pH1N1 2009 pandemic vaccines: recommendations for use

Instructional slide set for British Columbia Immunization Service Providers

Note: this document will be updated as further information becomes available @ http://www.immunizebc.ca/ImmForHP/default.htm

Current as of: December 4, 2009
Outline

- Seasonal vaccine and pH1N1 vaccine timeline
- Adjuvanted pH1N1 vaccine (Arepanrix H1N1®) and Non-adjuvanted monovalent pH1N1 vaccine
  - Recommended recipients
  - Dosing
  - Co-administration and special populations
  - AS03 adjuvant
  - Mixing of adjuvanted vaccine
  - Contraindications
  - Adverse events

- Background information:
  - What is pandemic pH1N1 influenza?
    - Epidemiology
    - Disease
Seasonal and pH1N1 vaccine program timelines in BC

pH1N1 vaccine (starting Oct. 26) offered to:
a) **Adjuvanted Vaccine** (~late Oct.-Dec. 2009)
   - Priority groups as per national guidance on next slide
   - pH1N1 vaccine available for any and all British Columbians who want to be vaccinated (starting November 20th, 2009)
b) **Non-adjuvanted vaccine**
   - Pregnant women (Nov. 9th - Dec. 2009)
   - Healthy people 10-64 years old (starting week of: November 16th)
   - Healthy children 3-9 on parental request only

Also:

**Seasonal vaccine**
- Publicly funded seasonal vaccine available to high risk groups,

See the following document for a listing of these groups:
## pH1N1 vaccine recommendations

### Strongly recommended for:
- Persons with chronic conditions <65*
- Pregnant women*
- Children 6 mos- < 5 years
- All persons residing in remote or isolated communities
- Health care workers
- Household contacts under 65 years old of:
  - infants < 6 months
  - immunocompromised persons

### Recommended for all others:
- Children 5-18 years
- First responders
- Poultry and Swine workers
- Adults 19-64 years
- Adults 65+

*People with chronic conditions <65 years old and pregnant women > 20 weeks gestation will be given priority in the first several weeks of adjuvanted pH1N1 vaccine availability.*
pH1N1 vaccines

antigen is A/California/7/2009 (H1N1)v-like

- **Adjuvanted vaccine: Arepanrix H1N1®**
  - 4 million doses for BC
  - 3.75 μg antigen per 0.5 ml dose
  - AS03 adjuvant
  - This is the vaccine recommended for all people except pregnant women; may be used in pregnancy if unadjuvanted vaccine is not available

- **Unadjuvanted vaccine**
  - About 250,000 doses in BC
  - 15 μg antigen per 0.5 ml dose
  - Monovalent formulation based on Fluviral® seasonal influenza vaccine
  - For pregnancy indications*
  - Healthy people 10-64 years old
  - Children 3-9 years old on request only
  - Will be named “Influenza A(H1N1) 2009 Monovalent vaccine (without adjuvant)” or “(Clinical Formulation)” in Canada

*see slide 9

Both products from GlaxoSmithKline Inc. Canada
## Recommendations for dosing of pH1N1 vaccine compared to seasonal influenza vaccine: by age and pregnancy

<table>
<thead>
<tr>
<th>Age/ pregnancy</th>
<th>pH1N1 vaccine</th>
<th>Seasonal vaccine</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 months- 35 months</td>
<td>0.25 ml IM, 2 doses, at least 21 days apart, adjuvanted(^1)</td>
<td>0.25 ml IM, 2 doses(^2), 4 weeks apart</td>
</tr>
<tr>
<td>3 to 9 years old</td>
<td>0.25 ml IM, 2 doses(^2), 4 weeks apart for children aged 3 to 8 years old</td>
<td>0.5 ml IM, 2 doses(^2), 4 weeks apart for children aged 3 to 8 years old</td>
</tr>
<tr>
<td></td>
<td>For those with chronic health conditions: 0.25 ml IM adjuvanted, 2 doses given at least 21 days apart(^3,4)</td>
<td>For healthy: 0.25 ml IM adjuvanted, 1 dose for now; unadjuvanted vaccine upon request, 0.5 ml IM, 2 doses given at least 21 days apart(^3)</td>
</tr>
<tr>
<td>10 years and older</td>
<td>0.5 ml IM, 1 dose, adjuvanted; unadjuvanted vaccine may be used in healthy people aged 10-64 years in the same dosing regimen</td>
<td>0.5 ml IM, 1 dose for those aged 9 years and older</td>
</tr>
<tr>
<td>Pregnancy</td>
<td>0.5 ml IM, 1 dose, unadjuvanted or adjuvanted (SEE SLIDE #9)</td>
<td>0.5 ml IM, 1 dose</td>
</tr>
</tbody>
</table>

\(^1\)For healthy: 0.25 ml IM adjuvanted, 1 dose for now; unadjuvanted vaccine upon request, 0.5 ml IM, 2 doses given at least 21 days apart.

