H1N1: Current and Future Challenges in Pandemic Influenza Response

Texas Department of State Health Services (DSHS)
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Community Preparedness Section
October, 2009
Presentation Goals

1. Describe previous pandemics of influenza and their influence on planning assumptions

2. Describe the initial response to “novel” H1N1 influenza

3. Describe Texas’ preparation and response for the second wave…and possible third wave

4. Discuss coordination of efforts and what you, your family, and your community need to consider in preparation for H1N1 (next steps)
Misconceptions: “Swine Flu”

• 2008, economic impact of pork production to the state was over $860 million.
• 30 April 2009, CHICAGO (Reuters) - U.S. hog prices fell sharply on Thursday as the market grew more worried that consumers afraid of swine flu will avoid pork, despite scientific evidence the meat is safe and the flu spread by human contact. In all, 13 countries have banned pork or meat from U.S. states that have had human cases of the flu. That list includes China and Russia, important buyers of U.S. meat that have been working to increase their own meat production.…."

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Misconceptions: “Swine Flu”

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Influenza Virus Infection

General Characteristics

• Sudden onset of symptoms
• Incubation period: ~1-4 days
• Infectious period: 5+ days, starting 1 day before symptoms (longer in children)
• Fever, headache, cough, sore throat, aches, possibly vomiting and diarrhea
• 50% of individuals with typical “seasonal” influenza have contact with the health care system (ranging from a doctor visit to hospital admission)

Several types of influenza virus are circulating.
Pandemic

Definition: A disease outbreak occurring over a wide geographic area and affecting an exceptionally high proportion of the population

The June 2009 declaration of a pandemic by the World Health Organization is an indication of the spread of the disease, not the severity.
Recorded Influenza Pandemics

20th Century Influenza Pandemics

1918 Spanish Flu
• Highest number of known flu deaths
• More than 500,000 people died in the US
• 20 to 50 million people worldwide died

1957-58 Asian Flu
• 70,000 deaths in the United States
• First identified in China in late February 1957
• Spread to the US by June 1957

1968-69 Hong Kong Flu
• 34,000 deaths in the United States
• First detected in Hong Kong in early 1968
• Spread to the US later that year

1976 Swine Flu
• The pandemic that did not happen
The 1918 Influenza Pandemic: U.S. Influenza and Pneumonia Deaths by Age

Deaths per 100,000 population

Age Divisions

1911 -1917 (Lower Line)

1918 (Upper Line)

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H1N1 Deaths in Texas
Week Ending November 28th, 2009

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1918: How Health and Community Leaders Responded…

By advising:
- Cough control
- Hand washing
- Avoiding crowds

By establishing:
- Alternative sites for medical care

By issuing:
- Ordinances to limit large public gatherings

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Liberty Loan Parade
Philadelphia – September 28, 1918
Community Mitigation 1918: Pandemic Flu Mortality in Philadelphia & St. Louis

Death Rate/100,000 Population

Philadelphia

St. Louis
Texas Confronts Novel H1N1 Virus

It’s not a matter of *If*... but a matter of *When* *Now!*
## Pandemic Influenza Planning
### Assumptions Prior to April 2009

<table>
<thead>
<tr>
<th>Pre-April Assumptions</th>
<th>Reality</th>
</tr>
</thead>
<tbody>
<tr>
<td>H5N1 (bird flu) would be the pandemic strain</td>
<td>H1N1 was the pandemic strain</td>
</tr>
<tr>
<td>Need to plan for high mortality and morbidity</td>
<td>Low mortality</td>
</tr>
<tr>
<td>Outbreak would occur overseas (Asia)</td>
<td>Outbreak began in Mexico</td>
</tr>
<tr>
<td>Potential for rapid spread</td>
<td>Rapid spread</td>
</tr>
<tr>
<td>Elderly, chronically ill, and very young would be the most affected</td>
<td>Primarily affected school age &amp; young adults</td>
</tr>
<tr>
<td>Vaccine would not be available</td>
<td>Vaccines will be available (delivered late in Wave #2)</td>
</tr>
<tr>
<td>Key role for community mitigation</td>
<td>Initially schools were closed as a precaution</td>
</tr>
<tr>
<td>Unpredictability of influenza virus</td>
<td>Conducted surveillance for changes in the virus strains</td>
</tr>
</tbody>
</table>
Percentage of Visits Due to Influenza-Like Illness (ILI)

Texas Providers in the U.S. Outpatient Influenza-like Illness Surveillance Network, 08-09 and 09-10 Seasons
Region VI Baseline = 4.6%

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Percentage of Visits Due to Influenza-Like Illness (ILI) Reported by Texas Participants in the ILINet, 2006-2010

