



# Pandemic Plan for the Church

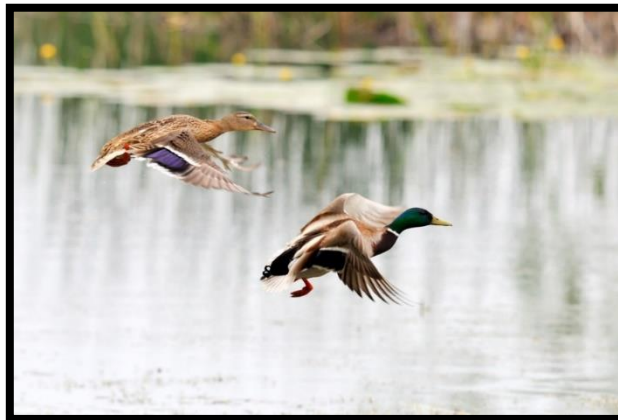
## *Ministering to the Community in a Time of Crisis*

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### Avian Influenza

Avian influenza, also known as the bird flu, naturally occurs in wild aquatic/migratory birds worldwide. This strain of influenza is caused by a Type A virus. Although it normally affects wild birds, domestic poultry can become infected along with other birds and animal species. In addition, humans have also succumbed to avian flu viruses.

All birds are believed to be susceptible to infection with avian influenza. Migratory waterfowl, such as wild ducks, are the natural reservoir of avian influenza viruses. However, these birds are also the most resistant to infection. Infection can cause a wide scope of symptoms in birds, these ranging from mild illness to a highly contagious and rapidly fatal disease resulting in severe epidemics. Domestic poultry such as chickens and turkeys are easily susceptible to avian influenza.



Migratory Waterfowl  
aabeele/Shutterstock<sup>1</sup>

Avian influenza A viruses are classified into two categories *low pathogenic avian influenza* (LPAI), and *highly pathogenic avian influenza* (HPAI). These refer to their ability to cause severe illness. LPAI may cause no symptoms or just a mild illness, and sometimes it may not even be detected. However, infection with HPAI can cause a rapid onset of disease that affects multiple internal organs that leads to severe illness and rapid death. HPAI can have a mortality that can approach 100%. The differences are due to genetic and antigenic differences between the influenza A virus subtypes. These differences also determine if a virus can infect only birds, or if they can infect birds and people.

Migratory waterfowl coming in direct or indirect contact with domestic birds is believed to be the cause of many epidemics. Live bird markets have also played a role in the spread of avian influenza. Infection is spread by birds through the virus in their saliva, nasal secretions, and feces. When surfaces such as dirt and cages are contaminated by wild water fowl, domestic

birds can become infected through contact with these surfaces. Once infected, the virus spreads quickly through the domesticated flock and will quickly sicken and kill them.

Currently the subtype avian influenzas H5N1 and H7N9 have caused serious infections in people, while the H3N2, H5N2, and H5N7 have only caused illness in birds. The majority of human cases with these infections have been associated with direct or indirect contact with infected live or dead poultry. At present there is no evidence that the disease can be spread to people through properly cooked food, or human-to-human contact. The fatality rate of these avian influenzas in people is much higher compared to that of seasonal influenza infections.

## **Avian Influenza and Migratory Birds**

Wild birds are the host for the Avian flu. The virus resides in their intestines, but the birds exhibit a natural resistance to infection and are usually asymptomatic or only become mildly sick. This is the case especially with the H7N9 influenza. The concern is that many of these wild host birds are migratory and travel across international borders. During migrations some birds can cover thousands of miles during their travels and cross borders of two or more countries.

Studying the routes birds take, health officials are developing databases to determine the flyways and patterns of these migratory birds. Noting also where species overlap while traveling will enable them to follow the spread of the virus and possibly predict where the next outbreak might occur. Many countries with humans, poultry, and wild birds killed by H5N1 fall along the migratory routes of these infected birds.

### **Qinghai Lake, China**

Before 1996, HPAI viruses were largely confined to Southeast Asia. In 2005 an outbreak of H5N1 appeared in Qinghai Lake, China. Qinghai Lake is China's largest inland expanse of salt water, and is known for its high diversity of migratory birds. Every summer, more than 150,000 migratory birds pass through this region, which sits within the eastern portion of the Central Asian flyway, a migration route which extends from India to Russia. In April 2005, 6,500 birds died on the shores of Qinghai Lake.

From 2003 through 2009, the Qinghai-Tibet Plateau experienced 16 confirmed outbreaks of the virus in wild and domestic birds. Bird flu that spread beyond Asia and into Europe and Africa was later found to have genetically originated in the Qinghai Lake area. A study also uncovered a migratory link between Qinghai Lake and Mongolia, further suggesting that Qinghai may be a pivotal point of H5N1 transmission.

It is believed that the epicenters of both the Asian influenza pandemic of 1957 and the Hong Kong influenza pandemic of 1968 were in Southeast Asia. The H5N1 was first detected in Guangdong Province, China, in 1996, when it killed some geese. This outbreak did not receive much attention until it spread through live-poultry markets in Hong Kong. In May 1997 it spread to humans, killing 6 of the 18 people infected. From 1997 to May 2005, H5N1 viruses were largely confined to Southeast Asia, but after they infected wild birds in Qinghai Lake, China, they rapidly spread westward.

