Decision Making During a Novel H1N1 Influenza Epidemic

Katrina Hedberg, MD, MPH
Oregon Public Health Division
UK should expect swine flu cases, says HPA chief

Britain should expect cases of the swine flu that has killed over 100 people in Mexico, the head of the Health Protection Agency has said.

What are the symptoms of swine flu fears and confidence?
H1N1 (Swine) Influenza: Why Worry?

March-April:
Outbreaks in Mexico

March 28 & 30:
Case onsets in CA
• San Diego and Imperial Counties
• No known connections

April 15 & 17:
Novel flu confirmed at CDC
A/California/04/2009

Possible Pandemic Strain
Generation of New Influenza A Virus Subtypes with Pandemic Potential

avian host

avian virus

direct avian-human transmission

human virus

swine host

new reassorted virussubtype

Influenza A virus in humans since 1918

1918 - Spanish flu
1957 - Asian flu
1968 - Hong Kong flu
1977 - Asian flu

15 HA subtypes
9 NA subtypes

Influenza A reservoir
The Plan versus Reality

Plan: Based on severity determined abroad

Reality: Spread within N. America & US first; severity unknown
Decision-Making Process

- Incident Command Structure: staffing, role of subject matter experts
- Pandemic Influenza Coordinating Committee: LHD, medical, ethics
  - Antivirals
  - Mitigation
Surveillance & Lab Testing

- Detect novel influenza virus in Oregon
- Define groups at highest risk for infection, hospitalization and death

- Flexible: intensive investigation around individual cases; later, may be focused on societal impact
- Testing: information on epidemiology mirrors who is being tested
Antiviral Issues

- Determining priority populations
- Prophylaxis versus treatment: scarce resource
- Allocation and distribution: public versus private sector
  - Local health departments:
    - Not open 24/7
    - ? Legal authority for drug distribution
Community Control Measures

- Isolation of the ill
- Management of patient contacts
- Quarantine of recent Mexico travelers
- Cancellation of specific events
- Closure of schools/daycare
- Closure of facilities and transportation
- Widespread community quarantine
Amount of Information

Aggressiveness of Action

less

more

less

more

Amount of Information

The graph shows a negative correlation between the amount of information and the aggressiveness of action, with less information associated with more aggressive action and more information associated with less aggressive action.
Local Situations

Cinco de Mayo festival in Portland

• Thousands of participants, many from Mexico
• Backlash against Mexican community
Local Situations

- Rural county
  - First case teenaged girl: hospitalized with ARDS
  - Highest rates in Oregon
Pandemic H1N1 Oregon, 2009* n = 219

*data as of June 22, 2009
“What’s in a name? That which we call a rose
By any other name would smell as sweet.”

H1N1 (Swine) Influenza
H1N1 Influenza A (Novel)
H1N1 (Pandemic) Flu
Public information vs anxiety producing

Local PH investigation of cases/contacts

Legislature/Governor’s office

Medical community testing/treatment

Communication Coordination

Other partners
- Schools, university, daycare
- Latino community
- Congregate settings
Local epidemiology

National recommendations (CDC) differ from local experience

Constantly changing situation and messages
- Daily briefings
- Date / time all guidance
Spanish flu, 1918  

Swine flu, 2009
Decision Making During a Novel H1N1 Influenza Epidemic

Anthony A Marfin, MD, MPH, MA
Washington State Department of Health
Focus on decisions made in the first two weeks of outbreak
Swine Influenza A (H1N1) Infection in Two Children Southern California, Mar–Apr 2009 (MMWR Early Release)

“unique combination of gene segments”

“neither child had contact with pigs”

“different from human influenza A (H1N1)”

“large proportion of the population may be susceptible”

“possibility that human-to-human transmission of this new influenza virus has occurred”
Update: Swine Influenza A (H1N1) Infections—California and Texas, April 2009 (MMWR Dispatch)

“six more persons infected by the same strain in San Diego County (CA), Imperial County (CA), & Guadalupe County (TX)”

“any influenza A viruses that cannot be subtyped be sent promptly for testing”

“viruses of the same strain confirmed by CDC among specimens from patients in Mexico”
4/24/09 (D4): Specific Plan: This Virus During This Outbreak

Plan: Tailor response to specific situation

Potential Problems

- Illness from novel virus just like seasonal flu
- Still have seasonal flu viruses circulating
- Tremendous demand on Public Health Laboratory (PHL) resources

Messages

- Emphasize person-to-person transmission
- Never mentioned zoonotic transmission

Shunt PHL lab work to other labs
Containment not an option
Determine need for community mitigation
Assume widespread transmission within the United States
Epidemic transmission likely
Operate as if in WHO Phase 5
4/24/09 (D4): Immediate Goals

Goal: Joint planning, laboratory & epidemiology

1. Perform Rapid Assessment
   - Virus present?
   - Transmission?
   - Many communities involved?
   - Special groups “at risk”?
   - Pandemic severity index (basis for mitigation)

2. Test
   Define testing algorithm with available reagents used for subtyping seasonal flu samples

3. Accept Samples
   - From labs?
   - From providers?
Day 4 (4/24/09): Initial Surveillance Effort

Maximize lab sample submissions immediately

- Samples regardless of clinical presentation
- Samples from provider-ordered flu tests
- All flu A-positive samples at commercial & hospital labs

