

H1N1 flu virus spread quickly after onset

Severity of illness for most no worse than seasonal flu

By Jill U. Adams

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In early April, a 10-year-old San Diego boy was found to be infected with a novel flu virus. The virus, identified as an H1N1 strain, was soon matched to samples from Mexico, which had suffered a series of flu outbreaks leading to a large number of deaths and hospitalizations.

Because of its virulence and low resistance amid the general population, global and U.S. public health officials quickly recognized that the new virus strain could become a pandemic, which it eventually did.

Here's a closer look at the flu outbreak's progression:

April/May: In late April, the Mexican government closed the nation's schools. Eat-in restaurants in Mexico City were shut down to curb transmission. Fear of flu led several cruise-line companies to suspend stops.

In the U.S., the disease spread quickly. By the end of April, five states had confirmed cases. A New York City school was the focus of that city's outbreak after some students returned from spring break trips to Mexico.

The spread of the virus in the Northern Hemisphere continued through May, as seasonal flu cases receded. A 33-year-old woman in Texas was the first U.S. citizen to die of the disease. Swine flu also crossed oceans, with early cases appearing in Europe (Spain and France), Asia (South Korea and Hong Kong) and the Southern Hemisphere (New Zealand).

By mid-May, H1N1 flu arrived on mainland China and in Japan. Later in the month, the illness began to show up in South America. On May 29, Egypt ordered the slaughter of 300,000 pigs because of swine flu fears.

June/July: At the beginning of June, 62 countries had confirmed cases of H1N1 infection. Although hospitalizations and deaths were being reported, for the most part, the novel H1N1 flu seemed to be rather mild.

Egypt reported its first case June 8 -- the first on the African continent.

As the epidemic continued well past the normal flu season, 3,000 to 4,000 probable cases were reported a week, the federal Centers for Disease Control and Prevention said. An estimated 1

2 flu strains in 1 pig led to new H1N1

Swine flus merged, jumped to humans

By Karen Kaplan

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The virus behind the global influenza outbreak may be known as swine flu, but it didn't just come from pigs. Wild birds and humans also played a role in its creation.

Scientists are still trying to unravel how it wound up infecting people and spreading rapidly around the world. To date, the pandemic has caused at least 3,205 deaths, as of Sept. 6, according to the World Health Organization.

As it resurges in the U.S. during flu season, health officials fear it could spread to half the population and are calling for urgent preparations, including the inoculation of children, pregnant women and other vulnerable groups when a vaccine becomes available in October.

Here's what researchers know about the virus so far:

H1N1's LINEAGE?

The new H1N1 strain is based primarily on an unusual virus that has been circulating widely in U.S. pigs since the 1990s. That "triple reassortant" flu is actually a combination of classic swine flu, a North American avian flu and a strain of human flu.

Somehow, a single pig became simultaneously infected with that virus and a pure swine flu strain found in pigs in Europe and Asia. The two strains swapped genetic material to produce the new H1N1 strain, which then began to infect humans.

HOW DID STRAINS MIX?

That remains a mystery, and scientists will probably never know. Relatively few pigs engage in intercontinental travel, and those that do are strictly quarantined.

But there are theories. One is that a person in Asia became infected with the Eurasian swine flu, then traveled to North America and passed it along to a pig here that already had the triple reassortant virus. That would explain why the outbreak began in Mexico and the United States.

H1N1s BEFORE?

Yes. The extremely deadly 1918 Spanish flu was an H1N1 strain, and one of the strains of the

seasonal flu is also an H1N1. But not all H1s and N1s are the same.

The H1 and N1 in the seasonal flu are both from humans. But new H1N1 is more virulent because most people never encountered it before, so they have no pre-existing immunity.

DEADLIER?

It doesn't seem to be deadlier than the seasonal flu, but it's hard to say for sure. Public health officials keep track of how many people have died from H1N1, but without reliable figures on total infections they don't know for sure what proportion of cases result in death.

Even if H1N1 is no deadlier than the seasonal flu, it will cause more deaths because it likely will infect more people.

LIKE THE 1918 FLU?

