

# The FOX FLU Pandemic: A Public Sector Risk Management Case Study

Kevin Quigley, Dalhousie University\*\*

Jared Abbott

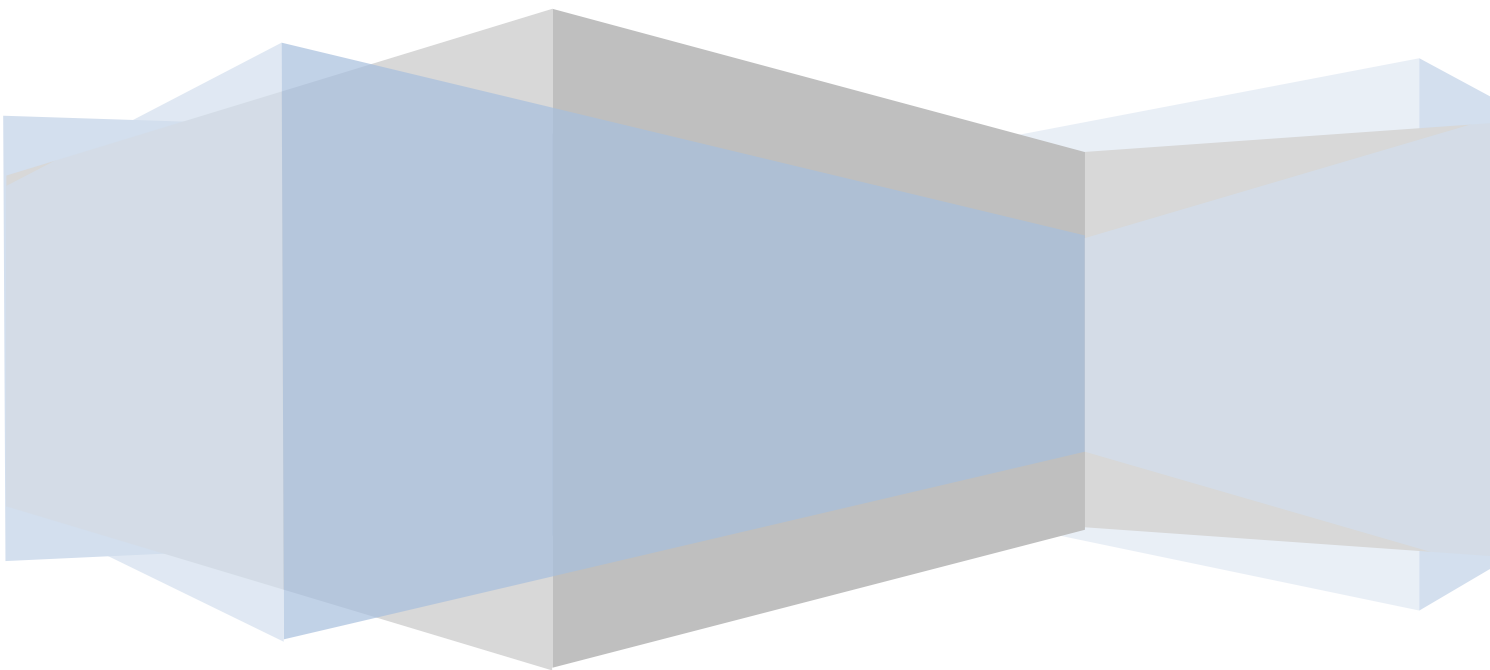
Heather Parsons

Emily Pond

Alex Szumilas

Rachael Weir

\*\* corresponding author



**Note to the Readers:**

This case study was prepared for *The Foundations of Risk*, a course which was offered at the Canada School of Public Service in the winter of 2011. The Foundations of Risk was created by Calvin Burns (University of Strathclyde, UK), John Quigley (University of Strathclyde, UK) and Kevin Quigley (Dalhousie University, Canada).

The development of the case study was led by Kevin Quigley. He was assisted by five research assistants identified below. The case should not be cited without his permission.

The information in this case study was collected almost entirely from one year's worth of newspaper articles in *The Globe and Mail*, *The New York Times*, *The Daily Telegraph* and *The Australian* on the subject of the H1N1 pandemic that occurred in 2009. Academic papers and audits were also consulted. Expert opinion was solicited from Dr. Donald Pond who specializes in the area of infectious diseases.

The purpose of the case study is to explore risk issues in the round. H1N1 is an excellent case because it allows us to examine a potentially serious risk that includes: inconclusive science; an aspect of learn (and adapt)-as-you-go; intense media coverage; dynamic public opinion; interest groups; and multi-jurisdictional governance. The case focuses largely on the Canadian experience, however, we have provided additional information in the appendices on the experiences in Australia, the UK and the US, respectively. We provided this additional information in order to place the Canadian experience in international and comparative context.

This case is intended to stimulate thought and discussion on the subject of risk. It should not be considered an exhaustive account of the H1N1 pandemic. For that reason we have renamed the pandemic for this case study the "FOX FLU".

## About the Authors of this Case Study

Kevin Quigley is an Associate Professor and the Acting Director at the School of Public Administration at Dalhousie University and was the principal investigator for this research project.

Jared Abbott was the lead researcher for the Canadian case study.

Heather Parsons was the lead researcher for the Australian case study.

Alexander Szumilas was the lead researcher for the American case study.

Rachael Weir was the lead researcher for the United Kingdom case study.

Emily Pond conducted additional research and editing.

These research assistants—Jared, Heather, Alex, Rachael and Emily—are all recent graduates of the MPA program at Dalhousie University.

The authors takes responsibility for any errors and omissions found in this case.

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Contact Details:

Kevin Quigley (kevin.quigley@dal.ca)  
School of Public Administration  
Dalhousie University  
6100 University Avenue  
PO Box 5100  
Halifax, Nova Scotia  
Canada B3H 4R2

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## Summary

FOX FLU was an influenza pandemic that occurred primarily in 2009. It originated in Veracruz, Mexico, in the spring and spread to other countries, occurring in two waves: spring/summer and again in the fall.

Health officials were particularly concerned because the disease affected young people in greater numbers than did the seasonal flu; the median age of FOX FLU patients was 53, whereas the median age of those with seasonal flu was 83.

FOX FLU first came to Canada in April 2009 when Canadian vacationers returned from Mexico with the disease. Within months every province was reporting FOX FLU cases. In all, 426 people died. (Approximately 8,000 died in 2007-08 due to seasonal flu and pneumonia.) No one will ever know how many people actually contracted the disease because at the height of the pandemic many doctors stopped testing people suspected of having FOX FLU. In total, 8,507 people were hospitalized for influenza (both FOX FLU and seasonal), compared to 2,614 in typical flu seasons.

Media coverage started at the outset of the disease in Mexico and continued throughout. There were 339 articles about the disease in *The Globe and Mail* over a 365-day period. The ratio of alarming headlines to reassuring ones was approximately 5:2. Governments at all levels and across jurisdictions shared information and, in many cases, coordinated responses to the threat. (Appendices 2 to 5 have comparative data from the US, UK and Australia.)

One pharmaceutical company provided Canada's vaccine supply. From September to mid-October, polls suggested that Canadians were somewhat apathetic towards the threat and getting vaccinated. A production delay in the vaccine, coupled with two high-profile deaths of young people in Ontario, however, generated an increase in demand just as there was a decrease in supply. Health officials restricted access to high-risk groups: children under age five; pregnant women; those with chronic conditions, such as asthma; and selected health care workers. Long line-ups resulted for which health officials seemed unprepared. Once there was adequate supply, the program was opened to the entire public again. The percentage of the population that received the vaccine varied by region and age group, with those aged 20-24 least likely to be vaccinated.

## Who Was “at Risk”?

According to the World Health Organization (WHO), a disease epidemic occurs when there are more cases of that disease than normal. A pandemic is a worldwide epidemic of a disease. An influenza pandemic may occur when a new influenza virus appears against which the human population has no immunity. Pandemics can be either mild or severe in the illness and death they cause, and the severity can change over the course of that pandemic.

FOX FLU was first identified in a small village in Mexico in early 2009. It first occurred in Canada when four students from Nova Scotia and two men from British Columbia who had been vacationing in Mexico returned to Canada.

FOX FLU predominantly affected young people. In the early stages of the spread of the illness, the median age of patients was 18 years. During the second wave, the rates of laboratory-confirmed cases were highest in children younger than nine years, and particularly younger than one year. Ultimately, the median age of FOX FLU patients was 53, which was considerably lower than for seasonal influenza, which was 83.

FOX FLU affected younger people partly because of a condition called *cytokine storm*. When a person is infected by a virus such as FOX FLU, the immune system releases cytokines-proteins that help recruit cells to destroy the virus. Side effects include fever, chills and muscle aches that for the majority of people are transient, however, some the immune response becomes very active, the cytokine storm raging even after the virus has been cleared. These storms happen primarily in younger people and an American study found that children 5-18 were the most susceptible to FOX FLU.