\(^2\)For healthy: 0.5 ml IM, 2 doses, 4 weeks apart.

\(^3\)For healthy: 0.5 ml IM, 2 doses, 4 weeks apart for children aged 3 to 8 years old.

\(^4\)For healthy: 0.5 ml IM, 2 doses, 4 weeks apart for children aged 3 to 8 years old.

*Footnotes on slides # 7 & 8
Footnotes to preceding table:

1. Adjuvanted product is preferred for children aged 6 months to < 3 years. Adjuvanted pH1N1 vaccine should be given in a two half dose (0.25ml x 2) series.

2. Seasonal vaccine for children under 9 years old should be given in a two dose series unless the child has received seasonal vaccine in 1 or more prior season.

3. Healthy children between 3 and 9 years of age should only receive a single half-dose of the adjuvanted pH1N1 vaccine, and do not need to return for a second dose for now. This recommendation may be updated as more information becomes available. Unadjuvanted pH1N1 vaccine on request in a 2 dose (0.5ml x 2) series.
Footnotes to table cont’d:

4. Children with chronic health conditions who are between 3 and 9 years of age should receive their first half-dose of the adjuvanted H1N1 flu vaccine as soon as possible, and should receive a second half-dose at least 21 days later. Chronic health conditions include:

- cardiac or pulmonary disorders (including bronchopulmonary dysplasia, cystic fibrosis and asthma)
- diabetes mellitus and other metabolic diseases
- cancer, immunodeficiency, immunosuppression (due to underlying disease and/or therapy)
- renal disease
- anemia or hemoglobinopathy
- conditions that compromise the management of respiratory secretions and are associated with an increased risk of aspiration
- children and adolescents with conditions treated for long periods with acetylsalicylic acid.
Pregnancy recommendations

**Unadjuvanted vaccine** will be available in BC starting November 9th and is recommended over adjuvanted vaccine at all stages of pregnancy because of theoretical considerations and known safety profile. Adjuvanted vaccine may be used if unadjuvanted is not available.

- **Pregnant women at any stage of pregnancy with chronic health conditions:** should receive the vaccine as soon as possible. These women are at elevated risk of complications from pH1N1 infection at all stages of pregnancy.

- **Healthy pregnant women in the second half of pregnancy:** should receive the vaccine as soon as possible. The risk of hospitalization, ICU admission and death from pH1N1 increases from mid to late pregnancy, and persists for 1 month postpartum.

- **Healthy pregnant women in the first half of pregnancy:** early pregnancy does not put them at any higher risk of serious outcomes from pH1N1 infection than a non-pregnant healthy woman would have. However, they should be immunized if presenting for pH1N1 vaccine, preferably using unadjuvanted vaccine.
Additional recommendations:

Co-administration:

- pH1N1 and seasonal vaccine may be given at the same visit, by separate injection in separate limbs. If PPV23 is given at the same time, it should be given in the same limb as seasonal vaccine.

- If both seasonal and pH1N1 vaccines are given, use separate limbs; give pH1N1 vaccine in the non-dominant arm as it’s more likely to be associated with local pain.

- If the pH1N1 and seasonal influenza vaccines are not given at the same time, they can be given sequentially without regard to interval. People under 65 should receive the pH1N1 vaccine first, if choosing not to receive the two vaccines at the same visit.
Contraindications to receipt of influenza vaccines:

- History of anaphylactic reaction to a previous dose of influenza vaccine or to the following vaccine components:
  - eggs
  - formaldehyde
  - sodium deoxycholate
  - thimerosal

- History of Guillain-Barré syndrome within 8 weeks of a prior dose of influenza vaccine

- Age under 6 months old

- Individuals with serious egg allergies should not be routinely vaccinated with the influenza vaccine. If at high risk of complications of influenza, such people should be evaluated by an allergy specialist. If such an evaluation is not possible, the risk of an allergic reaction to the vaccine must be weighed against the risk of influenza disease.
The following are NOT contraindications to vaccination:

**Latex hypersensitivity is NOT a contraindication to either adjuvanted or unadjuvanted pH1N1 vaccine because the stopper is butyl rubber, latex free.

