

PUBLIC HEALTH AGENCY *of* CANADA
AGENCE DE SANTÉ PUBLIQUE *du* CANADA

APEC Emerging Infections Network (APEC EINET)
Videoconference
Pandemic Influenza H1N1 2009 – The Canadian Experience
Ken Scott, MD, FRCPC
March 10, 2010



Public Health
Agency of Canada

Agence de santé
publique du Canada

Canada 

PURPOSE

- To provide an overview of the Canadian pandemic H1N1 experience:
 - Pandemic planning
 - Pandemic H1N1 Situation in Canada
 - Surveillance
 - Public Health and Infection Control measures
 - Communications
 - Antivirals
 - Vaccines
 - International Collaboration

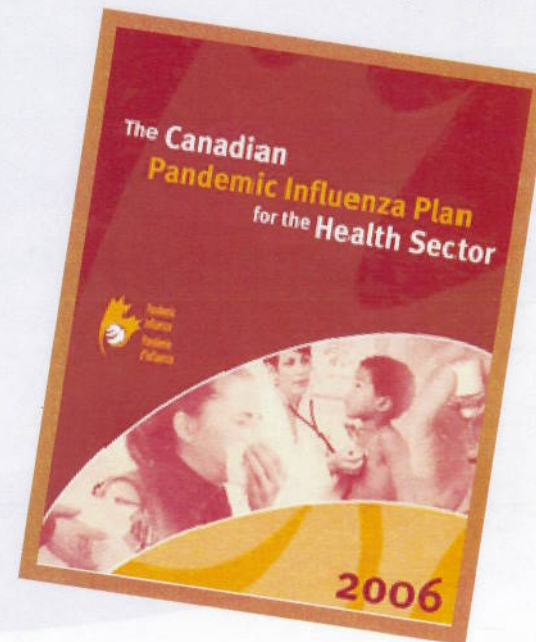
BACKGROUND

In the wake of SARS, the Government of Canada:

- Created the Public Health Agency of Canada (PHAC) to strengthen Canada's ability to protect the health of Canadians
- Appointed a Chief Public Health Officer to advise the Minister of Health who leads government communication with Canadians and the provinces and territories on important public health matters.
- Invested \$1 billion over 5 years for pandemic preparedness and planning in its 2006 budget included further enhancement of domestic vaccine production.

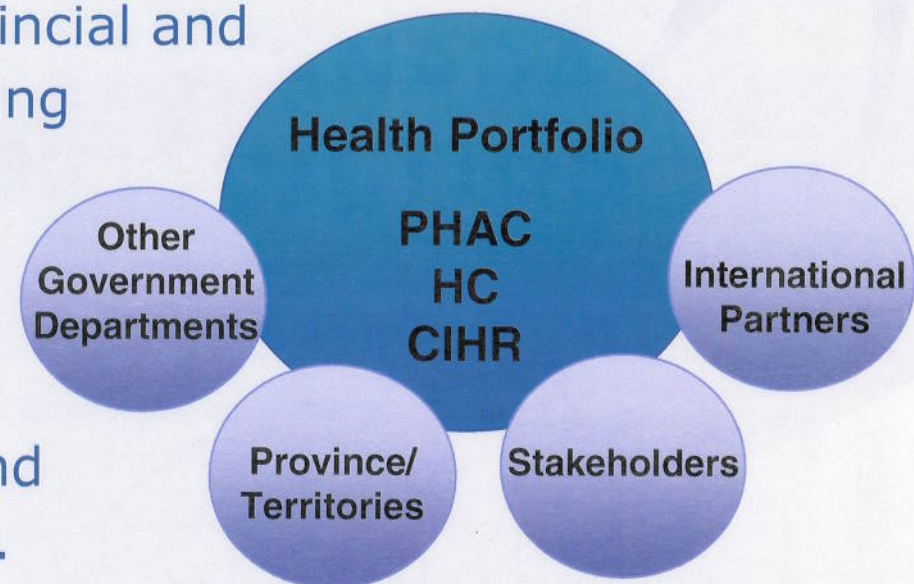
CANADIAN PANDEMIC PANDEMIC INFLUENZA PLAN (CPIP)

- *The Canadian Pandemic Influenza Plan for the Health Sector* (2006) was the cornerstone of our response to the Pandemic H1N1 outbreak. The plan is articulated around 7 pillars:
 1. Surveillance
 2. Antivirals
 3. Vaccines
 4. Public Health measures
 5. Clinical care
 6. Communications
 7. Research



HEALTH CARE IN CANADA - A SHARED JURISDICTION

- PHAC works collaboratively with provinces and territories through provincial and territorial decision-making mechanisms.
- Decision-making is collaborative given the cross-jurisdictional nature of health care and public health in Canada.
- Provinces and territories can adjust the guidance to their situation.