The lowest rates of infections were in adults over 65; however, when they developed the illness, it tended to be serious. As the pandemic progressed, doctors became less concerned with testing those who were suspected of having FOX FLU and as a result the total number infected is unknown.

FOX FLU differs from seasonal influenza in that respiratory infections occur more often with the former. This was the outcome for many with FOX FLU-related complications. Indeed, a much higher percentage of FOX FLU patients had to be hospitalized compared to those with seasonal influenza.

Ultimately, health officials identified the following groups as most at-risk for FOX FLU: children under five; pregnant women; those with chronic conditions, such as asthma, heart or kidney disease, chronic lung disease, liver disease, suppressed immune systems, neurological disorders, blood disorders and severe obesity. It was also thought, about half-way through the pandemic (October), that FOX FLU was impacting women more than men.

FOX FLU also occurred frequently and more seriously among Aboriginal populations. While a complete examination of this issue is beyond the scope of this case study, there are two theories for why this is so: poor living conditions on many reserves and genetic considerations. With respect to the first theory, overcrowding, limited access to a balanced diet and compromised sanitation affect many Aboriginal communities, decreasing the overall health of the population, and are used to explain increased rates of FOX FLU. With respect to the second theory, remote communities are considered particularly vulnerable because residents may not have been exposed to other flus, and thus may not have developed any cross-immunities which would help them fight FOX FLU.

Appendix 1 features data (cases/hospitalization/intensive care/death rates) from a provincial example.

## The Vaccine: Selected Controversies

The vaccine came in two forms. The first was an adjuvanted vaccine, created by the addition of aluminum. The aluminum increased the antigen load in the vaccine which produced more anti-bodies against the influenza virus and therefore increased its effectiveness. The adjuvanted vaccine was meant for the general population, and a non-adjuvanted vaccine was available for pregnant women.

The plan for the administration of the vaccine changed over time. In October 2009 it was felt that FOX FLU was not as wide a threat as health officials had previously thought; as a result, health officials decided to delay vaccination to give more time for trials and for production of the seasonal flu vaccine. There was also disagreement in the medical research community over the effectiveness of seasonal flu vaccine for fighting FOX FLU. An American study concluded that it provided some coverage; in contrast, a Canadian study found that people were *more* likely to contract FOX FLU if they had the seasonal flu vaccines. (This resulted in many provinces altering their seasonal influenza vaccination plans, some temporarily discontinuing them.)

The optimal dosage of vaccine was also unclear. At the beginning, health officials advised that everyone should receive two doses, so 50 million doses were ordered. This recommendation changed to two doses for children and one for everyone else; finally, health officials concluded one dose was adequate for everyone. This decision was informed by evidence obtained from clinical trials of the vaccine.

The supply of vaccine was delayed for a variety of reasons, the two main ones being the extra testing required for the adjuvants and manufacturing difficulties.

Some people “jumped” the vaccination queue. They included professional hockey players and hospital board members.

Among those considered not to be in the priority group were older children and veterans, for example.

## Media Coverage

Between April 24, 2009, and April 25, 2010, there were 339 articles in *The Globe and Mail* that were principally about FOX FLU. This is much higher than the number of articles that appeared covering critical infrastructure failures and emergency management events. (See Appendix 2 for a comparison of media coverage of selected events.) At the outset, the number of articles per day was largely consistent, but at the end of October the number of articles increased significantly. This corresponded with the release of the vaccine and the deaths of two young people in Ontario.

### *Tone of the Headlines*

Alarming	156
Reassuring	64
Alarming and Reassuring	44
Neither Alarming nor Reassuring	72

If we consider the ratio of alarming to reassuring headlines (156:64, or 5:2), the ratio is marginally more alarming than for natural disasters, such as hurricanes, examined in recent media research. It is marginally less alarming than for industrial failures, such train accidents and bridge collapses.

## **The Public: Fluctuating Demand**

From September to mid-October 2009, demand for the vaccine was low; polls suggested considerable apathy. In November, there was a surge in demand just as there was a drop in supply. The surge in demand resulted from the deaths of two seemingly healthy young people in Ontario. Production problems caused a drop in supply, which created a “rush” for the vaccine and health officials resorted to administering the vaccine only to priority groups. Provinces had established temporary clinics in community centres to administer the vaccine. However, parents rushed “sick” children (who in most cases only had the seasonal flu) to clinics and hospitals, which in some cases hampered doctors’ abilities to provide services to those who actually had FOX FLU or were suffering from other illnesses.

In early December the supply increased and the vaccine was once again available to the general public. There were vaccination queues, but to a degree the apathy returned and the government was again trying to convince people to get the vaccine.

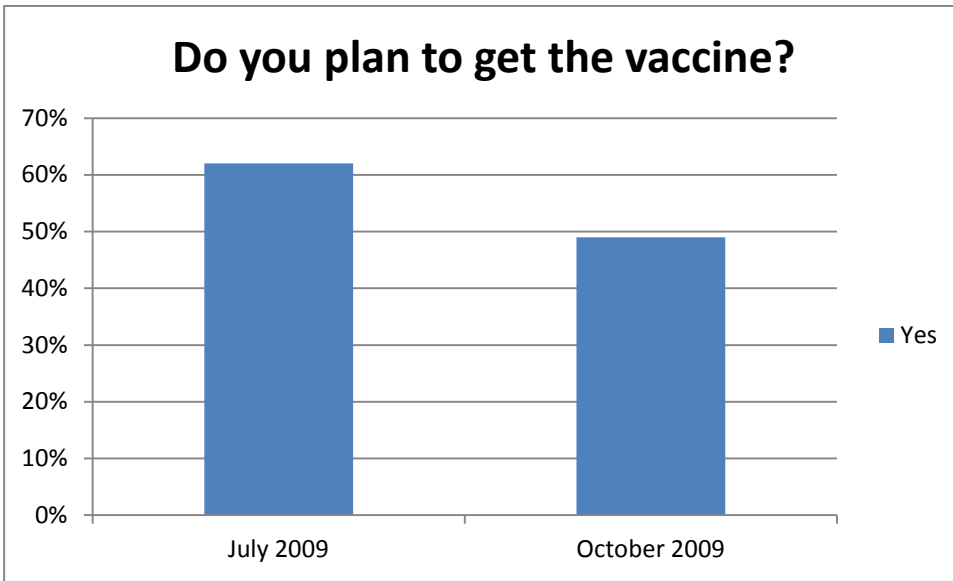
Considerable information was circulating, some of it inaccurate. There was concern expressed about the safety of the vaccine when it was first released, particularly regarding Guillain-Barré Syndrome, which had affected some who received vaccine during a 1970s outbreak of FOX FLU. (The Public Health Agency of Canada reported 26 cases of Guillain-Barré Syndrome in Canada following the FOX FLU vaccination campaign, which equals about one case for every million doses of vaccine distributed.)

There were also staged videos on the Internet suggesting that the vaccine could render one paralyzed.

Several rumours were circulating: that people could die from the vaccine; that health officials would run out of vaccine; that one could contract FOX FLU from eating pork; and there were conspiracy theorists who believed the vaccine was created to kill people.

Ultimately, the vaccine was deemed to be safe.

## Selected Polling Data



**On July 27, 2009, *The Globe and Mail* and CTV reported:**

62% of people said they were going to get the vaccine;

75% of men and 71% of women were not worried about catching FOX FLU;

30% of people polled felt that FOX FLU was a serious threat; and

45% stated that those who were willing to pay for the vaccine should be first in priority.

**Anxiety levels seemed to drop between the first and second wave. On October 26, 2009, *The Globe and Mail* and CTV reported:**

49% of people were going to get the vaccine. (In Quebec, 59% of people stated that they were not going to get the vaccine.)

59% of people polled thought that FOX FLU was no more worrisome than the seasonal flu.

64% of young people (18-34) said they would not get the vaccine. They were the least likely to get the vaccine.

56% of women said they would not get the vaccine whereas 47% of men gave the same answer.

78% of people believed that the media “had hyped up and exaggerated” the threat of FOX FLU.

60% of British Columbians opted not to receive the vaccine, which resulted in an over-production of 2.5 million doses (\$20 million).

## Selected Identifiable Groups

### *Industry*

Many profited from FOX FLU, including the sole supplier of the vaccine, other pharmaceutical companies, orange juice producers and drug stores. Companies that produced hand sanitizers, antiviral medications and other presumably preventive products all benefited from the FOX FLU. The World Health Organization was accused of colluding with pharmaceutical companies.

There were negative ramifications for pork producers, as some people believed FOX FLU could be contracted from pork. It is believed that restaurants also suffered.

### *Selected Community Views*

Two main issues involved Aboriginal communities in particular. First, the FOX FLU virus seemed to occur more frequently among Aboriginal populations compared with non-Aboriginal populations. For instance, at one point in the first wave, two-thirds of all Manitoba flu patients on respirators were Aboriginal. (This distinction was not as pronounced in the second wave).

Secondly, some Aboriginal leaders were frustrated by the government's handling of Aboriginal people's needs during the pandemic. They expressed concern that the appropriate medical equipment was not provided to Aboriginal communities and the vaccine program was rolled out too slowly.