**Fish allergy is NOT a contraindication to receipt of adjuvanted pH1N1 vaccine. The shark-derived squalene in the vaccine adjuvant is highly purified, eliminating all traces of fish proteins. Proteins are the allergenic substances in foods including fish. Squalene anaphylaxis is not known to occur, as this is a naturally occurring substance in the body and is manufactured in the human liver.

**see slide 16 for more information on squalene in the adjuvanted vaccine
Arepanrix® H1N1: Adjuvanted pH1N1 vaccine

- utilizes a novel GlaxoSmithKline proprietary adjuvant called AS03
- adjuvant stimulates immune response to the antigen for better antibody response
Adjuvanted pH1N1 vaccine

- Supplied as separate antigen and adjuvant
- Requires mixing prior to administration
- 24 hour shelf life after mixing

Image courtesy of BCCDC
Adjuvanted pH1N1 vaccine

- Vaccine will be distributed from GSK in 500 dose ‘shoebox’ containing 2x25 vial boxes of adjuvant, and 50 vial box of antigen

- The most current product leaflet will be ‘live’ online at http://www.gsk.ca/english/html/our-products/vaccines-canada.html
Why use an adjuvanted vaccine?

- Better immune response with less antigen (3.75 μg vs. 15 μg)
- May provide some cross protection in case the virus changes (“drift”)
- More immunogenic than regular vaccine formulations in the very young and at older ages
What is in the AS03 adjuvant?

- Squalene
- Alpha-tocopherol (vitamin E)
- Polysorbate 80
- AS03 is approved in 30 countries

**Safety profile** at time of approval based on 39,000 subjects who received A/H5N1 avian influenza vaccine, trivalent vaccine, or pH1N1 influenza vaccine adjuvanted with AS03
Squalene & Polysorbate 80

Squalene:
- is a naturally occurring substance found in plants, animals, and humans. It is manufactured in the liver of every human body. It is a precursor for cholesterol and steroid hormones and circulates in our bloodstream.
- is also found in a variety of foods, cosmetics, over-the-counter medications, and health supplements
- is commercially extracted from fish oil, and in particular shark liver oil. Squalene used in pharmaceutical products and vaccines is purified from this source.
- is present in MF59, an adjuvant used in Fluad™, an influenza vaccine produced by Novartis approved in 14 European countries for use in 65+ year olds, of which more than 47 million doses have been distributed since 1997 with no safety concerns identified.

Polysorbate 80:
- is an emulsifier that stabilizes the adjuvant
- is used widely in vaccines, medicinal products, and foods

Other constituents:
All of the H1N1 vaccines also contain trace amounts of substances which are left over from early stages of production, although the majority has been removed through purification steps. These substances include: egg proteins (because the virus is grown in fertilized hen’s eggs), formaldehyde (which is used to inactivate the virus), and sodium deoxycholate (which is a virus splitting agent and comes from bovine or ovine origins).
Mixing and injection supplies for a vial of adjuvanted pH1N1 vaccine

For mixing adjuvant and antigen:

1) 1x 5 ml or 10 ml syringe (depending on local availability)
2) 1x 1 ½”, 20-21 gauge needle

For administering vaccine to patients 10 years and older (0.5 ml dose):

1) 10 x 3 ml syringes
2) 10 x 1”-1 ½”, 25 gauge needles

For administering vaccine to patients under 10 years old (0.25 ml dose):

1) Same as above, may use 1 ml syringes for administration
2) Could potentially get 20 x 0.25 ml doses from one vial
2.5ml adjuvant in 3ml vial
2.5ml antigen in 10ml vial
Adjuvant= milky white emulsion
Antigen= colourless, opalescent fluid
No particulates should be present (before or after mixing)
Withdraw adjuvant: entire contents of vial using a 20-21 gauge needle
Do not inject air into adjuvant vial

Inject adjuvant into antigen vial; total volume will be 5 ml
Shake antigen/ adjuvant mixture to ensure even distribution of particles
Use 25 gauge 1” to 1.5” needle for withdrawing and administering

Write time+ date of mixing on vial
Record adjuvant lot number OR outer carton lot number on vial
Use within 24 hours of mixing

*The recommendation to bring vaccine components to room temperature before administration relates to patient comfort only, not to the performance of the vaccine
Withdrawing adjuvant: use care

