

Swine flu researchers put Milwaukee under microscope

July 28 2009, By Mark Johnson

To better understand the enemy they will face this fall, health investigators have been studying Milwaukee's swine flu outbreak during the spring and following the virus as it sweeps through the Southern Hemisphere.

Two important questions remain elusive:

How severe is the H1N1 influenza? And why were there so many cases in Milwaukee this spring and summer?

"The hardest and, globally, the most important question, is the severity," said Marc Lipsitch, a professor of epidemiology and director of the Harvard School of Public Health's Center for Communicable Disease Dynamics.

Lipsitch, who is leading the Harvard study of Milwaukee and a handful of other communities around the nation, said it may be difficult to quickly pinpoint the virulence of swine flu. Researchers hope to know enough about the virus to prepare rough estimates for a fall outbreak, including what fraction of the infected will need to be hospitalized; what fraction will need to be treated in intensive care units; and what fraction will die.

"Individual hospitals around the country could have three to five times as many influenza admissions. That's probably the high end," said Chris Ohl, an associate professor of infectious diseases at the Wake Forest

University School of Medicine.

What made Milwaukee so useful to researchers is that the city continued counting even mild flu cases while other cities gave up tallying the mild cases. That presented a problem when it came to calculating the severity of H1N1.

Without having an accurate picture of the total number of people infected -- both severely and mildly -- researchers cannot say with certainty what percentage of the infected has been hospitalized and what percentage has died. This may explain why the virus appeared to be more severe in Mexico; many mild cases are believed to have gone undetected, making it appear as though the deaths accounted for a high percentage of all cases.

Although health officials in Wisconsin have stressed that aggressive surveillance and testing explained why the state led the nation in confirmed swine flu cases, Lipsitch suggested that does not explain fully the high flu numbers here. Wisconsin still has 1,000 more confirmed swine flu cases than any other state, with 6,222, according to the Centers for Disease Control and Prevention. Texas, the next highest state, has 5,151.

"Milwaukee, Boston and New York all had significant epidemics," Lipsitch said, explaining for comparison that "in Atlanta there was just no evidence of serious transmission."

One theory is that northern communities saw some of the highest flu numbers because the virus fares better in cold, dry weather.

Based on what has been learned so far, it appears likely that Milwaukee and other communities around the nation will conduct mass vaccinations for the novel H1N1, possibly by mid-October or November. Also, it is

likely that the priority groups in line for vaccinations will differ from those in the past, skewing less toward the elderly and more toward younger people with underlying health conditions, such as asthma, emphysema and obesity. Pregnant women and school-age children are likely to rank among the high-priority groups as well.

Harvard School of Public Health investigators have examined documents on a few hundred flu cases in Milwaukee. So far, they have learned that early use of the anti-viral medication Tamiflu appears effective in stopping the flu from spreading through households.

Paul A. Biedrzycki, Milwaukee's director of disease control and environmental health, said the Harvard team has examined state communicable disease reporting forms for 200 to 300 swine flu cases, looking at such factors as age, gender, underlying medical conditions, use of anti-viral medications and geographical location within the city. He said this information could help officials to devise a vaccination strategy, so that "if there are limited supplies of vaccines, we know where they might be best targeted."

The Milwaukee flu data may also help officials determine whether anti-virals will help stop transmission of the virus not only in households but in other settings, including schools.

Biedrzycki said the swine flu could change while it is in the Southern Hemisphere or later on.

"I think we'll see changes in the fall, but also farther down the road," he said. "We need to be prepared for many iterations of this virus."

He said health investigators also will want to determine if there are so-called "super spreaders" who can infect many people.

The Centers for Disease Control and Prevention in Atlanta and other health organizations are watching swine flu closely in the Southern Hemisphere, where flu season began in early May and is expected to peak at the end of August. They worry that the virus may be altered during its run through the Southern Hemisphere, possibly becoming more virulent, developing a resistance to Tamiflu or changing the speed and method of transmission (for example spreading through fecal matter).

Joe Quimby, a senior press officer at the CDC, said it has had staff on the ground in different countries in the Southern Hemisphere watching what has been happening with swine flu virus.

So far, Quimby said, "No changes have been identified in the genetic makeup of the virus. What we've seen thus far is that it's brisk in the Southern Hemisphere, it's very active and it is the predominant strain."

If H1N1 returns to the Northern Hemisphere as the predominant strain, that could alter significantly the nation's flu-fighting strategy.

Ohl at Wake Forest explained that flu vaccines usually are prepared a year in advance and have three components. That's because there are usually two or three different types of flu circulating at the same time. But the presence of H1N1 in the mix raises questions.

"Will there be four viruses circulating or will it take the place of one of the viruses?" Ohl wondered. "Or will it just take over and push the others out of the way?"

"What it looks like so far in the Southern Hemisphere is that the novel pandemic swine flu has basically taken over and is by far the predominant strain."

If swine flu does become the predominant strain during our flu season, Ohl said, "our seasonal flu vaccine won't be as useful, and it will be much more important to get H1N1 vaccine."

The first human trials of [swine flu](#) vaccine recently got under way this week in Australia. The trials are to make sure the vaccine is safe and effective. Ohl said the trial process takes a few months, meaning that a vaccine could be ready by October or November.

"It looks like it will be a just-in-time scenario," Ohl said.

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Citation: Swine flu researchers put Milwaukee under microscope (2009, July 28) retrieved 25 April 2024 from

<https://medicalxpress.com/news/2009-07-swine-flu-milwaukee-microscope.html>

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