

Prevalence of Swine Influenza H3N2 and H1N1 in Ontario Swine

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Background

The Ontario swine population has been endemically infected with swine influenza subtype H1N1 for decades. Over the past 5 years the Animal Health Laboratory at the University of Guelph has diagnosed individual cases of other subtypes of influenza but the prevalence of these subtypes has remained very low until recently. This spring outbreaks of swine influenza were reported from over 20 herds in Ontario. The cause of these outbreaks has been determined to be an emerging H3N2 subtype that most closely resembles a virus present in the USA since 1999. The subtype contains genetic material from poultry, swine and human influenza viruses.

The outbreaks of clinical disease and the apparent rapid spread occurred in late spring and early summer. Because H3N2 is new, there is no background immunity in Ontario pig herds and significant disease outbreaks have been observed with pigs showing signs of fever, coughing, and reduced appetite. Influenza can contribute to the respiratory disease complex and trigger outbreaks of other disease conditions such as PMWS. The emergence of new subtypes of influenza and the rapid spread throughout the swine population must be monitored from a public health standpoint because of the possibility of reassortment and antigenic drift. At present there is only anecdotal evidence that the new subtype of influenza virus has spread beyond the twenty or so cases confirmed by the Animal Health Laboratory. The true prevalence and the pattern of spread are unknown.

Objective

The purpose of this study is to determine the prevalence of swine influenza subtype H3N2 and H1N1 in the pig population of Ontario.

Methods

We revisited 50 herds from the “sentinel herd project” in the fall of 2005 and collected 20 blood samples from late stage finisher pigs. We also retrieved 20 samples per farm from our freezer – samples that had been obtained from the same herds in 2004. The blood samples were submitted to the Animal Health Laboratory for testing. An ELISA test for H1N1 and for H3N2 Swine Influenza virus was performed.

Preliminary Results

The presence of antibodies to swine influenza (indicating previous exposure to the virus) was evaluated in the blood of 20 finisher pigs per farm for 2004 and 2005. To date we have the results of 36 herds. For H1N1 (the old strain) 21 out of 36 herds (58%) were positive in the Fall of 2005 compared to 38% of these same herds testing positive in 2004. For H3N2, the same prevalence (58% of herds positive) was reported for samples taken in 2005, but only 8% of these

herds were positive in 2004. Two herds with negative serological results for H3N2 in the fall of 2005 have since reported an outbreak of disease and confirmation of H3N2. This study proves that the new strain of influenza has spread rapidly and has already become widespread in the Ontario pig population. In most cases outbreaks of coughing and clinical signs of moderate respiratory disease were reported in herds where the new strain occurred. In most cases the disease was not severe but in at least a few herds the influenza outbreak coincided with other disease problems. Influenza is regarded as a part of the respiratory disease complex and may be overlooked as a component in serious outbreaks of respiratory disease when PRRS, *Mycoplasma* and porcine circovirus are also present.

Interestingly 12 herds had pigs with antibodies to both viruses. There is a danger when two different influenza strains are continuously cycling in the same herd that the viruses will recombine to create a new strain such as H1N2. From a public health standpoint there does not appear to be a danger that humans will become seriously ill from these two strains of influenza and that they will spread from human to human if they do infect a farm worker. The new strain has been circulating in the American pig population for several years. It probably is prudent for all pig farm workers to be vaccinated for influenza to prevent spreading a new strain of human influenza to pigs and thus preventing the possibility of a human virus recombining with the pig viruses which appear to be very common in the Ontario pig population.

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