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# Influenza



## Bug of the Month

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**Wednesday September 21st, 2011  
1400 hrs – 1415 hrs**



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# Outline

- Brief general overview about influenza and seasonal influenza vaccine
- Facts and myths
- Questions

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# Influenza

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# What is Influenza?



- Influenza is a contagious disease of the respiratory tract caused by a virus
- **Seasonal** influenza occurs in Canada every year during the late fall and winter months
- There are 3 types of influenza viruses:
  - Type A - infects humans, birds & other mammals
  - Type B - only infects humans
  - Type C – infects humans and pigs

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# Seasonal Influenza – Symptoms

- Fever and cough, sore throat, unwell, muscle aches, headaches (up to 1 week)
- Pneumonia, exacerbation of underlying chronic illnesses, encephalitis
- Most severe in the very old and very young

<b><i>Signs and Symptoms</i></b>	<b><i>Common Cold</i></b>	<b><i>Influenza (the flu)</i></b>
<b>Fever</b>	Rare	Usual, sudden onset 39°-40°, lasts 3 to 4 days
<b>Headache</b>	Rare	Usual, can be severe
<b>Aches and Pains</b>	Sometimes mild	Usual, often severe
<b>Fatigue and weakness</b>	Sometimes mild	Usual, may last 2-3 weeks or more
<b>Extreme fatigue</b>	Unusual	Usual, early onset, can be severe
<b>Runny, stuffy nose</b>	Common	Sometimes
<b>Sneezing</b>	Common	Sometimes
<b>Sore throat</b>	Common	Sometimes
<b>Chest discomfort, coughing</b>	Sometimes mild to moderate	Usual, can be severe
<b>Complications</b>	Can lead to sinus congestion or earache	Can lead to pneumonia and respiratory failure and cause more complications in persons with chronic diseases.
<b>Prevention</b>	Frequent hand-washing	Annual flu shot and frequent hand-washing
<b>Treatment</b>	No specific treatment is available; symptom relief only	An anti-viral drug, which reduces severity and shortens the duration of symptoms if started within two days of becoming ill is available by prescription from your doctor.

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# Impact of Influenza

- Influenza A (H3N2, H1N1) and influenza B viruses circulate in humans causing annual outbreaks
  - 10%-25% of a population become ill with influenza
  - Average of 4,000 deaths and 20,000 hospitalizations per year in Canada due to flu or its complications

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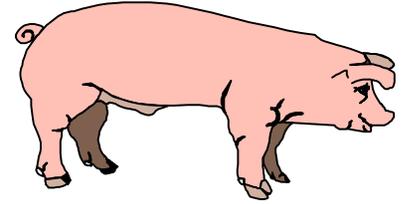
# Transmission of Influenza

- Influenza is spread by coughing, sneezing, direct physical contact, contact with objects in the environment.
- People can become contagious starting 1 day *before* the onset of symptoms and remain contagious for up to 5 to 7 days *after* the first symptoms.
  - Children may be able to spread the virus longer than 7 days.
- Infected people without any symptoms may still be contagious.

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# Survival of Influenza Viruses

- Influenza A virus can survive on hard, nonporous surfaces (e.g., stainless steel, hard plastic) for 24 – 48 hours and on porous materials (e.g., cloth, paper) for < 8 – 12 hours in ambient temperatures.
  - Infectious virus can be transferred to hands from nonporous surfaces for at least 2 – 8 hours during periods of heavy viral shedding in respiratory secretions.
  - The secondary spread of infectious virus from environmental reservoirs to susceptible persons is accomplished primarily via hand transfer (i.e., hand contact with contaminated surfaces and then touching mucous membranes of the eyes, nose, and mouth)



# Influenza Terms Defined

- ***Seasonal (or common) influenza*** - a respiratory illness that occurs every fall and winter and can be transmitted from person to person.
  - A vaccine is available every fall to prevent the most common seasonal influenza strains.
  
- ***Pandemic influenza*** - occurs when a new influenza A virus emerges for which there is little or no immunity in the human population; the virus causes serious illness and spreads easily from person-to-person worldwide.

