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"We shall never be found in a similar predicament, for from the devastation of this epidemic will follow preparations against its repetition which will rival in thoroughness the most efficient planning of a great military offensive."

A.W. Hedrich, Editor, American Journal of Public Health, November, 1918

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Pandemic Influenza Planning

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What Is Influenza?

A viral infection of the nose, throat, and the lungs


Easily spreads between people by sneezing and coughing

Annual winter epidemics (~10% of Americans infected each year)



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Influenza Illness

Illness begins 1 to 3 days after exposure to an ill person

Some people have mild symptoms


- ~ Runny nose, sore throat, aches and pains

Some people become very ill

- ~ High fever, headaches, lung infection, hospitalization, and even death

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My influenza has a first name


It is H1 through H16...

Second name N1-9

Simply a form of nomenclature not a measure of severity or likelihood of becoming a pandemic strain.

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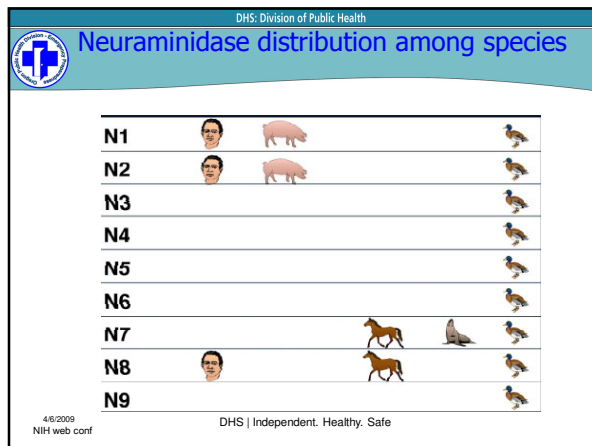


Hemagglutinin distribution among species

Hemagglutinin	Human	Pig	Bird	Swine	Canine
H1					
H2					
H3					
H4					
H5					
H6					
H7					
H8					
H9					
H10					
H11					
H12					
H13					
H14					
H15					
H16					

H16 - Scandinavian seagulls

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Pandemic Influenza

Influenza virus changes continuously

Periodically, humans are infected by a virus with a MAJOR genetic change - a pandemic begins

- ~ More people get sick (over 30%)
- ~ More deaths occur

Pandemic influenza is not "Bird Flu"

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Drift and Shift

Drift: small changes from RNA mutations

- ~ Most people are susceptible each year
- ~ Vaccines require frequent modification to be effective

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Drift and Shift

Drift: small changes from RNA mutations

- ~ Requires frequent small changes in vaccine

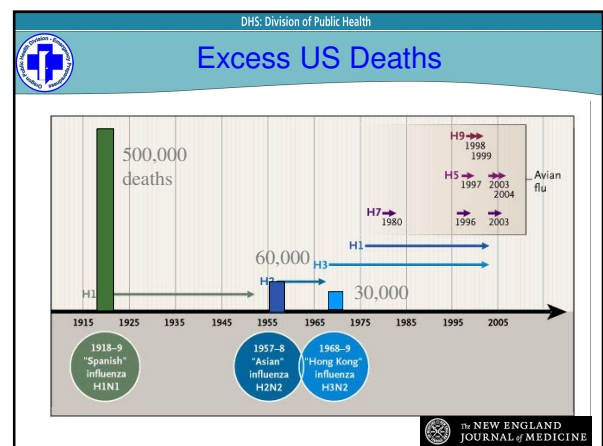
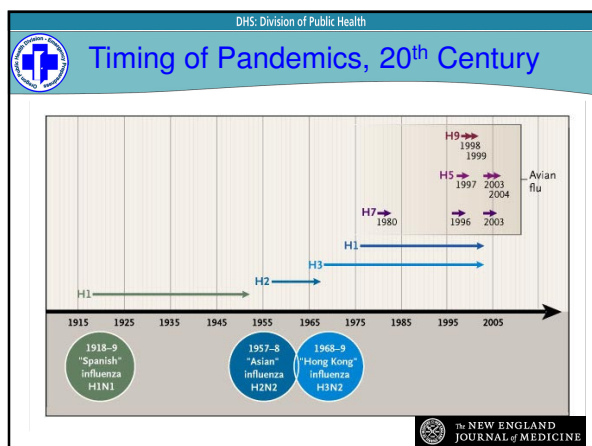
Shift: major changes

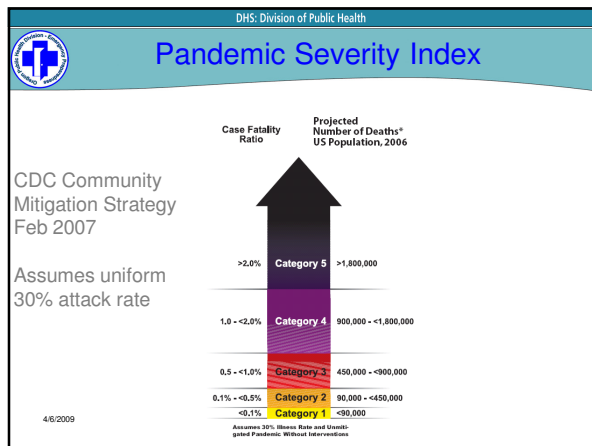
- ~ Non-human virus infecting humans
- ~ Reassortment btw human and animal strains
- ~ Pandemic requirement

Earthquake fault, New Zealand
Health Emergency Management, NZ

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Pandemic Scenario, Oregon

Characteristic	Moderate	Severe
Illness	1.17 million	1.17 million
Out-pt visit	585,000	585,000
Hospitalized	11,245	128,700
ICU care	1,677	19,305
Ventilator Use	845	9,646
Death	2,717	24,700

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Period	WHO Phase	US Stage
Inter-pandemic	1 Low risk of human cases	0 New domestic animal outbreak in at risk country
	2 Higher risk of human cases	
Pandemic Alert	3 No or very limited Human cases	Suspected human outbreak overseas
	4 Evidence of increased human to human transmission	2 Confirmed human outbreak overseas
	5 Evidence of significant human to human transmission	
Pandemic	6 Efficient and sustained human to human transmission	3 Widespread human outbreaks in multiple overseas locations
		4 First human case in North America
		5 Spread throughout US

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What are the triggers?