In one incident, Health Canada was criticized for sending polyethylene bags (cadaver bags or "body bags") to First Nation communities in Northern Manitoba as part of a shipment of medical supplies that included hand sanitizers, masks and gloves. Initially the media reported that several reserves had received an over-supply of such products. Further investigation revealed, however, that in fact only one reserve received the over-shipment. Thirty-eight body bags were delivered to the nursing station at Wasagamack First Nation; all contained full post-mortem kits. In a symbolic protest, northern First Nations leaders returned bags to a Health Canada office in Winnipeg. Garden Hill First Nation Chief David Harper called the deliveries an insult.

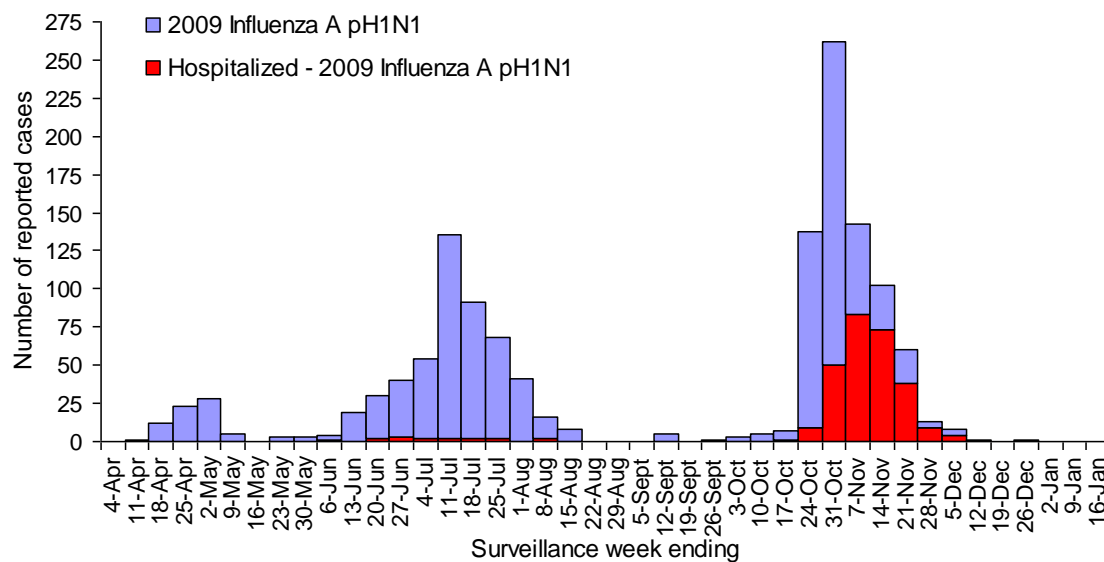
The Minister of Health directed health officials to investigate the issue. The investigation found that nursing stations were advised by senior officials to order supplies generously in preparation for a second wave of the H1N1 flu pandemic, but that there was no ill intention. As a result of the episode the government put in place a new influenza virus communication plan for Aboriginal communities.

The administration of the vaccine, as it applied to veterans and children, was at times criticized for being too slow.

## Appendix 1: Provincial Example (Population = 1 M)

**Table 1:** Scale of FOX FLU Pandemic

Wave	Lab Confirmed Cases	Hospitalization	Intensive Care	Death
Wave 1	582	14	6	1
Wave 2	752	277	42	6



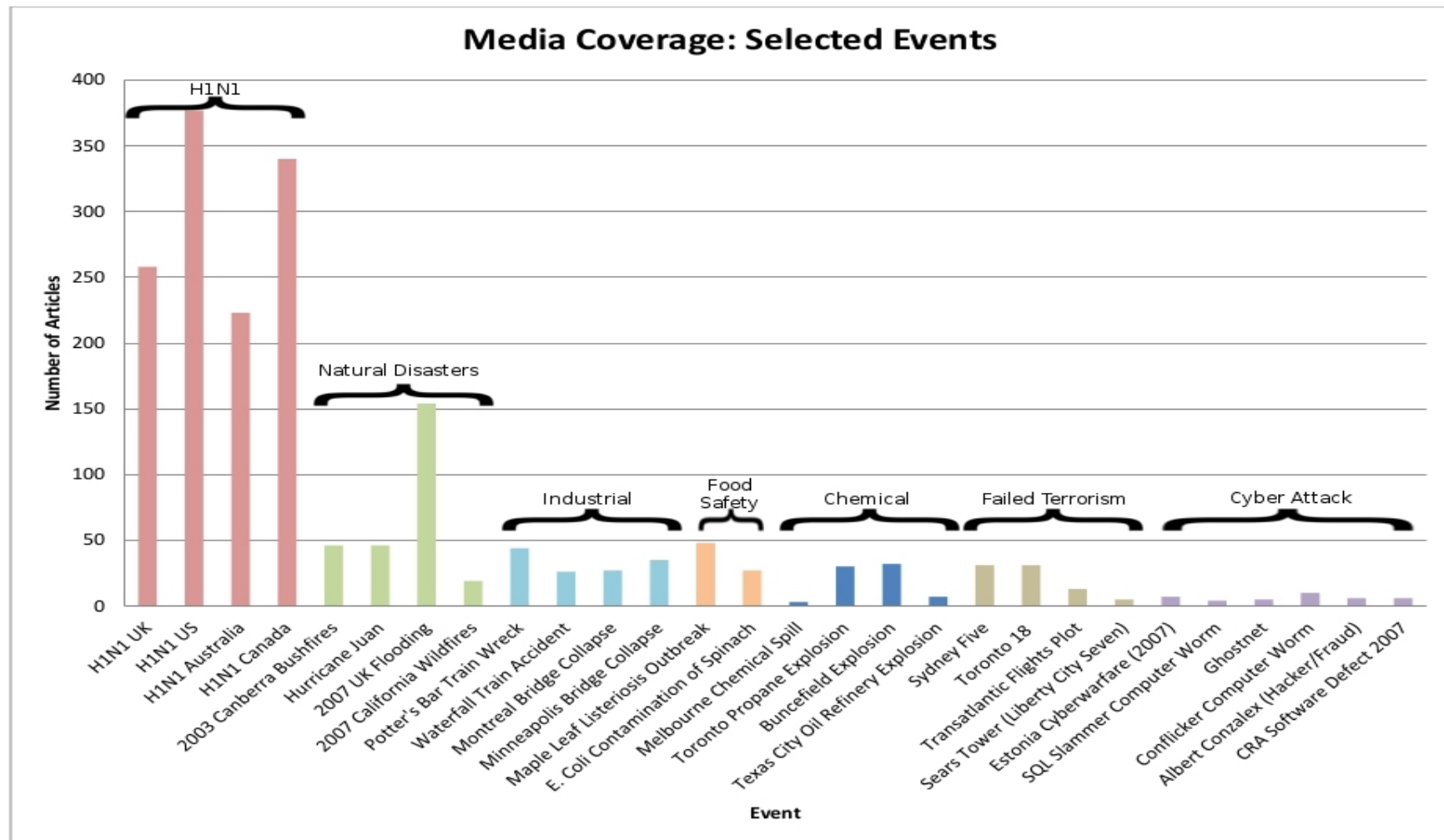
Source: Government of Nova Scotia. (2009). *Nova Scotia's Response to H1N1: Summary Report*. Retrieved March 27, 2012 from <http://www.gov.ns.ca/hpp/publications/H1N1-Summary-Report.pdf>

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## **Appendix 2: Media Coverage of Selected Critical Infrastructure / Emergency Management Events**

The figure below shows the number of articles on the selected event that appeared over a 365 day period following the start of the event. The number represents the total number of articles that appeared in one national newspaper from the country in which the event occurred, with the exception of the cyber events. Countries include Australia, Canada, the UK and the US. Events include natural disasters, industrial failures, cyber attacks, food contamination, failed terrorist plots and H1N1/Fox Flu. Sources - Australian events: *The Australian*; Canadian events: *The Globe and Mail*; UK events: *The Daily Telegraph*; and US events: *The New York Times*. The cyber events combine the coverage from *The Globe and Mail* and *The New York Times*. All events are post 9/11.

**Figure 1: Media Coverage**



## **Appendix 3: The 2009 FOX FLU Pandemic in the United Kingdom**

### **Background**

Similar to the Canadian case, FOX FLU first came to the United Kingdom (UK) in April 2009, when Scottish vacationers returned from Mexico with the disease. With the growth of international services at UK regional airports and London as a hub for international travel, the virus soon spread around the country. It created the most pressure on health care facilities in England. Like Canada, the UK has a universal health care program. Throughout the pandemic, 784,000 cases of influenza-like illness (ILI) related to FOX FLU were confirmed through clinical diagnosis in England alone. In all, 474 people died from FOX FLU in the UK, which is comparable to 428 deaths in the Canadian case. A higher number of patients were hospitalized in Canada: 8,200 compared to 5,376 in the UK.