Source = modified from CDC

# Each Pandemic is Different



1918: "Spanish Flu"  
40-50 million deaths

**H1N1**



1957: "Asian Flu"  
1 million deaths

**H2N2**



1968: "Hong Kong Flu"  
1 million deaths

**H3N2**

**Source: WHO**



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# Influenza Vaccines

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# Influenza Vaccines

- Indicated for the prevention of influenza in adults and children 6 months of age or older.
- The vaccine provides protection only against influenza caused by the specific strains of influenza virus contained in the vaccine
- Each year the seasonal vaccine contains 3 virus strains
  - Usually 2 type A strains and one type B strain representing the influenza viruses believed most likely to circulate during the current flu season.

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# Seasonal Influenza Campaign

- Start date is Tuesday October 11<sup>th</sup>, 2011
  
- Three vaccine products are being used in the publicly-funded program in Saskatchewan – only two will be used in SCHR:
  - AGRIFLU® for the general population; and
  
  - FLUAD® for individuals  $\geq$  65 years of age who reside in long term care facilities.

*Both these products are latex free and thimerosal free.*

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# Risk Groups Recommended to Receive the 2011-12 Seasonal Influenza Immunization

## People at high risk of influenza-related complications or hospitalization

- Adults (including pregnant women) and children with a chronic health condition including but not limited to:
  - ❑ cardiac or pulmonary disorders (including bronchopulmonary dysplasia, cystic fibrosis and asthma);
  - ❑ diabetes mellitus and other metabolic diseases;
  - ❑ cancer, immune compromising conditions (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;
  - ❑ morbid obesity (BMI  $\geq$  40); and
  - ❑ children and adolescents with conditions treated for long periods with acetylsalicylic acid.
- People of any age who are residents of nursing homes and other chronic care facilities.
- People  $\geq$ 65 years of age.
- Healthy children 6 to 23 months of age.
- Healthy pregnant women (the risk of influenza-related hospitalization increases with length of gestation, i.e. it is higher in the third than in the second trimester).

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# Risk Groups Recommended to Receive the 2011-12 Seasonal Influenza Immunization

## People capable of transmitting influenza to those at high risk

- All health care workers and volunteers who, through their activities, are capable of transmitting influenza to those at high risk of influenza complications:
  - Defined as anyone who provides direct patient care or indirect health services (e.g., office reception, housekeeping staff).
- Household and close contacts (adults and children  $\geq 6$  months) of individuals at high risk of influenza-related complications (whether or not the individual at high risk has been immunized):
  - household and close contacts of individuals at high risk, as listed in the section above;
  - household and close contacts of infants  $< 6$  months of age as these infants cannot receive influenza vaccine; and
  - members of households expecting newborns.
- Those providing regular child care to children  $< 24$  months of age, whether in or out of the home.
- Those who provide services within closed or relatively closed settings to persons at high risk (e.g. crew on a ship).

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## Risk Groups Recommended to Receive the 2011-12 Seasonal Influenza Immunization

### Other people who are eligible:

- People who provide essential community services.
- People working in direct contact during culling operations with poultry infected with avian influenza.
- People working with poultry or swine.
- Health sciences students (human and animal health).

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# Changes for 2011-2012 Publicly Funded Vaccination Program

- Egg allergy - is not a complete contraindication of receiving the injectable flu vaccine.
  - NACI is indicating that individuals with a history of egg allergy may be able to receive influenza vaccine provided appropriate facilities for the monitoring and management of anaphylaxis by a physician are available.
  
- Children 6 to 35 months of age should receive a full dose (0.5 ml) of influenza vaccine.

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# Composition of the 2011-2012 Influenza Vaccine

- All three components in the vaccine are the same as last year:
  - **A/California/7/2009 (H1N1)-like,**
  - **A/Perth/16/2009 (H3N2)-like, and**
  - **B/Brisbane/60/2008-like virus (B Victoria lineage).**

The two influenza A vaccine components are the same as in 2010-2011 and the B component is unchanged from the 2009-2010 and 2010-2011 season.

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Questions?

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What Do You Think are the  
Top 3 Reasons to Get Your Influenza  
Vaccination?

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# CDC's Top 3 Reasons

## 1. Prevents influenza-related death.

- Each year over 36,000 people in the U.S. die because of the flu—most are 65 or older. More people die from flu than from any other vaccine-preventable disease.

## 2. Prevents severe illness.

- In the U.S. influenza puts about 200,000 people in the hospital each year. Children younger than 2 years old are as likely to be hospitalized as adults who are 65 or older.