24/7 rtPCR testing to subtype for seasonal flu

“Unsubtypeable” flu A samples: “Novel H1N1”

Notify local health jurisdictions (LHJ) of confirmed cases
4/27/09 (D7): Restructuring

1. Initiate incident command at epi & lab
   - All surveillance & lab issues
   - Interpret/write guidelines
   - Community mitigation

2. Open DOH Emergency Operation Center

3. Accommodate information from
   - CDC
   - CSTE
   - ASTHO
   - HHS
   - DHS
   - etc
Number of illnesses due to pandemic H1N1 virus by illness onset date for 574 WA residents

CDC’s earliest confirmed case (nationally) – 3/28/09
WA’s earliest – 4/19/09
Number of illnesses due to pandemic H1N1 virus by age group for 574 WA residents

**Number of cases**

- **0–4**: few cases
- **5–17**: highest number of cases (approximately 300–350)
- **18–49**: moderate number of cases (approximately 150–200)
- **50–64**: few cases
- **>65**: few cases
Hospitalization rates of confirmed cases of pandemic H1N1 virus in Washington reported 4/26–5/23/09

<table>
<thead>
<tr>
<th>Age group (yrs)</th>
<th>Yes (%)</th>
<th>No</th>
<th>Unknown</th>
</tr>
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<tbody>
<tr>
<td>0 – 4</td>
<td>8 (12%)</td>
<td>50</td>
<td>11</td>
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<tr>
<td>5 – 17</td>
<td>18 (6%)</td>
<td>268</td>
<td>37</td>
</tr>
<tr>
<td>18 – 49</td>
<td>6 (4%)</td>
<td>132</td>
<td>19</td>
</tr>
<tr>
<td>50 – 64</td>
<td>6 (32%)</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td>65+</td>
<td>2 (50%)</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>40 (7%)</strong></td>
<td><strong>464</strong></td>
<td><strong>68</strong></td>
</tr>
</tbody>
</table>
Results of Rapid Assessment

- Pandemic H1N1 virus present in state within three weeks of earliest U.S. cases*
- Cases occur in western and eastern WA*
- None of initial cases traveled to Mexico*
- Local transmission is occurring*
- Hospitalization rate likely higher than that seen for seasonal influenza
- Low case fatality ratio

* Knew within the first five days of testing
WHO declares Phase 5

Present data to Public Health Response and Assessment Team (PHRAT)
- Representatives of all LHJs
- Assist DOH in decisions about community mitigation, stockpiles, treatment/prophylaxis, etc.
- Goal: All LHJs have harmonized approach
What From Our Plans Went Well?

• Laboratory-epidemiology cooperation
• Rapid assessment plan
• Convening PHRAT
  • No school closure
  • Judicious use of antivirals
• Stockpile distribution
• Communication with LHJs
What Didn’t Go As Well As Planned?

- Overwhelmed laboratory capacity due to:
  - Lack of case definition
  - Accepting all commercial lab flu positive samples
- Distribution of confirmed cases to LHJs overwhelmed LHJ capacity to investigate
- Data entry & database management
- Communication with businesses and schools
- Public’s understanding of stockpiles
Reflecting on Decision Making During an Influenza (H1N1 – Unusual) Epidemic

Steven Helgerson, MD, MPH
Montana Dept of Public Health and Human Services
What Went According to Plan & Was Helpful?

- HAN system: distributed (much) information, frequently
- State health department was the lead agency: mostly
- Stockpile distribution: SNS to state; state to local
- Laboratory surveillance: enhanced, intense
What Could Have Been More Helpful?

News releases: what is the message? Self-fulfilling prophecies

Information for public: what is the message? Choice of terminology
Influenza Types Reported to MTDPhHS 4/25 to 6/01/09*

<table>
<thead>
<tr>
<th>Type</th>
<th>Total Number</th>
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<tbody>
<tr>
<td>Seasonal</td>
<td>114</td>
</tr>
<tr>
<td>Novel A/H1N1</td>
<td>19</td>
</tr>
</tbody>
</table>

Seasonal by county:
- 31–50
- 16–30
- 6–15
- 1–5
- 0–0.9

# Novel A/H1N1
- 6–15
- 1–5
The physician must...have two special objects in view with regard to disease, namely, to do good or to do no harm.

—Hippocrates, Epidemics, Book 1, Sect 5

Is “primum non nocere” applicable for public health?
Issues to Consider for Updating the Plan

• Realistic plans
  • Less time escalating worst case scenarios
  • More time refining strategies to control the effect

• Messaging
  • Practice formulating a message (what is the objective?)
  • Consider ways to disseminate the message

• Anticipate two outbreaks
  • Influenza
  • Anxiety
  • How not to stimulate the latter while trying to control the former?
Issues to Consider for Updating the Plan

• Distribution and use of whichever influenza antiviral medication(s) is pertinent at the time of an outbreak
  • Available when indicated
  • Not unnecessarily used or hoarded

• Research issues
  • HAN messages get to whom? Are interpreted how?
  • Public messages get to whom? Are interpreted how?
  • To what extent could public health use “anxiety outbreak” to emphasize a variety of messages?