Both viruses arose in late spring -- the tail end of the traditional flu season. And both appear to be most dangerous for healthy people in the prime of their lives instead of the very young and very old.

The 1918 flu is thought to have begun with a springtime wave that was followed by a more lethal wave in the fall. It ultimately killed about 50 million worldwide.

NOT AS BAD THIS TIME?

Studies in ferrets found that the new H1N1 strain didn't mix with the seasonal flu when animals were infected with multiple viruses. That suggests it's not likely to mutate in a way that could make it more dangerous than it is now.

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million people in the U.S. had been infected by the end of June.

The big question for the early summer months was: What would happen in the Southern Hemisphere as that part of the globe entered its traditional flu season? A recent report at flu.gov said four Southern Hemisphere countries had disease activity that was mostly novel H1N1 flu and dropped off after mid-July -- similar to their typical flu seasons.

The U.S., meanwhile, saw outbreaks at camps and military academies and in jails. As of July 23, California had 583 hospitalizations and 61 deaths from H1N1 flu, the majority occurring in the previous four weeks.

August/September: In mid-August, President Oscar Arias of Costa Rica contracted swine flu. At the end of the month, President Alvaro Uribe of Colombia was diagnosed. In early September, the chief of the Ecuadorean presidential security detail died of the H1N1 flu.

Chile reported Aug. 28 that H1N1 had jumped to birds. Two turkey farms were placed under quarantine.

Widespread outbreaks also occurred in the southeastern U.S. in August, coinciding with the return to school. Deaths in school-age children have been reported in Mississippi, Alabama and Tennessee.

Around the world, the illness still looks quite similar -- in terms of severity -- to what the U.S. experienced in the spring, said Ira Longini, a professor of biostatistics and epidemiology at the University of Washington in Seattle. It means that for most people infected with the H1N1 virus, illness will be no worse than seasonal flu.

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Vaccine trials 'very promising'

Strong protection against H1N1 seen in a single dose

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Federal health officials said Friday that preliminary data from U.S. trials of vaccines against the pandemic H1N1 swine flu virus show that a strong immune reaction is provoked by one dose of the vaccine within 8 to 10 days after it is administered.

The findings, which "corroborate and reinforce" trials by companies reported last week, should help alleviate concerns about limited availability of the vaccine when it is distributed in October, the health officials said.

The results are "very positive news" that means that Americans "will be protected sooner than we thought," said Health and Human Services Secretary Kathleen Sebelius at a news conference.

The finding that only one dose will be required means that more vaccine will be available both in the U.S. and around the world, she said.

There also have been "no significant adverse events whatsoever" in any of the trials, said Dr. Anthony S. Fauci, director of the National Institute of Allergy and Infectious Diseases, which is running the trials.

"We're seeing the kinds of things you would expect, swelling and redness at the injection site that is not clinically significant," Fauci said.

"There are no red flags on safety in any of these trials."

No results are available yet from the trials on children and pregnant women. Those studies started later than the others and results will not be available for a couple of weeks.

The institute has clinical trials of two vaccines ongoing in more than 2,800 people. The first began on Aug. 7.

In a trial of the vaccine produced by France's Sanofi Pasteur, researchers found that a single 15-microgram dose of the viral antigen -- the same size dose used in seasonal vaccines -- produced robust immunity in 96 percent of healthy adults ages 18 to 64 and in 56 percent of those ages 65 and older within 10 days.

Similarly, trials of a virtually identical vaccine produced by Australia's CSL Ltd. produced strong immunity in 80 percent of those between ages 1 and 64 and in 60 percent of those ages 65 and older.

Preliminary results from an Australian trial of the CSL vaccine reported Thursday showed 95 percent protection against the virus.

Fauci said there was no concern about the slight discrepancies between the two trials because of technical difficulties in the measurement of the precise amount of antigen in the vaccines.

The lower protection among the elderly "was not unexpected," he added.

"That is the case with seasonal flu vaccines as well."

The swine flu vaccine is expected to become available by the middle of October, although MedImmune Corp. said Thursday that it will begin distributing its FluMist inhaled vaccine by the end of September.

