

A word re: my own background. -
 Past 50 years - involved with infectious diseases
 originally @ CDC (21 years)
 Chief EIS and surveillance section
 Director of Global smallpox eradication prog. WHO
 where I was - 4 yrs. - life sciences advisor to G.H.W.
 After 2001 - Director of ~~the~~ HHS Office
 of Public Health Emergency Preparedness

Concern today about the possibility of pandemic
 influenza -
 Reason for concern - as I shall point out.

In May 2006. Pandemic H1N1. H5N1.
 & threat of BSE + Mad Cow. BSE.

Good morning/afternoon.

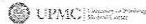
Why do I give this background - to note that I have been through many epidemic crises and,

Separating Hysteria from Reality: The Truth About Pandemic Influenza

Teleconference - July 19, 2006

D.A. Henderson, MD, MPH
 Center for Biosecurity
 University of Pittsburgh Medical Center

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as we look ahead to the possibility of a new influenza pandemic - I am deeply concerned that we retain a ~~lost~~ perspective and a critical sense of the realities we face.

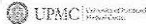
There is also reason to look at the relative ~~unwarranted~~ fears and panic could well transform a manageable epidemic into an international catastrophe.

Speculation- believable or not?

- Duration of severe pandemic: 18-24 months
- 30% employee absentee rate and 30% fewer customers
- Mandatory or voluntary closing of national, state and even local borders
- Supply chains will collapse
- How do we restart the global just-in-time economy?

Business teleconference - May 2006

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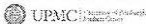


More speculation

- "...public health officials project cumulative absentee rates of 40 percent over three to four months"

It's Not Flu as Usual : distributed by U.S. Chamber of Commerce

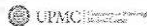
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What is influenza?

- "the flu" – a common layman's term for a respiratory or intestinal illness
- Influenza – a disease caused specifically by the influenza virus
 - **Seasonal influenza** – respiratory illness, occurs most years, often as local epidemics
 - **Avian influenza** – common influenza infection in birds; most strains do not infect humans
 - **Pandemic influenza** – a new (to humans) influenza strain that causes a global outbreak (pandemic)

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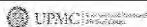


etom. schools, (A) H3N2 (B)

Source of a new pandemic strain

- Birds are the major reservoir for different influenza types
- Virus is continually mutating, resulting in new strains of the virus
- Periodically, a strain develops that is
 - Readily transmitted between humans
 - Genetically unique so that pre-existing immunity in humans is lacking
- Geographic origin – most likely South Asia

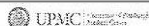
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Pandemics of influenza

- Ten pandemics in the past 300 years
- Pandemics in the 20th Century
 - 1918 – H1N1 (Spanish Influenza)
 - 1957 – H2N2 (Hong Kong Influenza)
 - 1968 – H3N2 (Asian influenza)

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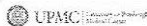


and then →

The next pandemic

- Another pandemic will occur but there is no way to predict when this might happen
- There is no certainty that H5N1 will be the pandemic strain

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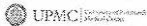


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Why the concern about H5N1

- Unprecedented behavior of a flu strain with massive deaths in poultry and 50% death rate in humans
- Influenza – 1918 – H1N1
 - Case fatality rate – about 2%
 - Deaths U.S. 675,000
World > 50,000,000
- H5N1 influenza – 2004-2006
 - >200 cases, about 100 deaths

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Status – May 2006

- Infected wild fowl, chickens, ducks, turkeys
 - Asia
 - Most of Europe
 - Africa
- Human cases – contacts of birds (a few patients)
 - Asia and Africa
- Massive slaughter of fowl in infected areas
- Embargo on fowl from infected areas
- Flu season – November (? September) to April

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*Now gone but is this meaningful
(other factors)*

Prospects for the U.S.