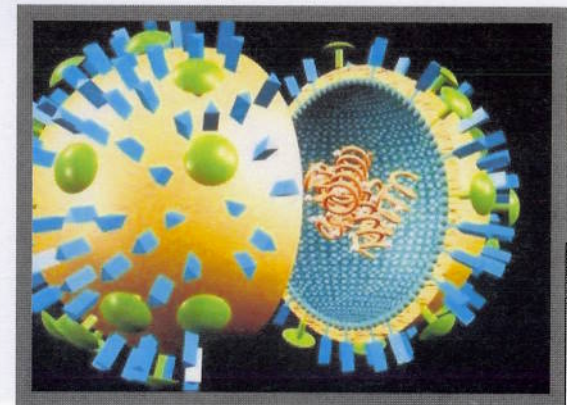
PANDEMIC PLANNING

- Challenge in comparing pandemics from 1957 to 2009, or even between first and second waves.
- Planning for pandemic H1N1 was based on a moderate scenario.
- Mitigation measures/guidelines impacted the second wave and reduced propagation of the virus in the winter.

PANDEMIC H1N1 CANADA 2009-2010

- First Canadian cases reported on April 26, 2009.
- **Cumulative number of cases:**
- As of February 6, 2010:
 - **8,615** hospitalized cases
 - **1,449** (16.8%) admitted to ICU
 - **426** (4.9%) deaths

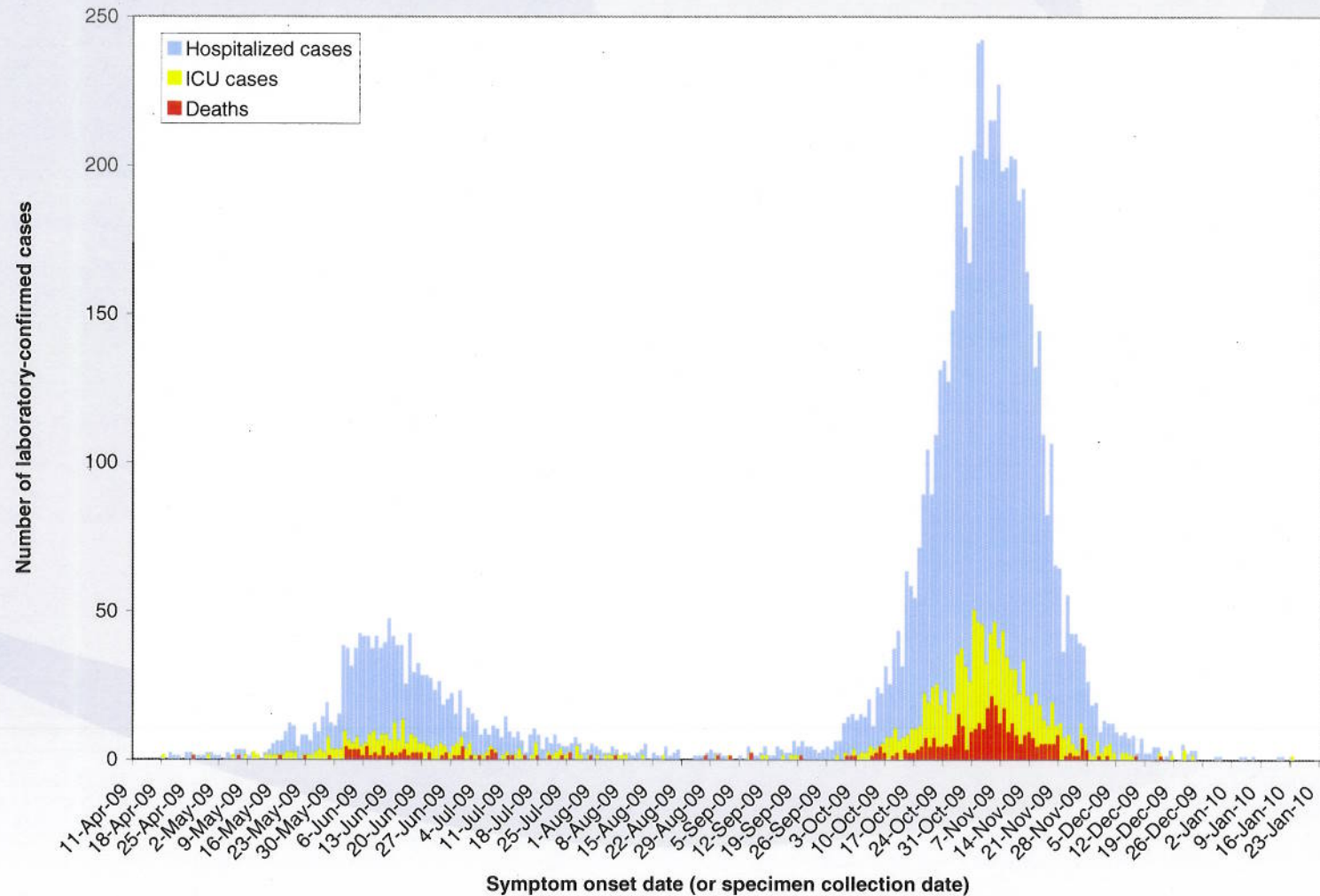
FluWatch, Public Health Agency of
Canada, Feb 6, 2010 (Week 5)