- Use 5 cc syringe if possible
- **Do not** inject air into vial prior to withdrawal of contents
- If using 3 cc syringe, use care to avoid pulling out plunger
- If this happens dispose of contents to avoid contamination
Recording of lot number of adjuvanted vaccine:

Each vaccine dose is related to 3 lot numbers:
- One for adjuvant
- One for antigen
- One for the mixture of both:
  - found on the “shoe box” outer carton containing 500 doses OR on the outer label of the bubble pack containing 10 doses
  - Record EITHER both adjuvant and antigen lot number OR outer (combination) lot number in provider record
  - Record combination lot number in iPHIS or PARIS (public health only)
Recording of lot number of adjuvanted vaccine cont’d:

- BCCDC will repackage vaccine into 10 dose bubble packs for small volume clients

Lot number of combination product will be on outer label only
Potential errors when using adjuvanted pH1N1 vaccine:

1) **Antigen only is injected:** this does NOT constitute a dose as having been given; a dose of the mixed Arepanrix H1N1® (adjuvanted pH1N1 vaccine) vaccine should be given immediately.

2) **Outer shoebox lot # is lost:** Record the lot # from both the antigen and adjuvant that were given.

3) **Antigen and adjuvant from separate shoeboxes are used:** It is preferable to use antigen and adjuvant from one “shoebox”; however, if this cannot be assured, there is no scientific reason why adjuvant from one shoebox cannot be used to mix with antigen from another; record the lot number of each component antigen AND adjuvant.

Please report errors to your local health unit. Errors will be collated centrally to identify common misunderstandings and improve instructional materials to prevent future errors.
Early data from pH1N1 clinical trials

The following three slides summarize the immunogenicity and adverse event data following vaccination with Arepanrix H1N1® compared to vaccination with monovalent pH1N1 vaccine (non-adjuvanted)
# Immune Response to pH1N1 Vaccines (Adults 18-60 years)

<table>
<thead>
<tr>
<th>Anti-HA Antibody</th>
<th>Adjuvanted Vaccine (n=61)</th>
<th>Non-Adjuvanted Vaccine (n=66)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seroprotection rate</td>
<td>100%</td>
<td>93.9%</td>
</tr>
<tr>
<td>Seroconversion rate</td>
<td>96.7%</td>
<td>84.8%</td>
</tr>
</tbody>
</table>

Seroprotection rate: % of individuals with haemagglutination inhibition (HI) antibody titres $\geq 1:40$ post-vaccination

Seroconversion rate: % of seronegative subjects with post-vaccination HI titres $\geq 1:40$ or that were seropositive and had a 4-fold increase in HI titre
Common and expected adverse events following pH1N1 vaccine receipt

- **Very Common**
  - Pain, redness, & swelling at the injection site

- **Common**
  - Myalgia
  - Fatigue
  - Headache

- **Less common**
  - Regional lymphadenopathy, i.e., axillary and / or supraclavicular after deltoid injection, inguinal after thigh injection

- These are similar but more frequent with adjuvanted vaccine than with unadjuvanted or seasonal influenza vaccines

- Do not report these events as Adverse Events Following Immunization
## Common adverse events with Arepanrix® H1N1 AS03 vaccine

<table>
<thead>
<tr>
<th>Local Symptoms</th>
<th>Incidence</th>
<th>General Symptoms</th>
<th>Incidence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Adjuvanted Vaccine</td>
<td>Non-adjuvanted Vaccine</td>
<td>Adjuvanted Vaccine</td>
</tr>
<tr>
<td>Pain</td>
<td>90%</td>
<td>37%</td>
<td>Arthralgia</td>
</tr>
<tr>
<td>Redness</td>
<td>1.6%</td>
<td>0%</td>
<td>Fatigue</td>
</tr>
<tr>
<td>Swelling</td>
<td>6.5%</td>
<td>0%</td>
<td>Fever</td>
</tr>
</tbody>
</table>

- Clinical trial subjects 18-60 years of age
- Arepanrix H1N1® product leaflet. Oct 21/09
- After first dose

- Headache 14% 8%
- Myalgia 34% 8%
- Shivering 8% 3%
- Sweating 10% 8%
Increased Reactogenicity following 2\textsuperscript{nd} dose of Pandemrix H1N1\textsuperscript{®} in children 6-35 months

NOTE: Pandemrix is the GSK AS03 vaccine approved for use in Europe and comparable to Arepanrix\textsuperscript{TM}

