provoked intense public concern but then unexpectedly died out.

Nevertheless, public health authorities are implementing a pandemic plan that was accepted internationally after 700,000 people died in the last pandemic in 1968.

The first step of the plan, administered by the CDC and the World Health Organization in Geneva, calls for rapid development of a vaccine against the new strain of flu. The currently available vaccine offers no protection against it, because it was designed ---as flu vaccines are every year ---to counteract the three flu strains that experts predicted would be circulating this flu season. The H5N1 outbreak was not predicted.

But the plan has already hit a major bottleneck. The worldwide manufacturing network that produces flu vaccine every year uses fertilized chicken eggs as a growing medium. But the new flu is closely related to a virus that has caused mass chicken deaths in the United States, Mexico and Hong Kong in the past few years. It is "absolutely lethal in chickens," killing them within two days, said Dr. Robert G. Webster, a Memphis-based virologist who has been investigating the outbreak.

That has left experts scrambling for an alternative. If the Hong Kong outbreak becomes an epidemic, they will have little time to waste, because broad-scale flu vaccine production takes four to six months.

One path, Mahy said, would be to find or develop a genetically similar but nonlethal strain of flu. Another would be to discover a different method of manufacturing large quantities of vaccine quickly. Both have drawbacks.

Because the H5N1 virus has never been seen in humans before, no close match for it exists in the world's flu labs. The WHO has already uncovered several surrogate viruses, but they must be tested against the Hong Kong strain, a task that could take several weeks.

If an alternative virus cannot be found, scientists will have to rely on alternative methods of vaccine production. There are several ---growing the virus in cell cultures, using a "cold-adapted" weakened virus that is administered by nasal spray, and using the purified DNA of the virus by itself. But all three methods are still experimental, Mahy said; none has been approved by the U.S. Food and Drug Administration, and none is advanced enough to produce the quantities of vaccine that would be necessary.

One of those methods, a vaccine using purified DNA, is under investigation at the Yerkes Regional Primate Research Center at Emory University. Studies in humans are in very early stages, said the vaccine's creator, Dr. Harriet Robinson. "I can't even comment on a time frame" for availability, she said. "When you have a new approach to vaccination, you have to proceed very cautiously."