What is Influenza Pandemic?

- Global outbreak, effects all ages
- Caused by new flu virus
- Can occur at any time of year
- Few or no people immune
- Begins in countries where humans, swine, and birds live under same roof
- H5N1 (Avian) is one type of flu virus that could lead to pandemic
Seasonal Flu vs. Pandemic Flu

- **Common Virus**
  - Symptoms: fever, headache, tired, dry cough, runny nose, muscle pain
  - Very young, elderly, chronic ill at risk for complications

- **New virus**
  - Similar symptoms but more severe; more serious complications
  - Healthy adults at risk for serious complications
Influenza Pandemics 20th Century

1918 Spanish Flu
H1N1
20-40 m deaths
675,000 US Deaths

1957 Asian Flu
H2N2
1-4 m deaths
70,000 US Deaths

1968 Hong Kong Flu
H3N2
1-4 m deaths
34,000 US Deaths
Situation Report: Avian Influenza
July 2006

- Widespread and spreading prevalence in migratory boards; broad host range
- Continued outbreaks among domestic poultry
- Mammalian infection (cats, pigs, etc.) lethal
- Virus is evolving
- Virus has not yet reached the United States
- Sporadic human cases (227 reports to date)
  - Most in young and healthy
  - Case-fatality 56%
  - Rare person-to-person transmission
Will H5N1 become the next pandemic?

- Impossible to know
- Risk to people exists as long as it continues to infect birds with human contact
- H5N1 activity unprecedented and worrisome
  - Persistent outbreaks in Asian poultry
  - Spread through migratory birds
- If not H5N1, then another will come
- Prudent time to plan: NOW
Nations With Confirmed Cases of H5N1 Avian Influenza (July, 2006)
Cumulative Number of Confirmed Human Cases of Avian Influenza A/(H5N1) Reported to WHO
20 July 2006

<table>
<thead>
<tr>
<th>Country</th>
<th>2003 cases</th>
<th>2003 deaths</th>
<th>2004 cases</th>
<th>2004 deaths</th>
<th>2005 cases</th>
<th>2005 deaths</th>
<th>2006 cases</th>
<th>2006 deaths</th>
<th>Total cases</th>
<th>Total deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Azerbaijan</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>8</td>
<td>5</td>
<td>8</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Cambodia</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>China</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>8</td>
<td>5</td>
<td>11</td>
<td>7</td>
<td>19</td>
<td>12</td>
</tr>
<tr>
<td>Djibouti</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Egypt</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>14</td>
<td>6</td>
<td>14</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>17</td>
<td>11</td>
<td>37</td>
<td>31</td>
<td>54</td>
<td>42</td>
</tr>
<tr>
<td>Iraq</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Thailand</td>
<td>0</td>
<td>0</td>
<td>17</td>
<td>12</td>
<td>5</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>22</td>
<td>14</td>
</tr>
<tr>
<td>Turkey</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>12</td>
<td>4</td>
<td>12</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Viet Nam</td>
<td>3</td>
<td>3</td>
<td>29</td>
<td>20</td>
<td>61</td>
<td>19</td>
<td>0</td>
<td>0</td>
<td>93</td>
<td>42</td>
</tr>
<tr>
<td>Total</td>
<td>3</td>
<td>3</td>
<td>46</td>
<td>32</td>
<td>95</td>
<td>41</td>
<td>87</td>
<td>57</td>
<td>231</td>
<td>133</td>
</tr>
</tbody>
</table>

Total number of cases includes number of deaths.
WHO reports only laboratory-confirmed cases.
# World Health Organization (WHO) Pandemic Phases

<table>
<thead>
<tr>
<th>Phase</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1</td>
<td>No animal influenza viruses circulating with the potential to infect humans</td>
</tr>
<tr>
<td>Phase 2</td>
<td>Animal influenza virus is circulating with the potential to infect humans</td>
</tr>
<tr>
<td>Phase 3</td>
<td>Human cases with rare or no human-to-human spread (July 2006)</td>
</tr>
<tr>
<td>Phase 4</td>
<td>Small clusters caused by human-to-human spread</td>
</tr>
<tr>
<td>Phase 5</td>
<td>Larger regional clusters caused by human-to-human spread</td>
</tr>
<tr>
<td>Phase 6</td>
<td>Geographically widespread and efficiently spread from human-to-human</td>
</tr>
</tbody>
</table>
Assumptions about Disease Transmission

- No one is immune - ~30% of population will become ill
- Of those that become ill, 50% will seek hospital treatment
- Most will become ill 2 days after exposure
- May be contagious up to 24 hours before illness begins
- Most contagious the first 2 days of illness
- On average, each ill person infects 2 or 3 others (if no precautions are taken)
- Highest risk: young adults and pregnant women
Assumptions about Disease Transmission

- Pandemic move through community in waves
- Each wave will last 6 - 8 weeks
- There will be at least 2 “waves,” likely separated by months
- The entire pandemic period (all waves) will last about 18 months to 2 years
- Disease may break out in multiple locations simultaneously
### Medical Burden Example