The UK government responded to FOX FLU by implementing its nation-wide strategy for an influenza pandemic known as the *National Framework*, which it had been preparing since 2007. This strategy encompassed all four UK nations (England, Scotland, Wales and Northern Ireland) under a country-wide response. Due to uncertainty surrounding the magnitude of the outbreak, the government initially took a “containment” approach that attempted to slow the spread of the virus and create time to gather necessary scientific data. In July 2009, the UK government switched to a “treatment” approach, which included: provision of antivirals to anyone with FOX FLU symptoms; establishment of online and telephone assessment services for pandemic flu through the National Flu Pandemic Service in England; and development of a public vaccination program.

### **The Vaccine: Selected Controversies**

The UK government had established advanced purchase agreements for influenza vaccines with two pharmaceutical companies, which came into effect upon the WHO’s declaration of a phase six pandemic in June 2009. The government initially decided to procure enough vaccines to cover two doses for the entire UK population. When it was discovered that initial vaccine supplies would be limited, only those categorized as *at-risk* groups (e.g. current seasonal flu at-risk groups and pregnant women) would receive the vaccine when the program started in fall 2009.

In contrast to the Canadian case, the UK’s vaccination program was never extended to the general population due to limited supply. By the time at-risk populations had received the vaccine in October 2009 and the second phase of treatment was given to children under five in December 2009, the vaccination program was shut down due to the mild nature of the pandemic. In January 2010, the UK government entered into negotiations with its biggest vaccine provider to reduce the government’s vaccine order; a break-clause had not been established with the company before contracts were signed. The UK government was ultimately forced to purchase more doses of vaccine than it needed, which resulted in at least 31 million in unused stocks.

### **Public Opinion and Media Coverage**

258 articles about FOX FLU were published in *The Daily Telegraph*. Although this is a high number of articles in comparison to other UK disasters in recent history (see Figure 1), FOX FLU received less coverage in the UK than it did in Canada (339 articles). In relation to the tone of the coverage, 66.7% of the FOX FLU articles had alarming headlines, which is comparable to other UK events including those industrial failures and natural disasters identified in Figure 1. Previous research has shown that UK newspaper coverage tends to be more alarming than coverage in other countries. (See for example Quigley, 2008.) FOX FLU seems to be no exception. *The Daily Telegraph* headlines were

significantly more alarming than the tone of the headlines in *The Australian* (57%), *The Globe and Mail* (46.6%) and *The New York Times* (32.6%).

Furthermore, UK public opinion polls relating to FOX FLU indicated that the public was not overly concerned about the virus. For example, a survey of British travellers revealed that 22% of respondents were not worried about the FOX FLU outbreak and 40% were “mildly” concerned about contracting the virus. Perhaps somewhat ironically, there was an elevated fear associated with the safety of the vaccine. One poll indicated that 48% of pregnant women would not get the vaccine out of fears about its safety.

### **Performance Assessment**

The UK government’s response to FOX FLU consumed a significant amount of resources, particularly in the purchasing of pharmaceuticals (Hine, 2010, 155). UK citizens, nonetheless, seemed satisfied with the government’s approach. In a survey of 28,000 European Union (EU) citizens commissioned by the EU Commission in November 2009, 81% of the 1000 UK respondents indicated that they were satisfied with the preventative measures implemented by authorities in their country; this is significantly higher than the EU average of 65% satisfaction (GO, 2010, 39-40).

Similarly, media analysis from *The Daily Telegraph* revealed that only 16% of articles that assessed government performance in responding to the pandemic assessed it negatively whereas 30% of articles that assessed government performance in *The Globe and Mail* assessed it negatively. Canadian articles, however, were more likely to separate the performance of the health care sector from government: 35% of articles in *The Globe and Mail* assessed this sector specifically whereas only 8% did in *The Daily Telegraph*.

## **Appendix 4: The 2009 FOX FLU Pandemic in the United States of America**

### **Introduction**

FOX FLU was first identified in the US on April 15 2009 after biological samples obtained from Mexicans sick with a mysterious illness were passed along to American health authorities. A public health emergency was declared in the US on April 26 (expiring on June 23, 2009).<sup>1</sup> By June 19, all 50 states, the District of Columbia, Puerto Rico and the US Virgin Islands were reporting cases of FOX FLU. Approximately 12,500 Americans died from the disease in 2009-2010.<sup>2</sup>

This document provides a summary of the US government's response to FOX FLU, taking into account contextual factors that may have influenced the government's response. Generally, the response consisted of disseminating user-friendly and consistent information to encourage Americans to take up the state-provided vaccines and prevent panic.

### **Uninsured Americans and Prior Epidemics**

Declining financial incentives for pharmaceutical companies have limited the number of vaccine manufacturers in the United States. Given that approximately 46 million Americans (15%) did not have health care insurance during the pandemic, government intervention would be required for FOX FLU vaccines to be produced and available for all Americans.

The US FOX FLU response in 2009-2010 may have been influenced by the 1976 Fort Dix, New Jersey, FOX FLU response. In 1976, the US initiated a national immunization campaign that was later aborted due to poor implementation and because the disease did not spread to epidemic proportions as had been originally predicted. Severe Acquired Respiratory Syndrome and H5N1, which in themselves contributed to the creation of the US Pandemic Influenza Plan in 2005, also likely influenced the American response to FOX FLU in 2009-2010.

### **Public Polling and Media Impressions of FOX FLU in the US**

*The New York Times* published 378 articles on FOX FLU (compared to *The Globe and Mail's* 339, *The Daily Telegraph's* 258 and *The Australian's* 223). *The New York Times* had the most reassuring headlines of the four newspapers.

Government efforts to disseminate information to Americans through public service advertisements and social media appeared to be working during the pandemic: approximately two-thirds of Americans said that since they learned of FOX FLU they, or someone in their family, washed their hands or cleaned them with hand sanitizer more frequently than they did before the FOX FLU pandemic. Further, 55% of Americans polled stated that they had made preparations to stay home in the event that they or a family member got sick from FOX FLU. The sense of worry amongst the population fluctuated, however, as the number of Americans worried about FOX FLU dropped from 25% in early May 2009 to 8% in early June, before increasing to over 15% by late August .

### **Relevant Groups that May Have Influenced the US Response**

Groups such as the President's Council of Advisors on Science and Technology and the Advisory Committee on Immunization Practices (ACIP) consist of scientific, medical and industry experts and

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<sup>1</sup> WHO's declaration of "flu pandemic" lasted from June 11, 2009 –August 10, 2009.

<sup>2</sup> The Centers for Disease Control and Prevention determined that approximately 12,500 Americans died from FOX FLU by first approximating the number of Americans infected with FOX FLU during 2009-2010 and then applying mortality rates to these figures based on the ages of the infected people.

liaise regularly with the executive branch of government; a number of the recommendations put forward by these groups were put into effect by the Obama administration.

There were other groups, however, that also tried to influence government response. Certain groups lobbied government for instance, including anti-vaccinators and the pork lobby, the latter of which protested against calling the emerging pandemic “swine flu”. The WHO persuaded Western countries to contribute surplus vaccines to developing nations. The United States, for instance, committed 10% of all vaccines for this purpose.

Finally, pharmaceutical companies were crucial to the delivery of the vaccination program. Unlike Canada, the United States had as many as five pharmaceutical companies that were legally allowed to produce a FOX FLU vaccine. Ultimately, projections for vaccine production were overly optimistic and the first vaccines were not available to the public until October 5, 2009.

### **Gathering Data**

The Department of Health and Human Services conducted different surveillance and information-gathering activities depending on the phase of the unfolding pandemic. Some surveillance measures, however, were ongoing prior to FOX FLU and would continue to be put to use. The amount of information gathering was not infinitely large as it became “unsustainable” by May 2009 to report on all metrics expected by the Centers for Disease Control and Prevention (CDC). Information on the spread of FOX FLU was gathered by several organizations reporting to the CDC. When vaccinations began, the CDC collected reports from clinics, hospitals and doctors to determine whether adverse side-effects were occurring at higher rates than expected.

### **Setting Voluntary Standards**

Generally speaking, the US federal government’s standards were presented as recommendations that citizens could choose to accept or reject. Health and Human Services declared a state of emergency in April and renewed it in October 2009. President Obama’s subsequent presidential declaration of a state of emergency allowed for the Secretary of Health and Human Services (HHS) to issue waivers to hospitals so that they could enact their disaster operation plans if needed. As well, the Department of Homeland Security drafted a FOX FLU pandemic plan recommending private-sector organizations take particular voluntary actions such as giving additional sick leave to employees.

The CDC, with ACIP, determined the demographic groups first allowed to get the FOX FLU vaccine, given that supplies were initially limited. Borders, including those with Mexico, were not closed by US officials as doing so after the disease was in the US was deemed not to be of any benefit.

### **Modifying Americans’ Behaviours**

The CDC, HHS and other federal organizations contributed money to create public service announcements and inform the public of how they should behave during the FOX FLU pandemic. Specifically, social media outlets and websites were used, an appearance by Secretary of HHS Sebelius on Sesame Street was made and twice-weekly updates by President Obama were given regarding FOX FLU on how Americans should behave to minimize its spread (Lee 2009; McNeil 2010). Vaccines, available free from local clinics, were also provided. The aforementioned public-service announcements were, in part, an attempt to get Americans to get vaccinated.