- Avian H5N1 – very probable
 - Migratory birds
 - Bird smugglers
- Human pandemic flu – unknown
 - Cannot know until the virus begins to spread but once it begins to spread, it moves rapidly

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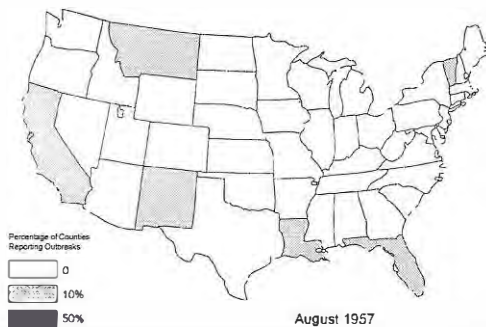
fly ways.

where is this likely to occur

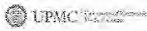
South Asia - free-ranging birds
mix, people?

surveillance

Influenza Outbreaks



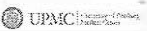
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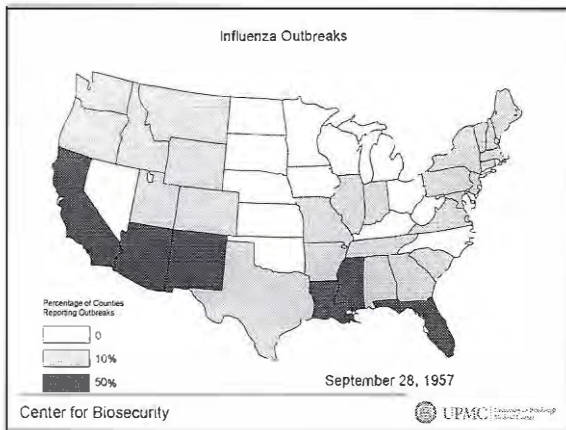


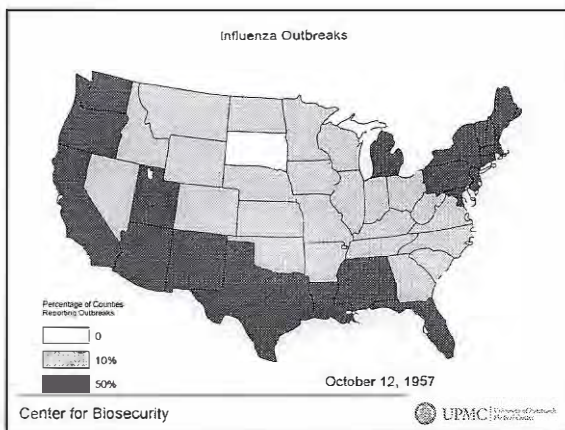
Influenza Outbreaks

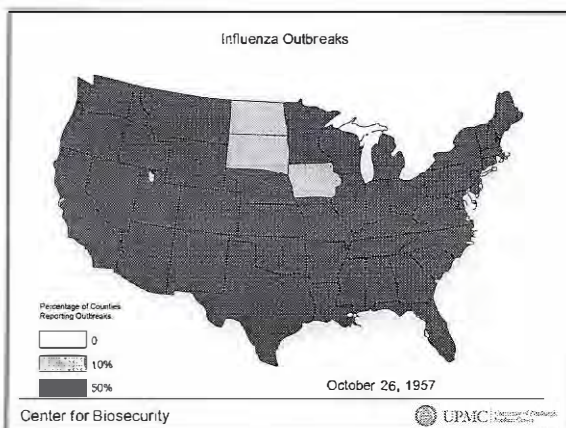


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contrast - then and now

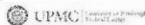
Population

Travel

HHS Planning Assumptions

- "Worst case scenarios – 1918-like
 - Persons ill – 90 million (*210 million not ill*)
 - Deaths – 2% of those who become ill (*99.5% of the population survives*)
 - Need for hospital beds at epidemic peak – about twice the present hospital bed capacity

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Where it began? We know. - 675,000 deaths
World War I troops - x3 (today)

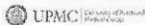
Would a 1918 flu be similar today -

Why did people die? Flu by itself
↳ underlying disease and
2nd pneumonia

Flu is all but impossible to contain

- Short incubation period – often 2-3 days
- Capable of being spread 1 to 2 days before symptoms develop
- Substantial number of those with influenza have no symptoms or symptoms that resemble a cold or allergy

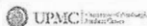
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Key facts in planning responses

- Expected attack rate is about 30 %
 - 30 of 100 people develop illness; 70 do not
- Duration of outbreak in a city – 10-12 weeks
- Illness lasts ~10 days; therefore, peak absentee rate because of illness is 10 to 12%

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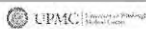


Federal role in pandemic response

- "Any community that fails to prepare with the idea that somehow, in the end, the federal government will be able to rescue them will be tragically wrong."