**Memphis/Shelby County (1 million)**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Moderate</th>
<th>Severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illness (30%)</td>
<td>300,000</td>
<td>300,000</td>
</tr>
<tr>
<td>Outpatient Care</td>
<td>150,000</td>
<td>150,000</td>
</tr>
<tr>
<td>Hospitalization</td>
<td>3,000</td>
<td>33,000</td>
</tr>
<tr>
<td>ICU Care</td>
<td>450</td>
<td>1,650</td>
</tr>
<tr>
<td>Mechanical Ventilation</td>
<td>225</td>
<td>825</td>
</tr>
<tr>
<td>Deaths</td>
<td>300 (0.2%)</td>
<td>6,000 (2%)</td>
</tr>
</tbody>
</table>
Assumptions (during entire pandemic period)

- **Fire department demands**
  - Estimate >25% increase in call demand if transport service
  - Estimate 40% of employees absent
  - Interruptions in supply delivery

- **Hospital demands**
  - Estimate >25% more patients than normal needing hospitalization during a local wave
  - Staffing shortages

- **Absenteism**
  - During 6 – 8 week wave, at any one time, ~40% of employees may be absent because of illness, fear or care for a sick person
Pandemic Influenza Challenges

- Essential services you depend on may be disrupted
- Food and water supplies may be interrupted and limited
- Being able to work may be difficult or impossible
- Schools and daycares may be closed
- Medical care for people with chronic illnesses will be disrupted
Pandemic Influenza Doctrine
Saving Lives

- Prevent/delay introduction into the US
  - May involve travel restrictions
  - For first cases, may involve isolation/short term quarantine of arriving passengers
Pandemic Influenza Doctrine
Saving Lives

- Slow spread, decrease illness and death, buy time
  - Antiviral treatment and isolation for people with illness
  - Antiviral preventive therapy and quarantine for those exposed would occur early in the outbreak
- Social distancing
- Vaccine when available
Vaccine and Antivirals
Solutions of the future, but little help now

- **Pandemic influenza vaccine**
  - Limited production
  - Research underway
  - Priority groups

- **Antiviral drugs**
  - Limited production
  - Priority groups
  - Usefulness?
Tamiflu
Protecting Your Employees
Masks

- CDC recommends N-95
- IAFF recommends P-100
- Should be given to any employee who will have direct patient contact
P-100 Disposable Respirator

N-95 Disposable Filter
More About Masks

- If you wear a mask, keep your hands away from your face!
- Clean your hands each time you touch your mask
Transporting Patients

- When transporting persons suspected of having a highly contagious respiratory infection, do not allow air to recirculate within the vehicle, especially do not use the recirculation (Maximum Level) control on the vehicle's heating/air conditioning system. When possible, open windows/vents for improved ventilation.

- Respirators may not be removed to eat or drink while in the transport vehicle. Personal activities that require removal of respirators should not be performed in the patient-care cabin.
Transporting Patients

- The patient may wear a paper surgical mask to reduce droplet production, if one can be tolerated.
- Oxygen delivery with simple and non-rebreather facemasks may be used for patient oxygen support during transport.
- A facemask and goggles must be worn for all patient care within 6 feet of the patient. Corrective eyeglasses alone are not appropriate protection.
Transporting Patients

- Patient care personnel should not wear leather or other non-medical gloves while transporting patients.
- Eating, drinking, application of cosmetics, and handling of contact lenses should not be done in the immediate patient care area.
- Handling or storage of medication or clinical specimens should not be done in areas where food or beverages are stored or prepared.
What Should Fire Departments Expect and What Should They Be Doing
What Can Fire Departments Expect

- Increased call volume
- Absenteeism among employees
- Sick employees – possibly deaths
  - Difficult to prove line of duty death
- Interruption in supply inventory
What Should Fire Departments Be Doing

- Plan NOW
- Plan should include:
  - How do you protect your employees
  - How do you deal with increased call volume
  - How do you deal with extreme absenteeism
  - How do you deal with an employee death
  - How do you deal with supply interruption
  - How to you deal with a sick person in a plane, bus, subway car, classroom
What Should Fire Departments Be Doing

- Working with the local health department
  - Surveillance
  - Vaccinations or prevention for employees
- Make sure psychological support services are in place for employees
- Formalize mutual aid agreements in the event other resources are needed
- Create an incident command system for your pandemic plan based on NIMS
- Identify who has authority to declare a public health emergency
What Should Fire Departments Be Doing

- Ensure you have a Infectious Disease Control Plan that meets NFPA 1581 (chapters 5 & 6) Standard on Fire Department Infection Control Program
- Work with law enforcement to work and maintain order if necessary (remember when there was a flu vaccine shortage last year)
- Test the operational plan for surge capacity, including increased call volume, excess absenteeism, and supply interruption.
What Should Fire Departments Be Doing

- Disseminate information to first responders
- Work with Unified Command regarding press releases and information to the public
Websites where you can find information

www.pandemicflu.gov
www.avianflu.gov
www.iafc.org
www.iaff.org
Thank you and have a great conference

Gary Ludwig
Contacting Me!

www.garyludwig.com
garyludwig@aol.com
636-789-5660