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National H1N1 Reporting

Weekly Influenza Activity Estimates Reported by State & Territorial Epidemiologists*
Week ending December 5, 2009 - Week 48

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Principal Activities: H1N1 Response

- Epidemiological investigation
- Laboratory testing
- Guidance for clinicians, organizations, & communities
- Distribution of Strategic National Stockpile antivirals
- Distribution of H1N1 vaccine
- Track Hospital Surge Needs
- Communication to the public
Signs and Symptoms of Novel A (H1N1) Early Cases Reported to DSHS April / May 09

<table>
<thead>
<tr>
<th>Symptoms reported in confirmed cases</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever (&gt;100°F)</td>
<td>94%</td>
</tr>
<tr>
<td>(median temp: 102.0°F)</td>
<td></td>
</tr>
<tr>
<td>Cough</td>
<td>87%</td>
</tr>
<tr>
<td>Sore throat</td>
<td>61%</td>
</tr>
<tr>
<td>Diarrhea and/or vomiting</td>
<td>47%</td>
</tr>
</tbody>
</table>

Critical point:
88% of the confirmed H1N1 cases met Influenza Like Illness (ILI) case definition (fever > 100°F and sore throat or cough)

*Based on early cases when we were doing general surveillance*
Perspective: Seasonal vs. H1N1

- Each year in Texas, it’s estimated that influenza viruses have the following impact:
  - Between 1 and 5 million people sick
  - Over 16,000 people hospitalized
  - Nearly 3,000 people die each year

- Novel H1N1 virus has had the following impact:
  - Hundreds of thousands sick
  - Thousands hospitalized
  - 177 people have died (reported as of 7 December 2009)

- The impact of novel H1N1 virus in the upcoming flu season will raise the number of people sickened, hospitalized, or killed

The degree of impact is unknown

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Novel H1N1 Virus Presented Challenges in Texas

• **Big home rule state**
  - Sheer size of Texas is itself a challenge
  - Disaster response is established as a local responsibility; state plays crucial support role

• **Laboratory capacity**
  - DSHS lab and Laboratory Research Network (LRN) handled over 30,000 samples during the spring response
  - Lab became a diagnostic laboratory rather than serving as a surveillance lab
• **Novel virus: Spread and Severity?**
  - When virus first appeared, we needed to know more about H1N1
  - Was it more serious and did it impact the same populations as seasonal flu

• **Complexity of local school closures & public events**
  - Impact can be community-wide, impacting employers and essential services

• **Communicating the right messages**
  - Finding the balance between reporting the news and not creating panic
Lessons Learned in 2009

- Young adults MAY experience higher than expected mortality rates from a “novel” (new) strain of influenza virus
- Severity of illness MAY be lessened by prior exposure to a genetically related influenza virus
- Targeted, layered non-pharmaceutical interventions (NPI) MAY help mitigate the impact of flu on communities
• *Timely* closure of large public gatherings MAY help diminish the “peak” number of people who are ill with the flu in a community at any one time

• Outpatient and inpatient medical care facilities WILL be overwhelmed when the number of people who are seriously ill at any one time exceeds each community’s medical surge capacity.
Medical Surge Capacity: Hospital Beds

- Texas has ~550 hospitals with ~80,000 beds
- We have a surge capacity of about 9,000 beds
- Texas’ population is 24 million
- Texas is working to develop an inventory of medical supplies and equipment
Medical Surge Capacity: Alternative Care Systems

• Try to care for ill people at home if possible
  • Home care guidance (provided through call centers)
  • Guidance on when to seek medical care

• Expand outpatient capacity
  • Flu clinics
  • ER capacity (tool kits available)

• Postpone non-essential healthcare activities if needed

• Identify local nursing home capacity

• Identify hospital surge capacity strategies for critical populations (Pediatrics, OB, Critical care)

• Develop alternate care sites as last option. Texas has approximately 22,000 alternate care site beds identified

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Non-Pharmaceutical Interventions (NPI) include methods to reduce spread of disease (e.g., community mitigation, good hygiene, staying home when sick)
Non-Pharmaceutical Interventions (NPI)

Goals for NPI

1. Reduce those exposed
2. Reduce burden on hospitals
3. See fewer outbreaks

* From Community Strategy for Pandemic Influenza Mitigation (CDC, February 2007)
## Pandemic Severity Index

<table>
<thead>
<tr>
<th>Case Fatality Ratio</th>
<th>Number Deaths in Texas</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \geq 2% )</td>
<td>( \geq 144,000 )</td>
</tr>
<tr>
<td>1 - 2%</td>
<td>72,000 - 144,000</td>
</tr>
<tr>
<td>0.5 - 1%</td>
<td>36,000 - 72,000</td>
</tr>
<tr>
<td>0.1 - 0.5%</td>
<td>7,200 – 36,000</td>
</tr>
<tr>
<td>&lt; 0.1%</td>
<td>&lt; 7,200</td>
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</tbody>
</table>
## CDC Recommended Community-based Strategies