That vaccine is not approved for pregnant women and people with underlying health problems.

But Sebelius noted that the seasonal flu vaccine is available now and that people should get it as soon as possible.

Dr. Anne Schuchat of the Centers for Disease Control and Prevention said 38 million doses of seasonal flu vaccine have already been distributed and that a total of 115 million doses should be available.

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H1N1 risk high for minorities

Chronic conditions in communities raise vulnerability

By Antonio Olivo

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As the H1N1 flu virus spreads anew across Chicago, the already-busy staff inside North Lawndale's Westside Family Health Center expects that communities like theirs will see thousands of potentially life-threatening cases.

The long-struggling African-American neighborhood is considered a medically underserved area, where contact with doctors is sporadic and rates are high for chronic conditions such as asthma or diabetes, which make patients more vulnerable to H1N1 and other flu viruses.

"If you notice any [flu] symptoms, you should come see me as soon as possible," Dr. William Gillard recently urged Regina Nash, 28 -- among 700 asthma patients treated at the West Side clinic, which also has 500 diabetes patients and hundreds more with chronic ailments.

Those factors help explain the findings of a recent study in Chicago, released last month by the Centers for Disease Control and Prevention, which shows that blacks, Hispanics and Asian-Pacific Islanders had higher rates of hospitalization for H1N1 during the swine flu outbreak last spring.

In the report, a map of confirmed cases in Chicago neighborhoods in May documents that the virus had its strongest presence in densely populated ethnic communities where health-care options are limited and long-term illnesses such as asthma or diabetes are prevalent.

But epidemiologists want to know if that is the only answer. This fall, they plan to dig deeper and examine whether the higher rates relate to specific ethnic makeups, said Dr. Julie Morita, medical director of the Chicago Department of Public Health, who co-wrote the four-page report.

"This is something that has been identified as a potential issue and so there will be evaluations that go on nationally as well," she said, explaining that hospitalized patients and the more severely ill will be examined for links between their illness and their ethnicity.

"I mean, all that needs to be fleshed out further," Morita said.

The report stated that the cause was "unknown" and "likely the result of variations in exposure rather than differences in susceptibility."

The study's findings have contributed to concerns about how and where an expected H1N1

vaccine will be distributed when the federal government makes an estimated 45 million to 52 million doses available in October.

Under a formula used by a federal contractor distributing H1N1 inoculations, Morita said, the vaccines initially would be available in 1,045 hospitals, clinics and other health-care sites in the city.

City and state health officials are still working out which sites would get the vaccine and whether additional doses would be distributed elsewhere, including at specially designated immunization clinics.

Despite assurances, some neighborhood clinics still worry about availability, citing patterns with regular influenza inoculations.

"The distribution of [seasonal flu] vaccines is very curious," said Dr. Hugo Alvarez, deputy medical officer for the ACCESS Community Health Network, which has 51 clinics in medically underserved areas throughout the region.

"Despite all best efforts, a large sector of patients at highest risk never get immunized," he said, suggesting that hospitals and other institutions with more clout are usually the first in line. "There's always a potential for smaller clinics to get lost in the fray."

While they wait for the vaccines, doctors have begun warning patients of the new flu, instructing them to follow common-sense precautions such as washing hands frequently while guarding against panic and misinformation.

In neighborhoods where not much is known about a virus that even the CDC is still struggling to understand, consultations about H1N1 can be slow going, Alvarez said. And the fact that many patients in areas with poor housing tend to move around makes it difficult to even have a consultation.

"We try to keep a current address and phone number on chart, but sometimes it can be difficult to contact patients," said Gillard, the Westside Family Health doctor. "Others are in homeless shelters, with increased risk of exposure to the virus. We are trying to get to those patients."

Inside *Servicios Medicos La Villita*, an ACCESS clinic in Little Village, Dr. Oscar Diaz, a pediatrician, sought to make parents grasp the potential threat by citing the highest scientific estimates of how many people could get sick and die this fall from the virus.

"One has to take every precaution possible," Diaz lectured one mother holding onto her 7-month-old daughter. "We don't know yet how this virus will attack from person to person."

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