<table>
<thead>
<tr>
<th>Adverse reactions</th>
<th>Post dose 1</th>
<th>Post dose 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>31.4%</td>
<td>41.2%</td>
</tr>
<tr>
<td>Redness</td>
<td>19.6%</td>
<td>29.4%</td>
</tr>
<tr>
<td>Swelling</td>
<td>15.7%</td>
<td>23.5%</td>
</tr>
<tr>
<td>Fever (≥38°C) axillary</td>
<td>5.9%</td>
<td>43.1%</td>
</tr>
<tr>
<td>Fever (≥39°C) axillary</td>
<td>0.0%</td>
<td>3.9%</td>
</tr>
<tr>
<td>Drowsiness</td>
<td>7.8%</td>
<td>35.3%</td>
</tr>
<tr>
<td>Irritability</td>
<td>21.6%</td>
<td>37.3%</td>
</tr>
<tr>
<td>Loss of appetite</td>
<td>9.8%</td>
<td>39.2%</td>
</tr>
</tbody>
</table>

Risk of fever $\geq 38^\circ$ C increased substantially after second dose of adjuvanted A/H1N1 vaccine

*Alert parents to likelihood of fever after immunization, provide fever management information as needed

Management of fever following immunization:

- Antipyretics, e.g. acetaminophen (15-20mg/kg/dose) may be given at intervals of 4 to 5 hours if fever persists, not to exceed five doses in 24 hours.

- Tepid sponge baths, rest and fluids recommended

- Do not give products containing acetylsalicylic acid (ASA) to children because of the risk of Reye syndrome.

Source: BCCDC Communicable Disease Control Immunization Program Manual, Section IX
Serious Adverse Events (SAE) after seasonal influenza vaccines:

- Generally accepted rates of serious adverse events following seasonal influenza vaccine:
  - Anaphylaxis (1 per 1 million doses given)
  - Guillain-Barré syndrome (GBS) (1 per 1 million doses given)

- Allergic event rates seen in BC pH1N1 vaccine program, with adjuvanted vaccine:
  - 4.5 per 100,000 doses
Non-adjuvanted monovalent pH1N1 vaccines

- Recommended for pregnant women
  - Preferred use over adjuvanted vaccine at any stage of pregnancy*
- "Clinical Formulation" product: 25,000 doses were distributed in BC starting November 9th
- Standard formulation will be available in BC starting November 16th. This product may also be used for healthy persons 10-64 years old.
- Both formulations are made in the same manner as Fluviral® seasonal influenza vaccine made by GSK and used in BC each year, but are pH1N1 influenza monovalent vaccines.

*see slide 9
Non-adjuvanted monovalent pH1N1 vaccines

Clinical Formulation:
- Available November 9th
- Released under an interim order from the Federal Minister of Health
- 5 doses per vial
- 10 ug thimerosal per dose

Standard Formulation:
- Available November 16th
- Fully authorized by Health Canada
- 10 doses per vial
- 50 ug thimerosal per dose (as per seasonal Fluviral® vaccine)
Non-adjuvanted monovalent pH1N1 vaccines

- Clear opalescent fluid, may sediment slightly, inspect for discoloration prior to administration. If this condition exists, do not administer the vaccine.
- Use 25 gauge 1-1.5 inch needle for withdrawing and administering
- 0.5 ml dose for those >10 years
- Shake vigorously prior to withdrawing each dose
- Give intramuscularly
- Write date on vial when withdrawing first dose. Use contents of vial within 28 days of vial puncture.
Non-adjuvanted monovalent pH1N1 vaccines

- Seroprotection achieved in 94% of subjects at day 21 post vaccine receipt
- Expected to have a similar adverse event profile to seasonal Fluviral® vaccine, contraindications same as other influenza vaccines (see slide 11)
What is the preservative used in the adjuvanted and non-adjuvanted vaccine?

- pH1N1 vaccines are in multi dose vials; therefore a preservative is needed to maintain sterility after vial entry
- contain thimerosal as a preservative
- In each 0.5 ml dose of the vaccine:
  - Adjuvanted: 5 μg thimerosal
  - Unadjuvanted, Clinical Formulation: 10 μg thimerosal
  - Unadjuvanted, standard formulation: 50 μg thimerosal
Reporting of adverse events following immunization:

Report as soon as possible events that:
- are severe or unusual
- require medical attention
- result in hospitalization

Mild to moderate local and systemic events will occur with adjuvanted vaccine more frequently than with seasonal or unadjuvanted vaccine. These are expected. Do NOT report these as adverse events following immunization.
Reporting of adverse events following immunization, continued:

