GlobalResearch
Center for Research on Globalization

What are the Origins of Swine Flu? Is the H1N1 Virus Endemic in Canada's Hog Farms?

The Case of British Columbia

By Alex Roslin
Global Research, July 22, 2009
straight.com 16 July 2009

Region: Canada
Theme: Science and Medicine
In-depth Report: THE H1N1 SWINE FLU PANDEMIC

Remember when they called it "swine flu"? The first pandemic flu in 41 years was quickly renamed "H1N1" in its early days after the pig industry, in damage-control mode, proclaimed loudly that people couldn't get sick from eating pork. And they said that it looked like the flu was spreading worldwide from person to person—not from pigs to people.

More than two months after the initial outbreak, it's still not clear how the flu started. The most accepted explanation is that a farm worker at a massive swine operation in Mexico got the virus from a pig and carried it into the wider population, where it spread without any more involvement from pigs.

But a closer look at the data on H1N1 cases in B.C. and the rest of Canada suggests the pandemic has a much closer relationship with pig farming than suspected. That relationship is especially striking in the most serious cases of the flu that have caused hospitalization and death.

The Fraser Health Authority, the district with the largest number of pigs in the province—and one of the most intensively farmed areas in Canada—has a 39-percent-higher rate of confirmed H1N1 cases per capita (9.7 per 100,000 people) than the provincial average (7.0 per 100,000), according to data from the B.C. Centre for Disease Control as of July 6. B.C.'s first confirmed death from H1N1 flu occurred on July 13 in the region.

The rate is even higher in the Northern Health Authority, which has the highest ratio of pigs to people in the province. The northern region has a 48-percent-higher per capita H1N1 rate (10.3 per 100,000) than the B.C. average.

The data shows a near-perfect 93-percent correlation between the number of pigs in a health region and the number of confirmed H1N1 cases there. (Correlation measures the strength of the relationship between two groups of data. A correlation of 70 percent or higher is generally considered to be strong.)

Density of pigs also seems to have a relationship with H1N1 rates—especially when it comes to the most recent flu cases. There is a 95-percent correlation between new cases of H1N1 confirmed during the week of June 29 and the number of pigs per farm in a particular region.

The same high correlations exist Canada-wide, according to Statistics Canada figures on pig

farms and an analysis of data on confirmed H1N1 cases from the Public Health Agency of Canada as of July 8. The data shows that the flu has been more severe in areas with intensive, large-scale hog production.

The total number of confirmed H1N1 cases in each province has a 99-percent correlation with the number of pig farms in that province.

In Quebec, the province with the highest number of pigs—4.3 million—residents were twice as likely to be hospitalized when they acquired H1N1 as the Canadian average. Quebec's death rate from H1N1 per capita has been 60 percent higher than the national average.

The flu outbreak has been even more severe in Manitoba, which has 2.4 pigs per person, more than any other province. There, the number of H1N1 hospitalizations per capita is triple the national average. The rate of H1N1 deaths per capita in Manitoba has been more than 3.7 times higher than the Canadian average.

The high correlations surprised even long-time critics of intensive, large-scale farming. "Wow, that's astounding," said Peter Fricker, projects and communications director for the Vancouver Humane Society.

"If there is a possible link between pig farms and susceptibility to disease, public-health authorities should definitely be investigating. If the correlations are correct, the whole issue of factory farming has to be looked at," he said in a phone interview.

"Wow, really. I don't think anybody's looked at this before," said Bob Martin, who headed the Pew Commission on Industrial Farm Animal Production, which released a major study last year that said workers in large farms and their neighbours have high rates of asthma and other respiratory illnesses due to manure runoff and emissions like ammonia and fine-particle pollution.

Martin, speaking from Washington, D.C., said some people living near pig farms could be more susceptible to H1N1 and to more severe reactions because of such respiratory ailments.

As of mid-June, 40 percent of the people who had died of H1N1 in the U.S. had had an additional medical condition like asthma, diabetes, a compromised immune system, or heart disease, according to the U.S. Centers for Disease Control.

Dr. David Patrick, director of epidemiology at the B.C. Centre for Disease Control, said the data could mean people living in hog-producing regions have a higher predisposition to catching H1N1. But he cautioned that there could be other, unknown explanations for the high correlations, too.

"The fact that particulates can predispose people to asthma is clear. If particulates are an issue, we have to gradually improve our environment," he said.

"If we have issues of predisposition [to catching H1N1], that's a question for sober inquiry by people in environmental health."

Until now, he said, public-health officials have believed H1N1 spreads randomly between people or may cluster in areas with dense human populations.

“Probably the most important message is if people with flu symptoms have asthma or chronic lung disease or anything that affects their immune system, see a doctor right away because antivirals can help avoid hospitalization,” he said.

The B.C. Pork Producers Association didn’t return a call for comment.

In the province’s agricultural heartland, the Fraser Valley, H1N1 seems to be going strong instead of dying off after the end of the usual flu season, as initially predicted. So far, the vast majority of incidents have been mild, but a flurry of 22 new H1N1 cases there was confirmed during the week of June 29. That number was the highest in any region of the province and almost twice as many per capita as the provincial average.

The high numbers coincide with a trend of relatively high incidence of recent H1N1 cases in some of the biggest hog-producing provinces. During the week after July 3, Manitoba saw the highest rate of new confirmed H1N1 cases per capita in Canada (8.4 per 100,000)—5.6 times more than the Canadian average (1.5 per 100,000).

The location of new flu cases also seems to have a close relationship with especially high concentrations of pig farming. There is an 80-percent correlation between the number of new cases in the seven days after July 3 and a province’s ratio of pigs to people. In other words, the more pigs there are per person, the higher the rate of the flu.