## 3. Protects other people.

- You should get vaccinated if you live with or care for others who are at high risk of complications from the flu. Getting a flu vaccination yourself can help protect your family members, including seniors and young children.

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# Facts and Myths

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# Influenza isn't serious, it's just a cold?

- Influenza is the 6<sup>th</sup> leading cause of death among adults
  - Between 4000 and 8000 Canadians can die each year of influenza and its complications annually, depending on the severity of the season.
  - Approximately 36,000 deaths and 114,000 hospitalizations occur each year in the United States.

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# Influenza isn't serious, it's just a cold?

- Influenza transmission between HCWs and patients is a serious problem in acute & long-term health care facilities.
- Low HCW immunization rates significantly increase the health impacts experienced by residents and the expenses associated with employee absenteeism and health care costs.

# Hospitalization Rates for Influenza By Age and Risk Group\*

<u>Age Group</u>	<u>Rate**</u> <u>(high-risk)</u>	<u>Rate**</u> <u>(not high-risk)</u>
0-11 mos	1900	496-1038
1-2 yrs	800	186
3-4 yrs	320	86
5-14 yrs	92	41
15-44 yrs	56-110	23-25
45-64 yrs	392-635	13-23
≥65 yrs	399-518	125-228

27 \* Data from several studies 1972 - 1995  
\*\* Hospitalizations per 100,000 population

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# It's Better to Get the Flu and Develop "Natural" Antibodies

- Infected individuals are infectious the day before the onset of their symptoms and transmit the virus to others

(....5 times more likely to be infected than vaccinated individuals and all infected individuals are infectious  
....the vaccine is  
70-90% effective in healthy individuals)

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# Facts about Influenza Vaccination

- The “Flu Shot” is:
  - 70-90% effective in healthy individuals.
  - 70% effective in preventing hospitalizations for pneumonia and flu among older persons in the community.
  - 50-60% effective in preventing hospitalizations and pneumonia in LTC residents.
  - 85% effective in preventing death in LTC residents.

# It's Better to Get the Disease and Develop "Natural" Antibodies

	Incidence Before Vaccine	Incidence After Vaccine
<b>HIB</b>	Leading cause of bacterial meningitis in infancy. About 2,000 cases per year.	Only anecdotal cases now being reported, less than 60 cases per year in the last few years.
<b>Tetanus</b>	Average 40-50 deaths per year.	3-5 cases per year reported, only 5 deaths in the last 18 years and none since 1991.
<b>Measles</b>	Cyclic with increasing incidence every 2-3 years. About 300,000 to 400,000 cases per year estimated.	Recent outbreaks with 11,000 cases (1989) and 2,300 (1995). With 2 dose schedule, now fewer than 400 cases per year.
<b>Polio</b>	Range 2.5-28.3 /100,000 and in epidemic years up to 20,000 cases of paralytic disease. About 1 in 20 hospitalized patients die and 50% of survivors remain paralyzed.	Indigenous disease eradicated from the Americas. Still endemic in other parts of the world.

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## Influenza vaccine can cause influenza?

- Influenza vaccine is an inactivated virus vaccine, which means that the virus particles are killed during the manufacturing process.
- Because the virus has been killed/inactivated, the vaccine is not capable of causing an influenza infection.

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# Influenza vaccine can cause influenza?

- 24 to 48 hours after being vaccinated, < 2% of people immunized with influenza vaccine will experience flu-like symptoms.
- These side effects of the vaccine reflect an individual's unique immune response to the vaccine rather than a case of influenza.
- The side effects are short-lived and are not known to be associated with any decrease in overall protection.
- Other viral infections are also circulating and coincidentally may be the cause of the illness the person is experiencing (incubation period).

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# I was vaccinated last year & still developed influenza

- Protection from influenza vaccine is not immediate and it takes 2 weeks for an adequate immune response and complete protection to occur.
- Other viral infections are also circulating and coincidentally may be the cause of the illness the person is experiencing.
- The vaccine contains the 3 strains of influenza that were predicted to be most common and the vaccine does not match all the circulating strains every year.

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# I was vaccinated last year and still developed influenza

- With a good match of vaccine to circulating influenza strains, the vaccine prevents influenza in 70 to 90% of healthy adults
  - In those who do not develop full protection from disease following vaccination - they are less likely to develop complications, severe disease, be hospitalized or die (see slide on vaccine efficacy).
- Vaccine efficacy may be lower in certain populations (e.g. the immunocompromised, the elderly) than in healthy adults. However...