At one point, the New York State Department of Health tried to make it mandatory for nurses to get a FOX FLU shot. After threats of litigation, however, this action was not pursued.

## **Appendix 5: The 2009 FOX FLU Pandemic in Australia**

### **Background**

Australia experienced only one wave of the FOX FLU pandemic. It began mid-May and lasted approximately 18 weeks ending in late September. Unlike the Northern hemisphere, this period also corresponded to Australia's regular influenza season, which created a potential preview for Northern countries of the combined impact of FOX FLU and regular influenza. Australia had 37,584 confirmed cases of FOX FLU and 191 deaths, which is lower than both the number of confirmed cases and deaths in Canada. It is impossible to determine how many people actually contracted the FOX FLU virus because in mid-June doctors ceased testing people suspected of infection.

At the onset of the FOX FLU pandemic the Australian government activated the 2008 *Australian Health Management Plan for Pandemic Influenza*. This plan introduced several measures to minimize the economic and social impact of the pandemic, including substantial government information gathering and dissemination efforts. Despite considerable promotion, the government's subsidized national vaccination program had low uptake. This is perhaps not surprising. In addition to facing the many challenges that other countries faced (e.g., citizen apathy), the vaccination program only started on September 30, 2009, after Australia's FOX FLU wave had subsided.

The Australian government's response involved more mandatory measures than Canada's. These measures included mandatory quarantines and widespread school closures. There were also severe penalties stated in law, including a ten year jail sentence for non-compliance with quarantine orders. Ultimately, these measures proved unnecessary as the flu was relatively mild.

### **Public Opinion of the FOX FLU Pandemic**

Australians regularly sought information on government websites but did not seem alarmed by the flu. Indeed, polls suggest apathy. For example, at the beginning of the flu period, only 21.4% of Australians believed their risk of catching FOX FLU was high to very high. As in Canada, Australians became less concerned as time passed: only 17% believed their risk was high to very high after a pandemic had been declared.

While the number of articles that appeared in the print media was high it was considerably lower than in other countries. Between April 25, 2009 and April 24, 2010, 223 articles about FOX FLU appeared in *The Australian* newspaper; this is fewer than the number of articles in *The New York Times* (377), *The Globe and Mail* (339) and *The Daily Telegraph* (258) over the same period.

Most of the articles were published during Australia's flu season: 24% appeared within 16 days of FOX FLU's onset in Mexico, and only 9% appeared during the last six months of the pandemic. The tone of the headlines was more alarming in *The Australian* than *The Globe and Mail* (57% vs. 46.6%) or *The New York Times* (32.6%), but less alarming than *The Daily Telegraph* (65%). In addition, the percentage of alarming headlines for articles on FOX FLU was higher than that of other emergency management events in Australia.

### **Selected Issues with the Australian Government's Response**

Like Canada, Australia had only one supplier of the FOX FLU vaccine. In contrast to the Canadian case, throughout the pandemic the responsibility for screening and treating patients fell predominantly to general practitioners who, as a result, were permitted to charge over and above Medicare's scheduled consultation fees during this period.

The Australian government's response experienced communication and coordination problems, which resulted in intense media coverage. Two incidents stand out in particular. The first occurred in May when, despite the official government message being that there was no reason for alarm or anxiety about FOX FLU, Queensland's Chief Health Officer nonetheless urged people to stockpile food to avoid "plague-ridden streets". This caused some alarm amongst Queensland residents. The second notable incident shows some inconsistency in quarantine practices. Despite some passengers and crew members on a cruise ship showing signs of FOX FLU, passengers were allowed to disembark in New South Wales. New passengers were also permitted to board this same ship, and thereby became exposed to FOX FLU. Later, when the ship stopped in Queensland, health officials decided to quarantine all passengers and crew. The higher incidence of FOX FLU in New South Wales has been attributed partly to this incident, along with the deterioration of inter-state relations among health agencies.

Media analyses suggest, however, that government performance was largely successful: 8% of articles assessed the Australian government's performance positively; this figure is only 7% in *The Globe and Mail's* coverage of the Canadian government and 4% in *The Daily Telegraph's* coverage of the UK government. (Only 49% of total articles assessed government performance and the most frequent assessment was neutral.) On balance, the health care sector also received favourable performance assessments.

Finally, as in Canada, FOX FLU was diagnosed more frequently among indigenous populations in Australia; these groups accounted for 18% of confirmed cases and 12% of deaths. The government received criticism for failing to develop a culturally appropriate FOX FLU prevention plan for remote indigenous communities. In one incident, an indigenous community hospital was criticized after health practitioners failed to diagnose a pregnant woman with FOX FLU. After being discharged, she collapsed due to the flu, which was reported to have resulted in her suffering a miscarriage. (Despite these claims in the media, in fact, specialists assert that it is not possible that the flu could have caused the miscarriage.)

## Appendix 6: Comparative Tables & Figures

**Table 2:** Public opinion at different points in time in Canada, Australia, United Kingdom and United States

	CANADA	AUSTRALIA	UNITED KINGDOM	UNITED STATES
<b>APRIL 2009</b>				-55% made preparations to stay home in case a relative got sick <sup>3</sup>
<b>MAY 2009</b>			-75% not concerned about the outbreak  -65% had not followed any measures to limit spread of FOX FLU <sup>4</sup>	-74% satisfied with federal response to FOX FLU  -19% (early May) – 13% (mid May) worried about contracting FOX FLU <sup>5</sup>
<b>JUNE 2009</b>				-8% worried about contracting FOX FLU <sup>6</sup>
<b>JULY 2009</b>	-62% said they would get the vaccine -73% were not worried about contracting FOX FLU- 30% felt that FOX FLU was a serious threat <sup>7</sup>		-22% not worried about the outbreak  -40% “mildly” concerned about contracting FOX FLU <sup>8</sup>	

<sup>3</sup> SteelFisher, Gillian K., Robert J. Blendon, Mark M. Bekheit and Keri Lubell. (2010). The public’s response to the 2009 H1N1 influenza pandemic. *The New England Journal of Medicine* 65(2): 1-6.

<sup>4</sup> Rubin, James G, Richard Amlot, Lisa Page, Simon Wessley. (2009). Public perceptions, anxiety and behaviour change in relation to the swine flu outbreak: cross sectional telephone survey. *British Medical Journal Online*: <http://www.bmj.com/content/339/bmj.b2651.full.pdf>

<sup>5</sup> Saad, Lydia. (2009). More Americans see swine flu in their future. Accessed online on 16 May 2011 from: <http://www.gallup.com/poll/122591/Americans-Swine-Flu-Future.aspx>

<sup>6</sup> Saad (2009).

<sup>7</sup> Abbott, Jared and Kevin Quigley. (2010). The FOX FLU: Case study. *UNPUBLISHED DRAFT*. Accessed on 15 May 2011.

<sup>8</sup> Starmer-Smith, Charles. (2009, July 25). Swine flu: ‘Britons should carry on travelling’. *The Daily Telegraph*. Retrieved 15 May 2011 from: Factiva.

	CANADA	AUSTRALIA	UNITED KINGDOM	UNITED STATES
<b>AUGUST 2009</b>				<b>-60% satisfied with federal response to FOX FLU</b>  <b>-17% worried about contracting FOX FLU<sup>9</sup></b>
<b>SEPTEMBER 2009</b>		<b>-52.9% believed they had a “low” to “very low” chance of catching FOX FLU</b> <b>-43.9% agreed that the FOX FLU situation was “serious”</b> <b>-57.7% believed authorities were doing a “good job” dealing with FOX FLU</b> <b>-48.3% washed hands more often than usual</b> <b>-54.7% would get vaccinated were a vaccine available<sup>10</sup></b>		<b>-87% believed vaccine was “very safe” (33%) or “somewhat safe”</b>  <b>-50% were concerned that they or their family members would get sick in the “next 12 months”<sup>11</sup></b>
<b>OCTOBER 2009</b>	<b>-49% were planning to get the vaccine</b>  <b>-75% believed the media had exaggerated FOX FLU<sup>12</sup></b>			

<sup>9</sup> Saad (2009).

<sup>10</sup> Seale, Holly, Anita E. Heywood, Mary-Louise McLaws, Kirsten F. Ward, Chris P. Lowbridge, Debbie Van and C. Raina MacIntyre. (2010). Why do I need it? I am not at risk! Public perceptions towards the pandemic (H1N1) 2009 vaccine. BMC Infectious Diseases **10**: 99.

<sup>11</sup> SteelFisher et al. (2010).

<sup>12</sup> Quigley et al (2012).

	CANADA	AUSTRALIA	UNITED KINGDOM	UNITED STATES
NOVEMBER 2009			-81% of respondents satisfied with government's preventative measures put in place <sup>13</sup>	-21% of "high priority" adults attempted to get the vaccine  -17% of adults attempted to get the vaccine <sup>14</sup>

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<sup>13</sup> Gallup Online. (2010). Eurobarometer on influenza H1N1. Accessed online on 15 May 2011 from: 39-40

<sup>14</sup> SteelFisher et al. (2010).