And no region of Canada has a higher density of farm animals by weight than the Fraser Valley, according to Hans Schreier, a soil scientist and professor emeritus at the University of British Columbia who has studied agricultural pollution in the Valley.

“We’re generating so much manure in these operations, it winds up in the soil and water,” he said in a phone interview.

Thanks in large part to massive amounts of farm waste pouring into the Fraser River watershed, the Georgia Basin is “perhaps the most threatened area in the country” for coastal eutrophication—a process that stimulates algae blooms and chokes marine life—according to a study Schreier coauthored in 2006 in the journal *Biogeochemistry*. The study said farm-waste discharge is poorly regulated across Canada.

An Agriculture Canada report in 2002 found factory pig farms were causing health and pollution risks to farm workers and the local community. “In B.C.’s Fraser Valley, this chemical soup [from farm emissions] is so thick it causes a visible haze and can make up 70 per cent of the airborne particles in summer,” said the report, which was quoted in a 2002 *Ottawa Citizen* story and was obtained under an access-to-information request.

And of all the farm animals in the region, pigs are by far the single biggest source of smog-causing fine-particle pollution, contributing 64 percent of the total fine-particulate matter from all farm-animal sources in the Fraser Valley Regional District, according to a 2004 study done for the district and Environment Canada.

That study noted that while air-quality improvement in the region had focused on reducing emissions from vehicles and industry, “emissions from agricultural operations have been relatively untouched.”

Meanwhile, levels of nitrogen—another big emission from farms—in ground water in the Central Fraser have been above the allowable limit for drinking water since 1981, according

to a 1997 UBC study published in the journal *Environmental Management*.

George Peary, the mayor of Abbotsford, shares his community with the highest number of pigs of any agricultural district in the province—75,570, according to the 2006 census. He acknowledged that manure from pig farms has seeped into ground water in some areas and made some well water undrinkable, but he defended farming practices. “I wouldn’t tie it [H1N1] to agricultural operations,” he said in a phone interview.

“If there were an issue, the public-health people would keep me informed….There would be all sorts of bells and whistles going off.”

A top health official also dismissed the higher H1N1 rates in his region and said they’re not worthy of further investigation or action. “It just doesn’t matter. It spreads from person to person….We’re not looking at it from that perspective,” said Dr. Roland Guasparini, chief medical health officer with the Fraser Health Authority.

In recent years, the B.C. government has encouraged hog producers to spread far north to the fertile Peace River region, where there’s more available farmland. The policy has helped turn Peace River into the fastest-growing hog-producing region in the entire country, with a threefold expansion in pig numbers between 2001 and 2006. The region is now home to 24,000 pigs, more than double the human population of Dawson Creek, the region’s administrative centre.

And it just so happens that the Northern Health Authority, which includes the Peace River area, has the highest ratio of pigs to people in the province—and the highest rate of confirmed H1N1 flu cases per capita.

Just across the nearby Alberta border, Denis Sauvageau has all kinds of experience with pig farms moving in next door. He is a fourth-generation farmer in a tiny community called Falher.

On April 28, Canada’s first death related to H1N1 occurred at the High Prairie Health Complex, a 50-minute drive east from Sauvageau’s house. The woman had had asthma-related difficulties, though there’s no evidence they were related to farming emissions.

Sauvageau still recalls vividly how hog producers first came to town in the late 1990s with a slick promotion campaign promising a miracle of rural revitalization. “They would create jobs, keep schools open, keep our children here,” he said.

Today, the smell from a complex of large pig farms five kilometres away is often so strong, Sauvageau can’t stay outside. “The stench is gut-wrenching. It makes you want to puke. You’re done for the night.”

Sauvageau and his neighbours started a protest group, the Peace River Environmental Society, six years ago to demand improvements in farm waste management practices. They held demonstrations. The group estimated that the 50,000 swine in nearby farms produce 20 million gallons of manure per year.

Especially worrisome, he said, are the health problems in nearby areas—high rates of asthma and other respiratory illnesses.

The group finally convinced a reluctant province to study air quality in the area. “Odours do

extend into surrounding areas at levels that may disrupt quality of life," a draft version of the province's report said in 2007. "The subgroup agreed by consensus that odour from CFOs [confined feeding operations] can have health effects."

(The report was never published because the committee writing it, dominated by government and industry officials, couldn't reach agreement on the document; Sauvageau's group posted the draft on its Web site.)

The report cited other studies that had found ammonia from farms can reach levels in the surrounding area that can cause eye and throat irritation, respiratory problems, haze, and fine-particle pollution. Farm emissions of hydrogen sulphide, an eye and respiratory-tract irritant and neurotoxin at high doses, can "cause significant quality-of-human-life concern at the local scale", according to a 2003 U.S. National Research Council study cited in the report.

The Alberta report also cited international research that found pig-farm workers have rates of chronic bronchitis that are 2.5 to 5 times higher than those in the wider population and 50- to 100-percent higher than those in dairy and poultry workers.

The possible connection between intensive hog operations and H1N1 means governments should tighten rules on farm waste, according to the humane society's Peter Fricker. "They're like small cities, except with no sewer system. You could understand why there would be a risk to human health."

The Pew Commission's Bob Martin agreed: "We have reached the point that we have to decentralize this production. It's really a critical kind of issue."

With 22 new flu cases confirmed just on July 13 and 14—two-thirds in the Fraser—maybe we'll be calling it "swine flu" again soon.

Articles by: **Alex Roslin**