Secretary Michael Leavitt
Department of Health and Human Services

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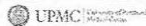


2 half

How to deal with an epidemic

- Vaccination
- Antimicrobials
 - Prophylaxis – prevention
 - Treatment
- Public health containment measures
- Medical care

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Vaccination

- Vaccine for seasonal influenza is available but this prevents only seasonal flu cases
- Vaccine for pandemic influenza will not be available until 6 months after the new strain begins to spread
- Quantity of vaccine available will be limited
 - Major international R&D effort under way but H5N1 virus presents many problems
 - International production capacity still minimal

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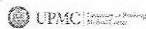


debatable -
H5N1 - good jobs but cl. of all viruses.
6.0 x 10⁸ doses of H5N1 flu vaccine but
in chicken.

Antimicrobials

- Oseltamavir (Tamiflu)
 - Limited supplies
 - 20 million doses (Dec. 06) – 7% of population
 - 44 million doses (Dec. 07) – 14% of population
 - +31 million doses (if States purchase)
 - Therapeutic use requires treatment within 24 to 48 hours after symptoms develop
 - Problems in allocation of available drug
 - Uncertainties about efficacy and dosage
 - Concern about development of resistance

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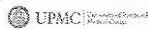
When to start?
Will it work?

Public health containment measures

- None have been shown to either stop an epidemic or retard its progress. However, most proposed measures could have serious adverse secondary effects on society and the economy

It is quite possible to imagine converting a manageable epidemic into a social and economic catastrophe

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Containment measures

- Isolation at home or in the hospital of those who are ill
- Responsible respiratory hygiene
- Oseltamavir within 48 hours after onset of symptoms, if available
- Closure of public schools for 10 to 14 days at beginning of epidemic – a practical measure

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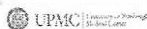


Good

Quarantine – an antiquated measure

- An approach not successfully used for at least 50 years
- WHO: "forced isolation and quarantine are ineffective and impractical"
- Quarantine of families where there is a case is difficult to implement and of questionable value

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Travel restrictions

- Closure of airports or screening of travelers would be of no value
 - WHO: "Screening and quarantining entering travelers at international borders did not substantially delay virus introduction in past pandemics...and will likely be even less effective in the modern era"
 - Screening of 3.5 million passengers during the SARS outbreak yielded no cases
- **What to do about a sick passenger on a plane arriving in the U.S?**

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Prohibition of social gatherings

- Neither historical observations nor scientific studies indicate that this action would be effective in mitigating an epidemic
- What gatherings should be cancelled?
 - Church meetings, theaters, restaurants, athletic events, schools, all meetings of more than 100 persons
- How long might they be prohibited?
 - 3 months (usual course of epidemic in a given local area) or 6 to 8 months (duration of time virus present in the country)
- A potential principal cause for a social and economic disaster

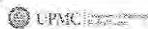
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Social distancing

- Stationing of workers at least 3 feet apart
- Sheltering in place
- Masks

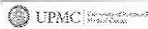
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Principal tenets for dealing with pandemic flu -- 2006-2007

- Alleviate anxiety; avoid panic
- Continuing informed communication to public
- Change the normal social activities of the city as little as possible
- Discourage absenteeism
- Provide care for those who are ill
 - Major efforts needed to plan for a flood of patients
 - Tamiflu for treatment if available

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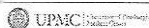


A final word

"...the most immediate and largest economic impact of a pandemic might arise not from death or sickness but from the uncoordinated efforts of people to avoid becoming infected...disruption and costs caused by emergency public measures such as quarantines and restrictions on domestic and international travel and trade..."

*Milan Bahmabhatt, World Bank—June 29, 2006
1st International Conference on Avian Influenza in Humans*

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Sources for information

Centers for Disease Control
www.pandemicflu.gov

World Health Organization
www.who.int/csr/disease/influenza/en

Center for Biosecurity
www.upmc-biosecurity.org

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