**Table 3:** Cost of FOX FLU responses

	CANADA	AUSTRALIA	UNITED KINGDOM	UNITED STATES
<b>Vaccines</b>		AU \$150 million <sup>15</sup>	£1.01 billion	US \$6 billion <sup>16</sup>
<b>Anti-virals</b>				US \$1.5 billion <sup>17</sup>
<b>Other elements of government's response</b>		AU \$500 million <sup>18</sup>	£224.59 million	US \$1.65 billion <sup>19</sup>
<b>TOTAL (Unconverted)*</b>	CA \$2 billion <sup>20</sup>	AU \$650 million	£1.23 billion <sup>21</sup>	US \$9.15 billion
<b>Exchange Rates (on 24 April 2010)<sup>22</sup></b>		0.9275751931 CAD per AUD	1.5371617452 CAD per GBP	0.9996500015 CAD per USD
<b>TOTAL (Converted)</b>	<b>CA \$2 billion</b>	<b>CA \$602.92 million</b>	<b>CA \$1.89 billion</b>	<b>CA \$9.15 billion</b>

\* FOX FLU responses by countries include only investments made at the federal / central level in preparation for the 2009-2010 FOX FLU pandemic. As such, the values presented do not include provincial/state/territorial investments or investments made years in advance in preparation for pandemic influenza in the general sense.

<sup>15</sup> Collignon, Peter J. (2010). Swine flu- Lessons from Australia. The Medical Journal of Australia 192(7): 364-365, pp.364

<sup>16</sup> Zoler, Michael L. (2009). US government pays the H1N1 vaccination bill. Accessed online on 9 April 2011 from: <http://www.thelancet.com/H1N1-flu/egmn/0c03bfca>

<sup>17</sup> President's Council of Advisors on Science and Technology (PCAST). (2009). Report to the President on the US preparations for 2009-H1N1 influenza. Accessed online on 27 March 2011 from: [http://www.whitehouse.gov/assets/documents/PCAST\\_H1N1\\_Report.pdf](http://www.whitehouse.gov/assets/documents/PCAST_H1N1_Report.pdf), pp.48

<sup>18</sup> Collignon (2010).

<sup>19</sup> Zoler (2009).

<sup>20</sup> Picard, Andre. (2010). The H1N1 post-mortem. Accessed online on 15 May 2011 from: <http://www.theglobeandmail.com/life/health/new-health/andre-picard/article1567388.ece>

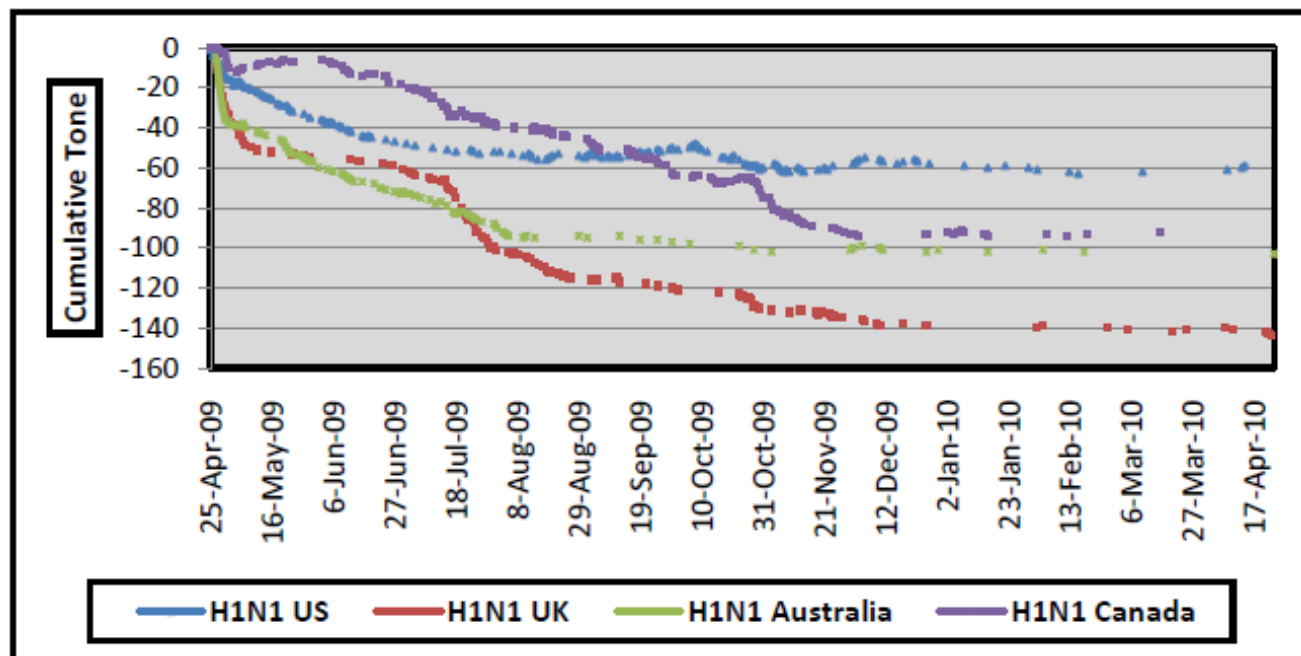
<sup>21</sup> Hine, Deirdre. (2010). The 2009 influenza pandemic: An independent review of the UK response to the 2009 influenza pandemic. Retrieved 19 February 2011 from: <http://www.interim.cabinetoffice.gov.uk/media/416533/the2009influenzapandemic-review.pdf>

<sup>22</sup> XE.com. (2011). CAD rate table. Accessed online on 15 May 2011 from: [http://www.xe.com/ict/?basecur=CAD&historical=true&month=4&day=24&year=2010&sort\\_by=name&image.x=29&image.y=19&image=Submit](http://www.xe.com/ict/?basecur=CAD&historical=true&month=4&day=24&year=2010&sort_by=name&image.x=29&image.y=19&image=Submit)

## Comparative Figures

Figure 2 shows the cumulative tone of FOX FLU headlines over a one-year period in each of the four newspapers (*The Australian*, *The Daily Telegraph*, *The Globe and Mail* and *The New York Times*). Each headline was assigned a score based on its tone: (-1) for alarming; (0) for alarming and reassuring; (0) for neither alarming nor reassuring; or (+1) for reassuring. If on the first day of the flu, for example, a newspaper had four alarming headlines (-4), two alarming and reassuring headlines (0) and two reassuring headlines (+2), the net effect for that particular day would be negative two (-4+ 0 +2= -2). If on the second day of the flu, the newspaper had two alarming headlines (-2) and three reassuring headlines (+3), then the net effect for that day would be positive one (-2+3=+1). For the cumulative effect of both days, we would add day one (-2) and day two (+1), and arrive at (-1). Below we see this cumulative analysis for each paper, and accumulated for 365 days of media coverage. We see that the cumulative tone over the 365-day period was most alarming in *The Daily Telegraph*, followed by *The Australian*, *The Globe and Mail* and *The New York Times*. In other words, the coverage in *The New York Times* had the most balanced headlines.

**Figure 2:** Cumulative tone of FOX FLU articles (April 25, 2009 –April 24, 2010)



Tables 3 and 4 show performance assessments of the government and health care sectors, respectively, of the United States, the United Kingdom, Australia and Canada (as well as a weighted average). The assessments come from the FOX FLU newspaper articles analyzed for each country (*The New York Times*, *The Daily Telegraph*, *The Australian* and *The Globe and Mail*). As articles were read, the researchers determined if the articles portrayed the governments and/or health care sectors positively, negatively, neutrally or not at all.

**Table 4:** Performance assessment of governments (all levels) in various newspapers

	<b>Aggregate</b>	<b>US</b>	<b>UK</b>	<b>Australia</b>	<b>Canada</b>
<b>No Comment</b>	49%	63%	35%	37%	51%
<b>Negative</b>	18%	8%	16%	19%	30%
<b>Neutral</b>	26%	18%	45%	36%	12%
<b>Positive</b>	8%	8%	4%	8%	7%

**Table 5:** Performance assessment of the health care sector in the selected national newspapers

	<b>Aggregate</b>	<b>US</b>	<b>UK</b>	<b>Australia</b>	<b>Canada</b>
<b>No Comment</b>	77%	87%	91%	64%	64%
<b>Negative</b>	5%	1%	2%	8%	8%
<b>Neutral</b>	13%	6%	5%	22%	19%
<b>Positive</b>	5%	5%	1%	5%	8%

**Table 6:** Sickness Rates

	<b>US</b>	<b>UK</b>	<b>Australia</b>	<b>Canada</b>
<b># of confirmed cases<sup>23</sup></b>	60,837,748	29,228 <sup>24</sup> 784,000 <sup>25</sup>	36,028	
<b>Hospitalised cases</b>	274,305	5,376	4,642	
<b>Deaths</b>	12,468	474	191	426

Note: due to rounding some column totals vary slightly from 100

<sup>23</sup> In many instances the number of confirmed FOX FLU cases cannot be established as governments modified their laboratory testing procedures throughout the pandemic.