SURVEILLANCE

- A pandemic H1N1 surveillance system was established with weekly hospitalization reports and twice-weekly public reporting on deaths.
- Disease surveillance and outbreak investigation, provincial and territorial responsibilities. The national picture depends on provinces and territories collecting and reporting information.
- Tracking incidence of influenza-like illness is a difficult but crucial task. Sero-prevalence studies would give the most accurate picture of the number of individuals affected by each wave.

PH1N1 2009 Summary for Canadian Laboratory-Confirmed Hospitalized Cases and Deaths, PHAC, Feb 6, 2010 (Week 5)



Descriptive characteristics of lab confirmed pandemic H1N1 deaths, hospitalized cases, ICU-admitted cases and deaths

	From April 12 to August 29, 2009			From August 30, 2009 to February 13, 2010		
	Hospitalized cases (n=1488)	ICU-admitted (n=292)	Deaths (n=78)	Hospitalized cases (n=6674)	ICU-admitted (n=1157)	Deaths (n=345)
Females, %	51.3	57.2	62.8	49.7	49.7	46.7
Median age	23.0	37.0	51.0	30.0	47.0	54.0
Aboriginal status¹, %	20.0-27.7	16.1-21.9	11.5-17.3	4.6-6.1	5.9-7.8	6.1-8.9
Underlying medical conditions², %	47.5 (652/1373)	60.2 (162/269)	73.3 (55/75)	58.4 (1884/3226)	72.9 (655/899)	84.2 (240/285)
Pregnancy³, %	27.6 (75/272)	19.7 (15/76)	28.6 (4/14)	18.5 (188/1018)	8.4 (15/178)	0.0 (0/36)

FluWatch, PHAC, Feb 6, 2010 (Week 5)

COMPARISON OF SEVERITY OF DISEASE IN FIRST AND SECOND WAVE

First Wave

- High rates of illness with patients in ICU and on ventilation, and high vulnerability amongst Aboriginal people and pregnant women.
- Younger individuals were more severely affected.

Second Wave

- The median age and proportion of people who contracted H1N1 with underlying conditions was higher.
- Lower proportion of cases among people of Aboriginal origin and pregnant women.
- However, overall hospitalizations were 5 times higher, deaths were 5 times higher and ICU admissions were 4 times higher than the first wave.

RESPONSE TO FIRST NATIONS

- The National Antiviral Stockpile (NAS) was prepositioned in provinces and territories for distribution by individual jurisdictions including First Nations.
- Health Canada facilitated staffing of vaccine clinics to facilitate early vaccination in remote and isolated communities which resulted in 60% vaccination rate – the highest in all segments of the Canadian population.
- 100% of remote and isolated on-reserve First Nation communities have held vaccine clinics.
- Guidance on Pandemic Influenza Planning Considerations in On-Reserve First Nations Communities (CPIP, Annex B)

PUBLIC HEALTH MEASURES

- Proactive school closures – were not considered of sufficient benefit to warrant the high economic and social costs that would be entailed.
- Reactive school closures were left to the discretion of local officials – in a Nova Scotia boarding school, extracurricular activities were suspended for one week and in BC, there were two school closures due to parental anxiety and high absenteeism negatively impacting school operation.
- Mass Gatherings were not restricted – infection control measures were recommended.
- Pregnant women were advised to avoid mass gatherings.

INFECTION PREVENTION AND CONTROL

- Success of H1N1 response was centered on the provision of infection control guidelines and on communication to the population:
 - Public Health Measures
 - Infection Prevention and control
 - Treatment and Clinical Care
 - Managing H1N1 in various settings
- Guidelines available on PHAC website:
www.phac-aspc.gc.ca

Efficacy of Infection Control

- Drop in transmission rate of H1N1 at the beginning of the fall.
- Lower rates of *Clostridium difficile* in hospitals in Quebec.

COMMUNICATIONS

- Risk communications and public education, based on public research to ensure message relevance.
- Ongoing visibility during the H1N1 outbreak through a proactive marketing campaign and social media.
- Daily/weekly updates from the Health Minister and CPHO.
- Key messages on immunization as the primary way to prevent H1N1 flu infection impacted behaviour and resulted in high vaccine uptake.
- Ongoing review and adjustment of messages as needed.
- Timely targeted communications and engagement with stakeholders.