- Health care providers in BC should report adverse events that they believe to be associated with these vaccines to the local medical officer of health/health unit.
- Report serious events as soon as these are recognized.
- Reporting form is online at: http://www.bccdc.ca/NR/rdonlyres/0F7FC86E-924C-4232-87DD-F5859E41A7A2/0/Epid_imms_adverse_events_form_june_09.pdf
Detailed reporting of anaphylaxis following vaccination

- Public health providers should report anaphylaxis events as follows:
  - In addition to reporting through iPHIS/ PARIS, complete and submit the anaphylaxis reporting form for each case.
Reporting of number of persons immunized each week:

- Reporting of the number of people immunized each week will be conducted from all clinics administered by public health and First Nations community health immunization service providers.
- Check with your local health unit on how to report.
- Private providers (e.g., in workplace settings) should check with local health unit about reporting back requirements.
- Doses given by physicians will be estimated through MSP billing claims.
Background information:
What is pandemic pH1N1 influenza?

The disease and its epidemiology
How Antigenic Shift Can Happen

Figure 1: Natural Reservoirs and Transmission Pathways: Drift and Shift Potential

Wild Fowl → Domestic Fowl → "Shift" → "Drift" → Person to Person
pH1N1 2009 pandemic influenza

- First positive test in Mexico March 28\textsuperscript{th}
- April 26\textsuperscript{th} first Canadian cases
- May 20\textsuperscript{th} 10 000 cases worldwide
- June 11\textsuperscript{th} WHO declared a pandemic (level 6):
  - evidence of “efficient and sustained human to human transmission” on more than 1 continent

Status as of: 04 October 2009

Cumulative deaths
- 1 - 10
- 11 - 50
- 51 - 100
- 101 and more

Chinese Taipei has reported seventeen deaths associated with pandemic (H1N1) 2009.
Age Distribution

Distribution by age group of persons hospitalized with laboratory-confirmed influenza (United States, 2007-08 winter influenza season and April 15-August 11, 2009)
Descriptive characteristics of laboratory-confirmed Canadian Pandemic (H1N1) 2009 cases, hospitalized cases, cases admitted to ICU and deaths  
26 September 2009

<table>
<thead>
<tr>
<th></th>
<th>Hospitalized cases (n=1,479)</th>
<th>Cases admitted to ICU (n=292)</th>
<th>Deaths (n=78)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median age</td>
<td>23yrs</td>
<td>37yrs</td>
<td>50yrs</td>
</tr>
<tr>
<td>Females, %</td>
<td>51.3%</td>
<td>56.8%</td>
<td>59.0%</td>
</tr>
<tr>
<td>Aboriginal status, %</td>
<td>17.6%</td>
<td>15.4%</td>
<td>11.5%</td>
</tr>
<tr>
<td>Underlying medical conditions¹, %</td>
<td>61.7%</td>
<td>71.6%</td>
<td>81.4%</td>
</tr>
<tr>
<td>Pregnancy², % (compared to other Women 15-44 hospitalized)</td>
<td>27.7%</td>
<td>19.2%</td>
<td>28.6%</td>
</tr>
</tbody>
</table>

1 Proportion of cases with at least one underlying medical condition (excluding pregnancy) among those for whom the information was available.
2 Percent of pregnant women among women 15 to 44 years of age.

Clinical presentation:

- pH1N1 symptoms
  - Very similar to seasonal influenza
  - Gastrointestinal symptoms more likely in children

- Among hospitalized patients
  - Primary viral pneumonia
    - Prolonged ventilatory support
  - Secondary bacterial infections

Adapted from the Centers for Disease Control and Prevention
Influenza virus transmission

- respiratory droplet spread (2 meters)
- may be spread by airborne spread
- direct contact; “fomites”
- incubation period usually 2 days (range 1-4)
- shed for 1 day before and up to 7 days after onset

Source: CDC public health image library
pH1N1 web sites

**Fightflu.ca**
Federal level information, Canada wide epidemiology, planning

**www.gov.bc.ca/h1n1/index**
Provincial information on disease, BC vaccine roll out plan

**www.bccdc.ca**
Provides up to date provincial information, epidemiology, links to other resources

**www.ImmunizeBC.ca**
Immunization specific information- appropriate for patients. Updated instructional materials will be posted here under Health Professionals.

**www.hls.gov.bc.ca/ pho/ physh1n1.html**
Provincial Health Officer’s H1N1 Site for the Physicians of B.C.