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# I was vaccinated last year and still developed influenza

- ...the possibility of lower efficacy should not prevent immunization in those at high risk of influenza-associated morbidity since protection is still likely to occur.
- Immunization of residents of LTCFs, may only prevent < 50% of lab confirmed influenza but vaccination may be 50% to 60% effective in preventing hospitalization and pneumonia, and up to 85% to 95% in preventing death.

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**It is not necessary to get immunized against influenza every year because protection lasts from previous vaccinations?**

- The types of influenza viruses circulating in the community usually change from year to year.
- A new vaccine is made each year to protect against the current strains.
- Immunity to influenza viruses only lasts for a year, so it is important to get vaccinated against influenza every year.

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# Other Concerns People Have about Influenza Vaccination

- Guillain-Barre syndrome is associated with the flu vaccine.
- Thimerosal in the influenza vaccine can cause autism in children.
- I shouldn't be immunized with the flu vaccine if I am pregnant.

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# Other Concerns People Have about Influenza Vaccination

- Guillain-Barre syndrome is associated with the flu vaccine.
  - The 1976-1977 “swine flu” vaccine was associated with an increased risk of Guillain-Barre syndrome (GBS).
  - In 1990, a small excess of cases were seen in the 6 weeks following vaccination in adults under age 65. However, the population base rate of Guillain-Barre cases was lower than normal, making the significance of these observations unclear.
  - A causal relationship has not been established.

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## Other Concerns People Have about Influenza Vaccination

- I shouldn't be immunized with the flu vaccine if I am pregnant.
  - Studies have indicated that pregnancy can increase the risk for serious medical complications associated with influenza.
  - Increased risks might result in increases in heart rate, stroke volume, oxygen consumption, and decreases in lung capacity.

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# Pregnancy and Inactivated Influenza Vaccine

- Risk of hospitalization is 4 times higher than nonpregnant women
- Risk of complications comparable to nonpregnant women with high-risk medical conditions
- Vaccination (with TIV) recommended if pregnant during influenza season
- Vaccination can occur during any trimester

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# Other Concerns People Have about Influenza Vaccination

- Thimerosal in the influenza vaccine can cause autism in children.
  - The two influenza vaccines being used in SCHR (AGRIFLU® and FLUAD®) are thimerosal free.

## CDC

“Some people believe increased exposure to thimerosal (from the addition of important new vaccines recommended for children) explains the higher prevalence in recent years. However, evidence from several studies examining trends in vaccine use and changes in autism frequency does not support such an association.

Furthermore, a [scientific review](#) by the Institute of Medicine (IOM) concluded that “the evidence favors rejection of a causal relationship between thimerosal-containing vaccines and autism.” CDC supports the IOM conclusion.”

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Questions?

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# **What Can You Do to Protect Yourself?**

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## What can you do to protect yourself?

- Wash your hands frequently.
- Wash your hands thoroughly with soap & warm water, or use a hand sanitizer that contains at least 60% alcohol (hand hygiene).
- Cough and sneeze in your arm or sleeve or cover your cough with a tissue (respiratory etiquette).
- Avoid touching your eyes, nose or mouth (germs spread this way).
- Stay at home if you are sick and do not visit people who are sick.



# Do You Have a Fever & Cough?



- 1 Please tell a Staff Member  
Immediately!**



- 2 Wear a Mask**  
You may be asked to wear a mask if you are coughing or sneezing frequently.



- 3 Clean Your Hands**  
Wash your hands with soap and water, or with hand sanitizers (minimum 60% alcohol).



- 4 Cover Your Cough & Sneeze**  
Use a tissue to cover your mouth and nose when you cough or sneeze and drop your used tissue in a waste basket.

**OR**

Cough or sneeze into your upper sleeve, not into your hands.



**Thank you for protecting our  
patients, residents, clients & health care workers!**

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## Protect Our Residents, Our Patients, and Our Clients

“The Duty of Care for patients on the part of HCWs must prevail. The vaccination of HCWs must be regarded more as a matter of meeting professional and ethical standards than of personal preference.”

– Pamela Orr (2000)

Infection Control = Team Effort  
We need all players to be effective!

Thank You!



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