(US Stage 3) No Cases in US Cases overseas	(US Stage 4) 1 st case in US	(US Stage 5) 1 st confirmed cluster in state or region
Alert	Standby	Activate

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Interventions for pan flu

Antivirals	Vaccine	Community Mitigation
~ Stockpile?	~ Available in time?	~ Social Distancing
~ Individuals or gov't?	~ Effective?	~ Isolation and Quarantine
~ Prophylaxis or treatment?	~ How many doses?	~ Close Schools
~ Resistance?	~ Rationing?	

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Current State of the Stockpile

Anticipated Antiviral Courses Oregon Will Receive During a Pandemic

Oregon share of Federal Stockpile (SNS)	20 million courses purchased for FY2006	241,439
	24 million courses expected by end FY2007	289,726
State Purchased Stockpile	Optional state purchase with 25% federal subsidy	13,000
TOTAL	State and Federal Purchases	544,165



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Treatment vs. Prophylaxis

Treatment: Used to shorten illness duration and limit complications. Most effective if started within the first 48 hours of illness.

Prophylaxis: to prevent infection in otherwise healthy people. Must be given for the entire duration of possible exposure to illness.

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The Number of Antiviral Courses Required for Treatment and Prophylaxis of the United States Population During a 16 Week Influenza Pandemic

Number of Courses in Billions

Treatment Prophylaxis

Method of Choice (and necessity): TREATMENT

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Oregon Community Mitigation

In a severe pandemic we expect to:

- Cancel pre-kindergarten to university classes
- Promote "adult social distancing"
 - Limit gatherings – crowds, events, social places
 - Modify workplaces to increase distance
- Use masks/respirators when contact can't be avoided
- Recommend voluntary isolation and quarantine – two phases

Emphasis on voluntary
Disruptions may last 12 weeks

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Impact of Mitigation

① Delay outbreak peak

Daily Cases

Pandemic outbreak: No intervention

Pandemic outbreak: With intervention

Days Since First Case

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Impact of Mitigation

② Decompress peak burden on hospitals / infrastructure

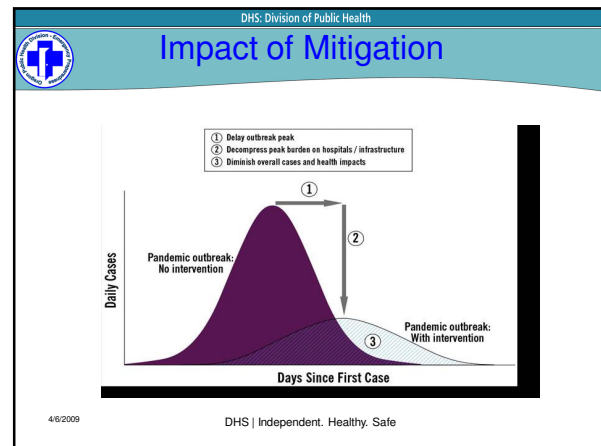
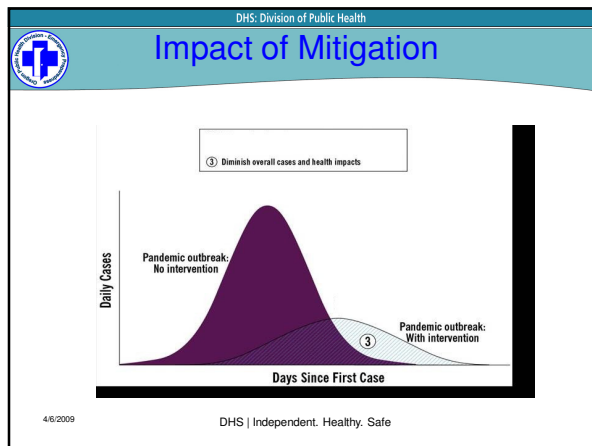
Daily Cases

Pandemic outbreak: No intervention

Pandemic outbreak: With intervention

Days Since First Case

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What are the Trigger Points?

Hard to quantify (draft):

- ~ Identification of a confirmed case, or cases, of a novel influenza strain, which presents a plausible risk of spread in Oregon
- ~ A case fatality ratio of $>1.0\%$ (severe, category 4-5)

Less severe, less response

Action must be early

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How does this work in your community?

Ideally, measures will be coordinated statewide and across the region

Principally, however, implementation in your community is a local responsibility

DHS will share surveillance data across the region and provide guidance

Public cooperation is easier with a common public health message

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Major Issues from Employers

- Defining "critical employees and essential services"
 - ~ What are your ethical obligations
- Human resource consequences of community mitigation strategies
- Regulatory relief
- Antiviral medications

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"If there was an event more planned for than a hurricane hitting New Orleans, I don't know what it is."


John M. Barry, Tulane University

<http://www.cidrapsummit.net/cidrap/content/influenza/biz-plan/news/feb0807quotes.html>

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Questions?

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