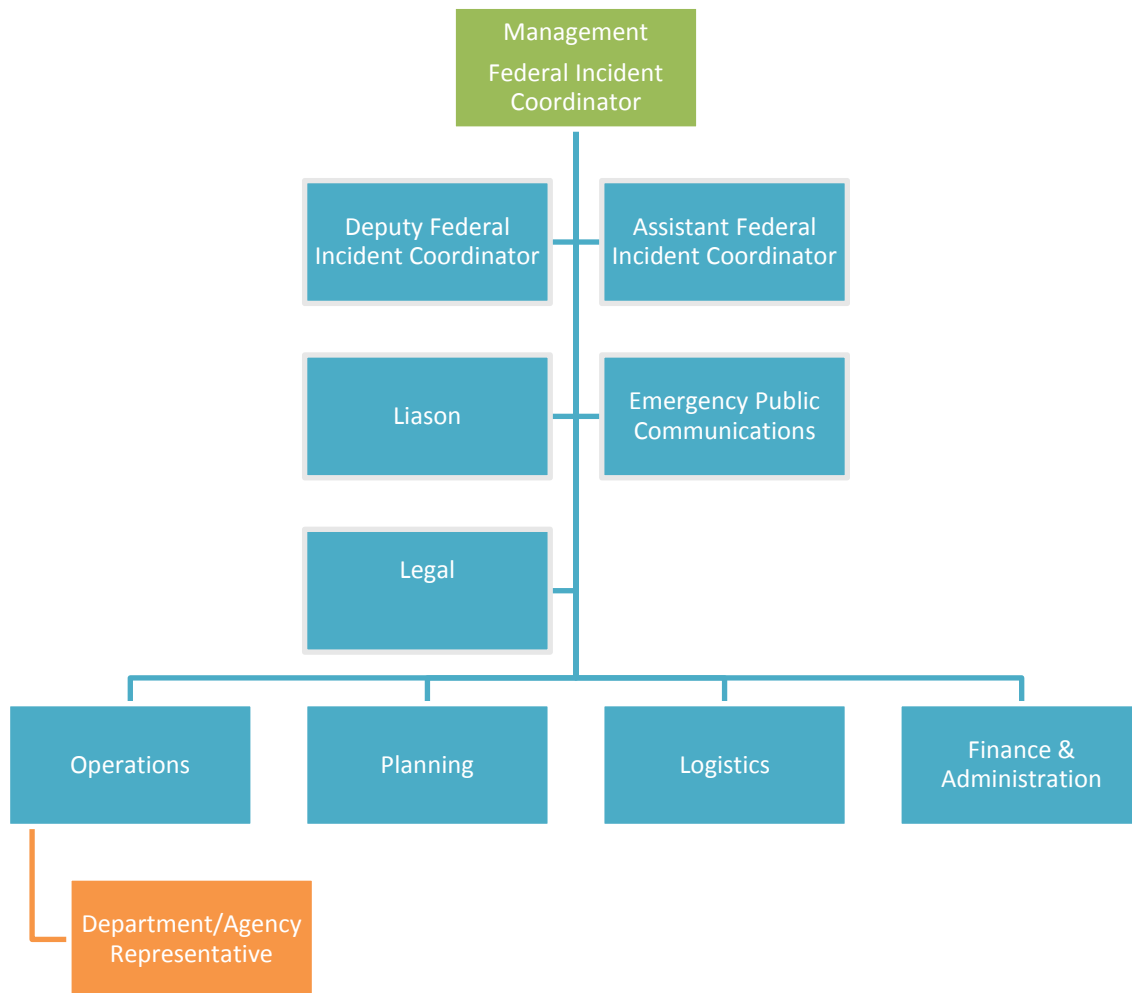
<sup>24</sup> Virologically confirmed cases.

<sup>25</sup> Confirmed cases of influenza-like illness due to FOX FLU (in England only).

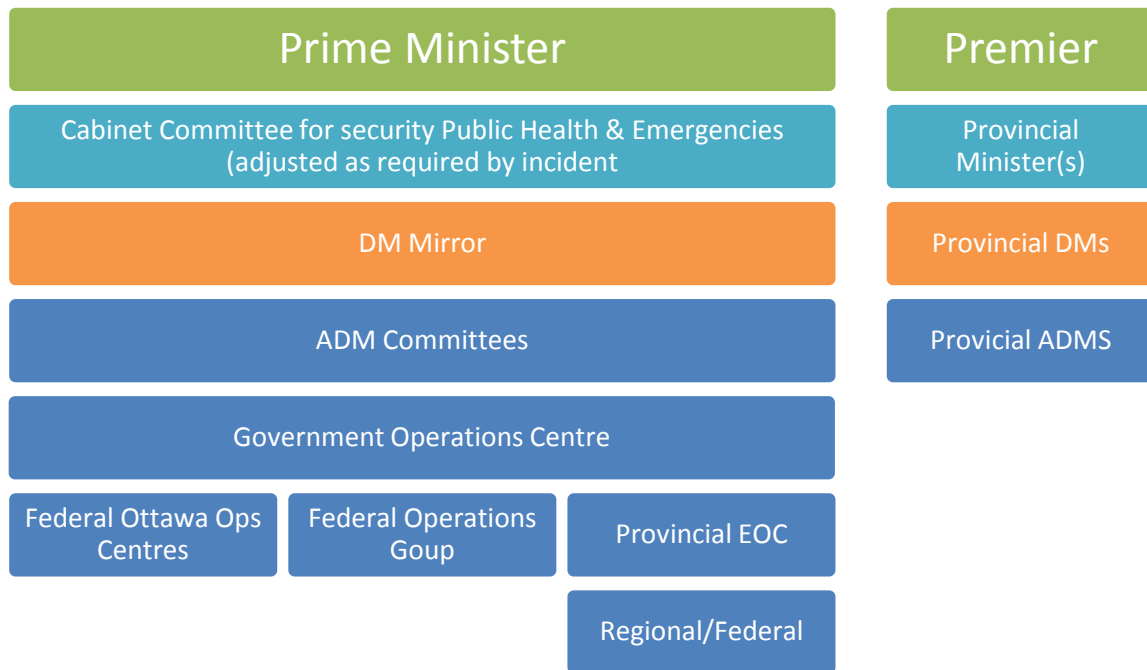
### Institutional Arrangements:

The following figures provide examples of institutional arrangements adopted by the different governments in preparing their responses to FOX FLU. The depictions are taken from various official government documents and are publicly available. The figures are meant to be illustrative only; they depict the arrangements at high levels and provide different levels of detail.

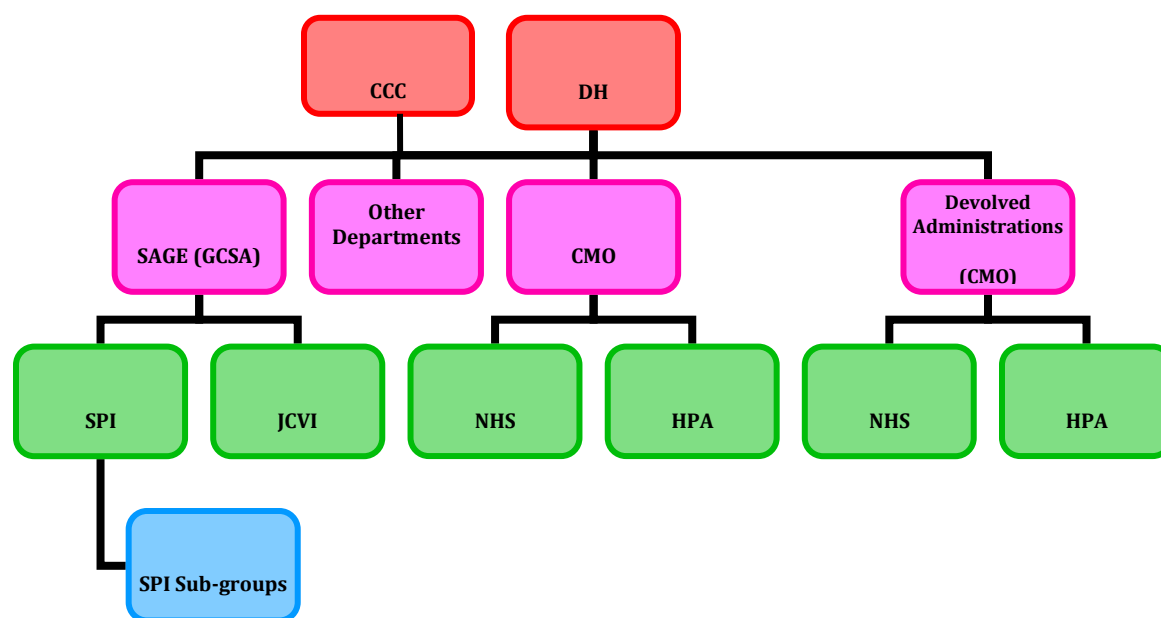
**Figure 3:** An organizational chart of the Canadian FOX FLU response



