Pandemic Novel H1N1 Influenza Surveillance, United States

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Pandemic Influenza Virus Surveillance: Goals

- To rapidly detect the introduction and early cases of a pandemic influenza virus into the country
- To track the virus’ introduction into local areas
- To monitor changes in the pandemic virus, including development of antiviral resistance and changes in antigenicity and virulence
- To help to identify effective control strategies and re-evaluate recommended priority groups for vaccination and antiviral therapy
Improving Disease Detection, Treatment, and Prevention

- Vaccine Policy-ACIP
- Vaccine and Antiviral Effectiveness Studies
- Characterization of seasonal and avian influenza
- Outbreak Investigations
- Improved Diagnostics at point of care
- FDA Approved Devices
Summary of Early Events in the U.S.

- Between April 15-17, 2009
  - 2 cases of febrile respiratory illness
  - Residents of adjacent counties in southern California
  - Swine influenza A (H1N1) virus

- Both viruses are genetically closely related to each other
  - Resistant to amantadine and rimantadine
  - Contain a unique combination of gene segments previously not recognized among swine or human influenza viruses in the United States

- Neither child had contact with pigs
Influenza Surveillance Goals and Uses of Data

- Identify and characterize circulating viruses
- Determine the timing of influenza activity
- Identify location of activity and track geographic spread
  - Informs policy recommendations for use of antivirals and vaccines
  - Data for public health communications to partners / public
### Surveillance for Influenza Antiviral Resistance United States as of 24 JUN 2009

<table>
<thead>
<tr>
<th></th>
<th>Isolates tested (n)</th>
<th>Resistant Viruses, Number (%)</th>
<th>Isolates tested (n)</th>
<th>Resistant Viruses, Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Oseltamivir</td>
<td>Zanamivir</td>
<td>Adamantanes</td>
</tr>
<tr>
<td>Seasonal Influenza A (H1N1)</td>
<td>1010</td>
<td>1055 (99.5%)</td>
<td>0 (0)</td>
<td>1012</td>
</tr>
<tr>
<td>Influenza A (H3N2)</td>
<td>187</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>187</td>
</tr>
<tr>
<td>Influenza B</td>
<td>550</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>N/A*</td>
</tr>
<tr>
<td>Global Novel Influenza A (H1N1)</td>
<td>216</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>216</td>
</tr>
</tbody>
</table>

*The adamantanes (amantadine and rimantadine) are not effective against influenza B viruses.*
# Novel Influenza A (H1N1) Cases by Weekly Report Date as of 19 JUN 2009 (n=)*21,449

<table>
<thead>
<tr>
<th>Week Ending Date</th>
<th>Cases (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-Mar</td>
<td>0</td>
</tr>
<tr>
<td>26-Mar</td>
<td>0</td>
</tr>
<tr>
<td>1-Apr</td>
<td>5</td>
</tr>
<tr>
<td>8-Apr</td>
<td>19</td>
</tr>
<tr>
<td>15-Apr</td>
<td>915</td>
</tr>
<tr>
<td>22-Apr</td>
<td>2,144</td>
</tr>
<tr>
<td>29-Apr</td>
<td>1,879</td>
</tr>
<tr>
<td>5-May</td>
<td>1,710</td>
</tr>
<tr>
<td>12-May</td>
<td>3,289</td>
</tr>
<tr>
<td>19-May</td>
<td>3,164</td>
</tr>
<tr>
<td>26-May</td>
<td>4,638</td>
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</tbody>
</table>

*Data for week ending 19 June 2009.
Dates not available for 92 cases.
Influenza Surveillance Goals and Uses of Data

- Identify and characterize circulating viruses
- Determine the timing of influenza activity
- Identify location of activity and track geographic spread
  - Informs policy recommendations for use of antivirals and vaccines
  - Data for public health communications to partners / public
NOTE: Week ending dates vary by influenza season † 
† There was no week 53 during the 2006-07 and 2007-08 seasons, therefore the week 53 data point for those seasons is a 48-week average of weeks 52 and 1.
Epidemiology/Surveillance
Pandemic H1N1 - 23 JUN 2009
State ILINet Week Ending 13 JUN 2009

U.S. Outpatient Influenza-like Illness Surveillance Network
Arizona

U.S. Outpatient Influenza-like Illness Surveillance Network
California

U.S. Outpatient Influenza-like Illness Surveillance Network
Chicago

U.S. Outpatient Influenza-like Illness Surveillance Network
Hawaii

CDC
Influenza Surveillance Goals and Uses of Data

- Identify and characterize circulating viruses
- Determine the timing of influenza activity
- Identify location of activity and track geographic spread
- Estimate disease burden associated with influenza
  - Inform vaccine policy – e.g. identify high risk groups,
  - Critical communications / advocacy data
Epidemiology/Surveillance
Pandemic H1N1 - 25 Jun 2009
Pneumonia and Influenza Mortality for 122 U.S. Cities
Week Ending 06/20/2009
Influenza Surveillance Goals and Uses of Data

- Identify and characterize circulating viruses
- Determine the timing of influenza activity
- Identify location of activity and track geographic spread
- Determine disease burden associated with influenza
- Maintain platforms / systems that can be used to monitor program impact
  - Vaccine effectiveness
  - Effectiveness of pandemic mitigation strategies
  - Special research studies
Challenges for Influenza Surveillance

- We are all struggling with determining true severity of pandemic H1N1
- By necessity, move from reporting line listing of laboratory positive cases to aggregate reporting
- Huge difference between counted cases and true number of influenza cases; denominator is underestimate as many do not seek medical care/and of those more severe cases more likely to be tested
- Difficult to calculate medically attended, hospitalization and fatality rates for estimating medical surge
- Planning and resource allocation predicated on accurate estimates of rates
- Need to use modeling to have better estimates
Question:
What is the Difference Between Bird Flu and Swine Flu?

Answer:
For bird flu you need tweetment
and for swine flu you need oinkment.