## **Migratory Flyways**

There is a crossroad of two international flyways. One is on the Asian side and the other on the North American side. Alaska is one of the forefronts where the Avian flu was likely to arrive in the United States because of its position. The U.S. Fish and Wildlife Service watch for birds as soon as they arrive from Asia during spring migration. They look to identify infected birds that may be carrying the virus.

U.S. satellites track infected flocks that may migrate from Asia and head north to Siberia and Alaska. In early 2015 the H5N1 reached North America by this crossroad. This occurred by infected birds mixing with other fowl in nesting areas. As these infected birds mingled with flocks from the North American flyways, the virus spread into Canada and the U.S. As this virus spreads through the avian population, it is speculated that there is no populated area in the world that will not be affected.

## **Avian Influenza in North America**

In January 2015, a report by The World Health Organization stated that the H5N1 virus was found in a wild green-winged teal in Whatcom County in Washington State. It was determined that this strain resulted from reassortment between a Eurasian virus and North American avian influenza virus.

The following month Canada reported an outbreak of the highly pathogenic bird flu virus H5N1 in a backyard poultry flock in the province of British Columbia. It was stressed that this particular strain of H5N1 could infect humans; fortunately, it had not yet been found in commercial poultry flocks.

Once the virus reached North America, it began to mix with North American fowl and mutated into new viruses which are now being found in poultry in the United States. The three strains that have been discovered so far are H5N1, H5N2, and H5N8. The H part, which is the highly pathogenic portion, originated in Asia. The N part, the low pathogenic portion, is due to the mixing with American birds. The H5N2 and H5N8 are of mixed origin strains. All of these strains are highly pathogenic.

Idaho officials confirmed the avian flu was found in backyard chickens in the southwest part of the state. Washington State quarantined poultry and eggs in areas where the virus was detected in chickens, geese and ducks. The highly pathogenic H5N2 strain of avian flu was first found in Pacific Northwest states in December 2014, when U.S. officials confirmed the existence of that strain.

Although the H5N2 virus is fatal for domestic birds, it does not appear to affect wild birds such as ducks, which carry and spread it through their feces or other means. There have been no human illnesses associated with this H5N2 strain.

Beginning in March 2015, a virulent strain of avian flu H5N2 killed turkeys in Minnesota, Missouri, Arkansas, and Michigan. Molecular testing has found that this strain is

nearly identical to viruses isolated in migratory ducks. This supports the conclusion that the virus is being spread by waterfowl along a migratory route that stretches from Minnesota to the Gulf of Mexico. Scientists are concerned that if the virus becomes established in the migratory and breeding grounds in Alaska and Northern Canada, it will increase the chances that the virus can spread to the south with each migratory season.



Commercial Poultry Farm  
Sergey Bogkanov/Shutterstock.com<sup>ii</sup>

The virus can be transmitted to poultry from ducks through droppings that land on farms or when birds interact, among other ways. To date, the virus has wiped out flocks and led farmers nationwide to destroy nearly forty-eight million chickens and turkeys across several states.

## **Avian Influenza A Virus Infections in Humans**

Although avian influenza A viruses usually do not infect humans, rare cases of human infection have been reported. Most human infections have occurred following direct or close contact with infected poultry. Avian influenza is present in droppings, respiratory secretions, and blood of infected birds. In adults, most infections have occurred among those who have removed feathers or slaughtered infected poultry. Children can be infected by playing around sick or dying poultry. Illness in humans has ranged from mild to severe.

Feces of infected birds contain the bird flu virus. Bird droppings can contaminate feed, equipment, vehicles, shoes, clothing, soil, dust and water. The feet and bodies of other farm animals can also carry the H5N1 virus. Humans can become infected and ill with avian influenza after coming into contact with infected birds and by doing the following:

- Touching infected birds including de-feathering

- Touching secretions from infected birds (saliva or fluids from infected birds)
- Being in contact with the feces of infected birds
- Inhaling dried feces dust from infected birds
- Slaughtering or butchering infected poultry
- Preparing poultry for cooking, if the bird was infected.
- Visiting markets where live birds are sold. If the birds are infected, those who handle them have a risk of becoming ill

WHO has determined that you cannot become infected if you eat cooked poultry. They instruct that poultry should be cooked to at least an internal temperature of 165 F (74 C). According to experts, humans cannot become infected by eating eggs. Even so, the US Food and Drug Administration says eggs should be cooked until both the white and yolk are firm.

The spread of avian influenza A viruses from one ill person to another is rare and has been limited, inefficient and not sustained. However, because avian influenza A viruses have the potential to mutate and gain the ability to spread easily between people, monitoring for human infection and person-to-person transmission is extremely important for public health.

It is possible that the only cases reported are those in the most severely ill people; the very young or the very old. It is suspected that the extent of the spread of H5N1 has not fully been determined.

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<sup>i</sup> aabeele/Shutterstock.com, <http://www.shutterstock.com/pic-30602869.html>.

<sup>ii</sup> Sergey Bogkanov/Shutterstock.com, <http://www.shutterstock.com/pic-246455866.html>.