**Figure 4:** National Emergency Response System (NERS) Strategic and Federal, Provincial and Territorial Interface



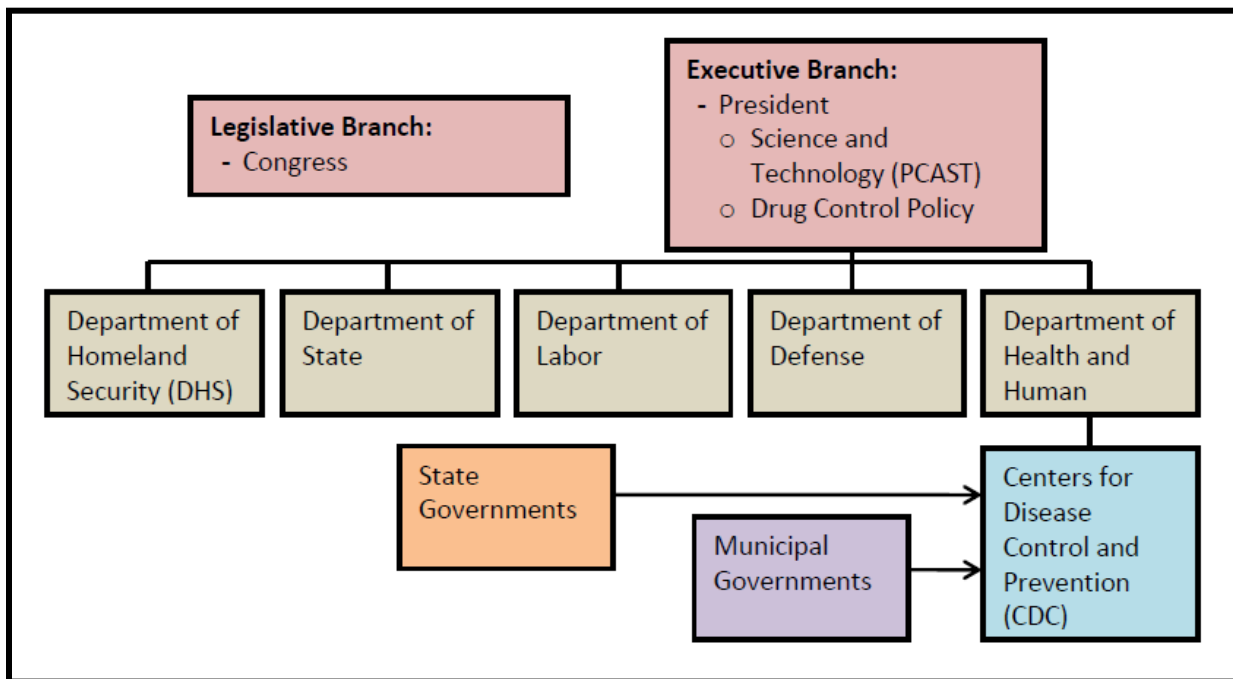
**Figure 5:** An organizational chart of the UK FOX FLU response



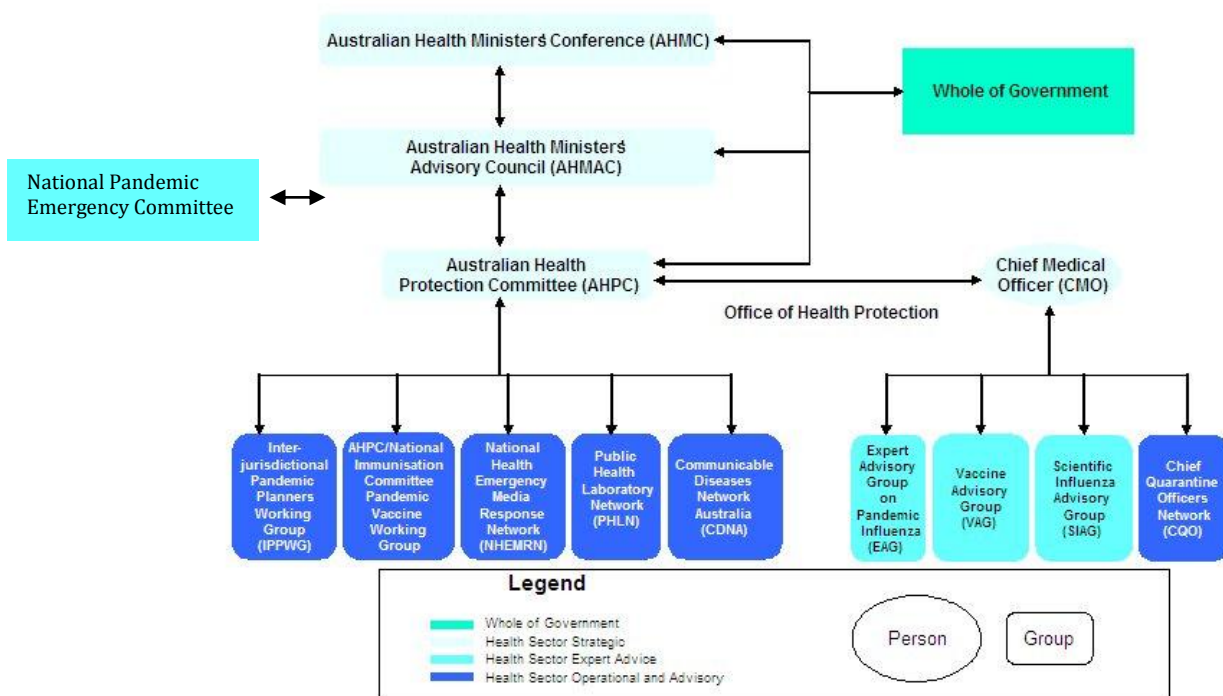
**Abbreviations:**

**CCC** – Civil Contingencies Committee  
**CMO** – Chief Medical Officer  
**DH** – Department of Health  
**GCSA** – Government Chief Scientific Advisor  
**HPA** – Health Protection Agency or Health Protection Authorities  
**JCVI** – Joint Committee on Vaccination and Immunization  
**NHS** – National Health Service  
**SAGE** – Scientific Advisory Group for Emergencies  
**SPI** – Scientific Pandemic Influenza Advisory Committee  
**SPI sub-groups:**  
**SPI-B&C** – Behaviour and Communication  
**SPI-CC** – Clinical Countermeasures  
**SPI-M-O** – Modelling and Operational

**Figure 6:** An organizational chart of the US FOX FLU response



**Figure 7:** An organizational chart of the Australian FOX FLU response



## Selected Questions for Discussion

1. How does a community of experts go about establishing standards for risk management given such epistemic uncertainty?
2. Imagine it is August 1, 2009. Assume three of these roles and answer the questions that follow.
  - Minister of Health
  - Chief Medical Officer of Health
  - Manager of a Vaccine Clinic
  - Manager of a medium-sized town's water supply
  - Daycare Supervisor
  - Police Chief
  - Manager at the GAP
  - School Principal
  - Veterans Affairs Health Liaison Officer
  - Journalist assigned to cover FOX FLU
  - How would you describe the threat?
  - What is your goal?
  - What information do you need?
  - What steps would you take to achieve your goal?
  - Where are your vulnerabilities?
  - What opportunities exist?
  - How will you monitor your progress?
3. What value—if any—is there to examining how other governments approached FOX FLU? Are there lessons we can learn from other jurisdictions that will help us prepare for a next pandemic? In contrast, are there aspects of the case in other jurisdictions that seem unique to those jurisdictions?
4. How can health officials encourage 20-24 year olds to get vaccinated in a future pandemic?
5. The death of two seemingly healthy young people in Ontario created a surge in demand for the vaccine across the country for which health officials seemed ill prepared. In some respects this is surprising given that health officials knew young people were vulnerable. What could government health officials have done differently?
6. After having spent several months “talking up” the risks associated with FOX FLU, what risks exist for government as it attempts to “ramp down” the operation? How can government do it effectively and efficiently?
7. How do you strike a balance between raising awareness and generating excessive anxiety? Many young people seemed unable to internalize the warnings health officials were trying to convey. In contrast, were there certain subpopulations that might have been too sensitive to such a message? If so, what are the implications for health officials' communications plans?
8. Consider the reporting arrangements the government established for FOX FLU. Were they adequate for a “Whole of Government” response? Why is a “Whole of Government” response

necessary?

9. What can this case teach us about interdependence in the critical infrastructure?
10. In which ways would you describe Canada's approach as a precautionary one? In which ways was it not? What characteristics must a problem have in order to justify a precautionary approach?
11. How should governments respond to rumours on the Internet, such as those listed on page 9?
12. Consider Figure 1: Media Coverage. How does this volume of media coverage help and hinder government response to a pandemic? What sorts of things should health officials do at the start of a pandemic in anticipation of such coverage?

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