<table>
<thead>
<tr>
<th>Interventions by setting</th>
<th>Pandemic Severity Index</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Mild (Category 1)</td>
</tr>
<tr>
<td><strong>Workplace/Community/School</strong></td>
<td></td>
</tr>
<tr>
<td>Decrease number of social contacts:</td>
<td>Generally not recommended</td>
</tr>
<tr>
<td>Adults: teleconferences/webinars</td>
<td></td>
</tr>
<tr>
<td>Students: altered curriculum; computer-based classes</td>
<td></td>
</tr>
<tr>
<td>Modify workplace/school schedules and practices</td>
<td>Generally not recommended</td>
</tr>
<tr>
<td>Adults: telecommute; staggered shifts</td>
<td></td>
</tr>
<tr>
<td>Students: staggered school schedules</td>
<td></td>
</tr>
<tr>
<td>Increase distance between persons</td>
<td>Generally not recommended</td>
</tr>
<tr>
<td>Adults: Increase space between people in mtgs, public transit</td>
<td></td>
</tr>
<tr>
<td>Students: Increase space between students in school buses; schools</td>
<td></td>
</tr>
<tr>
<td>Modify, postpone, or cancel public events</td>
<td>Generally not recommended</td>
</tr>
<tr>
<td>Adults: UT/TAMU football game, theatre events</td>
<td></td>
</tr>
<tr>
<td>Students: UIL, graduation</td>
<td></td>
</tr>
</tbody>
</table>
### At-Risk Priority Populations

**Antiviral Medication**

- Children less than 5 years old
- Persons 65 years or older
- Pregnant women
- Adults and children with:
  - Chronic pulmonary, cardiovascular, hepatic, hematological, neurologic, neuromuscular, metabolic disorders and/or immunosuppression including those caused by medications or HIV
- Residents of nursing homes

**H1N1 Vaccinations**

- Pregnant Women
- Those who live with or provide care to infants <6 months
- Children and young people age 6 months through 24 years
- People between 25 and 64 years who have chronic medical conditions (heart disease, lung disease, neurological disease, etc)
- Health care and emergency medical services workers

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Antiviral Medications for Influenza

• Inhibits the growth or reproduction of the virus

• Antiviral medications are available in the commercial marketplace

• Antiviral medications are just one piece of the response effort

• If given within 48 hours of exposure or before exposure antivirals may:
  • Prevent disease, but only while medication is taken
  • No long term protection

• If given within 48 hours of symptoms antivirals may:
  • Reduce length of illness by 1-2 days
  • Prevent severe complications
Collaboration Efforts

Press Conference with the Governor

Incident Commander with Planning and Intelligence Chief at the DSHS MACC

EPI team hard at work

Inspection of the SNS antiviral allotment

Epidemiologists investigated deaths, established what data and specimens needed to be collected & established policy

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Public Health Messages

• Practice good hand hygiene
• Practice cough/sneeze etiquette
• Be prepared to get sick
• Stay home when you get sick
• Get your flu vaccinations (shots or sprays)
• No aspirin for kids when they are sick
• Get pneumococcal vaccine as recommended

www.texasflu.org
Texas Flu.org

On June 11, 2009, the World Health Organization (WHO) signaled that a global pandemic of novel influenza A (H1N1) was underway by raising the worldwide pandemic alert level to Phase 6.

Texas Flu.org provides H1N1 flu information for the public and health care professionals to help prepare for and respond to this pandemic.

Reporting
Following similar actions by the WHO and CDC, DSHS discontinued reporting novel H1N1 flu cases effective Aug. 1.

Texas is returning to using its standard seasonal flu surveillance network to track and report flu activity.

Latest DSHS Weekly Flu Surveillance Report
Next Steps

• Plan now with others in your community
  • local governments, health departments, trauma regional advisory councils, hospitals, doctors, schools, businesses, etc.

• Encourage both “seasonal” and novel H1N1 virus vaccinations

• Encourage common sense measures
  • like washing hands, covering coughs and sneezes, staying at home when sick with flu-like symptoms, etc.

• Engage in continuity of operations planning at work, personal readiness planning at home
Next Steps (cont’d)

- Plan for increased demand for healthcare services within your community
- Don’t assume help will be available from local, state, or federal agencies
  - Every community and every level of government will likely be impacted
- Promote readiness and self-care in your communities among those who are able
Resources

- www.TexasFlu.org
- www.TexasPrepares.org
- www.TEA.state.tx.us
- www.TDA.state.tx.us
- www.flu.gov
Thank You!