Influenza:
Protect Yourself and Others

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Effects of Influenza

- 5-20% of people each year
- 200,000 Hospitalizations
- Influenza associated deaths range from 3,000-49,000
- 90% of those in adults >65 years old
- Secondary Complications
Pediatric Deaths
About the Virus

Influenza Virus Anatomy

- Nucleoprotein (RNA)
- Lipid Envelope
- Capsid
- Neuraminidase (Sialidase)
- Hemagglutinin
Genetic Drift and Shift

**Antigenic Drift**

- An influenza virus infects a healthy cell.
- Mistakes made by viral DNA polymerase during replication cause virus with new antigenic variants to be produced.
- Due to pressure from antibody that host develops against viral antigens, the virus with new antigenic variants is selected and a slightly different strain of virus begins to circulate in the population.

**Antigenic Shift/Reasortment**

- Two different strains of influenza virus (ex. H1N1 and H3N2) infect the same healthy cell.
- Viral genetic material is exchanged during replication.
- Reasorted virus is released from the cell. This new virus may be capable of cross-species transmission.
Genetic Shift

Antigenic shift in pigs

Flu viruses containing genetic material from:
- pigs
- birds
- humans

New strain

Generation of a Pandemic Influenza Strain

Avian virus  Avian reassortant virus

Reassortment in swine

Reassortment in humans

Avian-human pandemic reassortant virus

Source: CDC | Influenza Division, Centers for Disease Control and Prevention. Modified from Emergence of H5N1 influenza virus and control options. (Emerging Infectious Diseases • www.cdc.gov/eid • Vol. 12, No. 1, January 2006)
History of Influenza
About the Flu

- Transmission
  - Droplet
- Incubation period
  - Very short 1-4 days
### Symptoms

<table>
<thead>
<tr>
<th>Influenza</th>
<th>Cold</th>
</tr>
</thead>
<tbody>
<tr>
<td>• High Fever for 3-4 days</td>
<td>• Low Fever or No Fever</td>
</tr>
<tr>
<td>• Headaches</td>
<td>• Rare Headache</td>
</tr>
<tr>
<td>• Aches, Pains</td>
<td>• Slight Aches</td>
</tr>
<tr>
<td>• Fatigue</td>
<td>• Mild Fatigue</td>
</tr>
<tr>
<td>• Sometimes stuffy nose, sneezing, sore throat</td>
<td>• Stuffy Nose, Sneezing, Sore throat</td>
</tr>
<tr>
<td>• Cough</td>
<td>• Mild to Moderate Cough</td>
</tr>
<tr>
<td>• Chest discomfort</td>
<td></td>
</tr>
</tbody>
</table>
Vaccinations!!

• Everyone >6 months old
• Vaccine Match
• Trivalent: A (H1N1, 2009), A (H3N2), B
• Quadrivalent
• High Dose: ages >65

Table 2. Influenza Vaccination Coverage by Age Group, Children 6 months to 17 years—United States, 2011–12 Season

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Unweighted Sample Size</th>
<th>%</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 months–17 years</td>
<td>96,254</td>
<td>51.5</td>
<td>±1.0</td>
</tr>
<tr>
<td>6 months–4 years</td>
<td>25,206</td>
<td>67.6</td>
<td>±1.7</td>
</tr>
<tr>
<td>6–23 months</td>
<td>9,115</td>
<td>74.6</td>
<td>±2.5</td>
</tr>
<tr>
<td>2–4 years</td>
<td>16,091</td>
<td>63.3</td>
<td>±2.3</td>
</tr>
<tr>
<td>5–12 years</td>
<td>40,584</td>
<td>54.2</td>
<td>±1.4</td>
</tr>
<tr>
<td>13–17 years</td>
<td>30,464</td>
<td>33.7</td>
<td>±1.6</td>
</tr>
</tbody>
</table>
Type of Influenza 2014-15

Influenza Positive Tests Reported to CDC by U.S. WHO/NREVSS Collaborating Laboratories, National Summary, 2014-15

- A (Subtyping not performed)
- 2009 H1N1
- A (H3)
- H3N2v
- B
- Percent Positive

Graph showing the number of positive specimens and percent positive over the years 2014 to 2015.
During flu season:

• Wash your hands
• Cover your mouth
• Stay home if sick
Works Cited

Center for Disease Control. (2014). *Influenza*. 
http://www.cdc.gov/flu/index.htm


[Name Withheld], Pediatric Pulmonologist. Personal Interview. 11/6/2014

[Name Withheld], RN, BSN, Health and Nursing Services Coordinator Danbury Public Schools. Personal Interview. 11/6/2014