ANTIVIRAL STOCKPILE

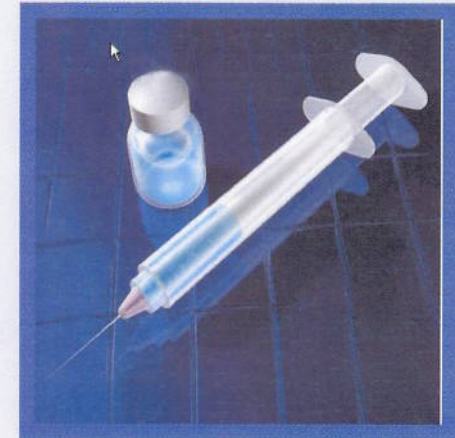
- A provincially and territorially controlled National Antiviral Stockpile (NAS) with 55.7 million doses, distributed on a per-capita basis to provinces and territories.
- The federally-controlled National Emergency Stockpile System, (NESS) with 23 million.
- The NAS stockpile contained three drugs:
 - Oseltamivir (Tamiflu) – approx. 80 %
 - Zanamivir (Relenza) – approx. 20%
 - A small amount of Amantadine
- 4 million doses (7%) of the stockpile was used during the pandemic.
- As of February 6, 2010, 13 cases of oseltamivir resistant Pandemic H1N1 were reported.
- If widespread oseltamivir resistance had developed, there would have been guidelines on who should receive zanamivir.

ANTIVIRAL STRATEGY

- **Early treatment** (by prescription) of those with severe pandemic H1N1 disease or with mild/moderate disease and the following risk factors:
 - Pregnancy
 - Children <5 (esp those <2)
 - Chronic conditions (esp. diabetes, asthma and immunosuppression)
 - Adults over 65 years
 - Obesity
 - First Nations and remote and isolated communities
- **Limited prophylaxis** to control outbreaks in closed facilities (e.g. long term care institutions and prisons)

VACCINE STRATEGY

- Canada ordered sufficient vaccine for every Canadian who needed and wanted it - 50.4 million doses based on initial WHO guidance.
- The order consisted of adjuvanted vaccine for the population at large and unadjuvanted vaccine for specific populations, including pregnant women.



VACCINE STRATEGY

- The Government of Canada cost-shared H1N1 vaccine purchase with provinces and territories.
- Provinces and territories bore the cost of program administration. Vaccine administration was initially a challenge given the original high demand for vaccine.
- The Government of Canada and provinces and territories developed sequencing guidelines giving priority to the most vulnerable.
- As of January 30, 2010, 25.143 million doses of vaccine have been distributed across Canada.
- Approximately 45% of the Canadian population have been vaccinated.

REMAINING VACCINE

- In early January 2010, with the support of the provincial and territorial governments, the Government of Canada also shipped five million doses of H1N1 flu vaccine to help Mexico to bridge its vaccine requirements.
- In late January 2010, Canada announced it will make a donation of five million doses of the H1N1 flu vaccine to support the World Health Organization's (WHO) global pandemic relief efforts in developing countries.
- Further options for remaining vaccine are currently being reviewed.

VACCINE SAFETY AND MONITORING SYSTEM

Robust system in place:

- Canadian Adverse Events Following Immunization Surveillance System (CAEFISS) - Passive surveillance of adverse events in collaboration with the provinces and territories.
- Vaccine manufacturer was required to submit monthly aggregate safety data in the form of simplified Periodic Safety Update Reports (PSUR) for the H1N1 vaccine.

Immunization Monitoring Program ACTIVE-IMPACT

- A network of 12 paediatric centres across Canada representing over 90% of all paediatric tertiary care admissions in the country, submits case reports to the appropriate provincial/territorial authorities and PHAC.
- Serious adverse events are also reviewed by an expert advisory committee to assess their potential causal relationship to vaccination
- As of January 30, 2010, 6131 adverse events reported, a rate of 0.99 per 100,000 doses of vaccine administered.

INTERNATIONAL COLLABORATION

Multilateral

- WHO & PAHO: Regular Teleconferences with WHO and PAHO & reporting under the International Health Regulations
- Global Health Security Initiative (G7 + Mexico and European Commission)

Trilateral Collaboration with Canada/US/Mexico

- North American Plan for Avian and Pandemic Influenza
- Mexico: tested over 2,000 lab samples, deployed epidemiologists and scientists
- US: common approach to issuing travel notices; visits to CDC; creation of a diplomatic post in HHS

International Assistance

- Committed over \$100 million over the past 5 years for pandemic preparedness and response in developing countries
- Recent commitments of 5 million doses of H1N1 vaccine and \$6M to WHO & \$2M to PAHO