

Preparing for the Next Influenza Pandemic

Paul Effler, MD, MPH

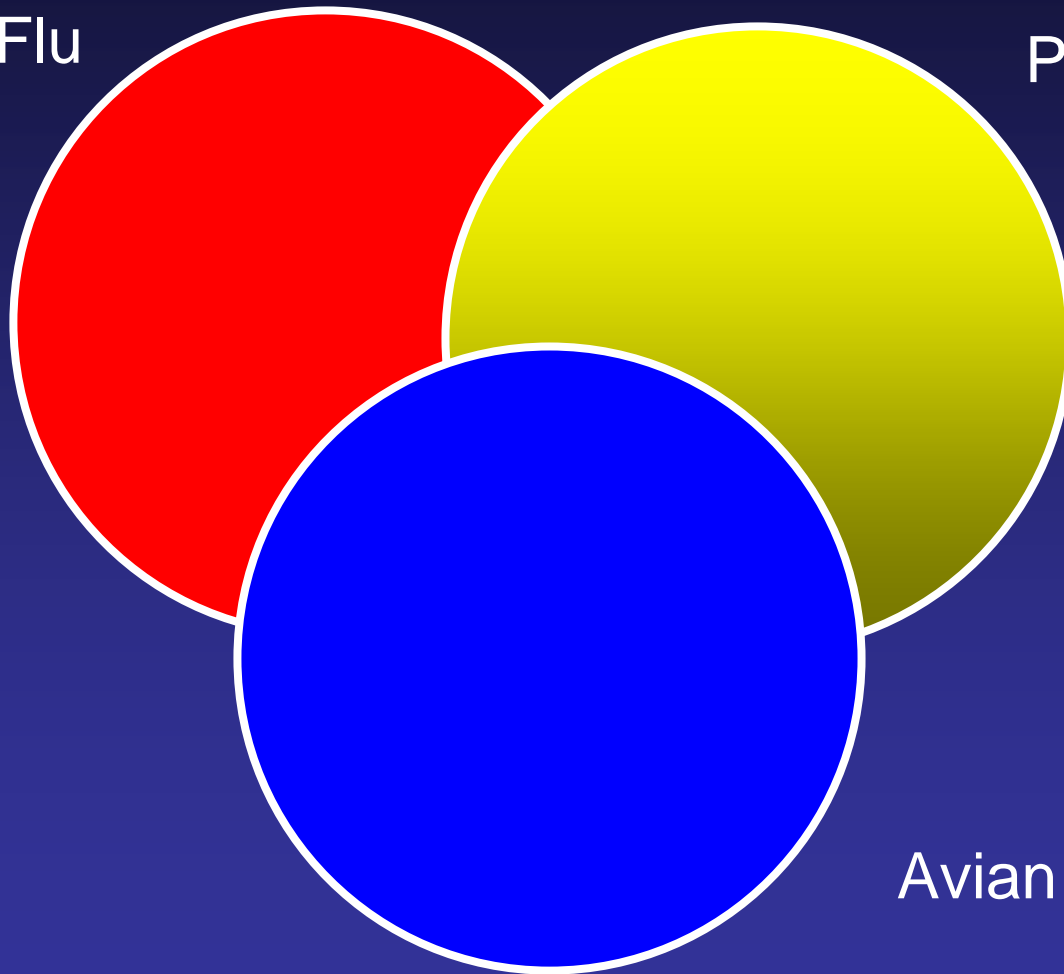
Disease Outbreak Control Division

Hawaii Department of Health

Conceptual Framework

Seasonal or
Epidemic Flu

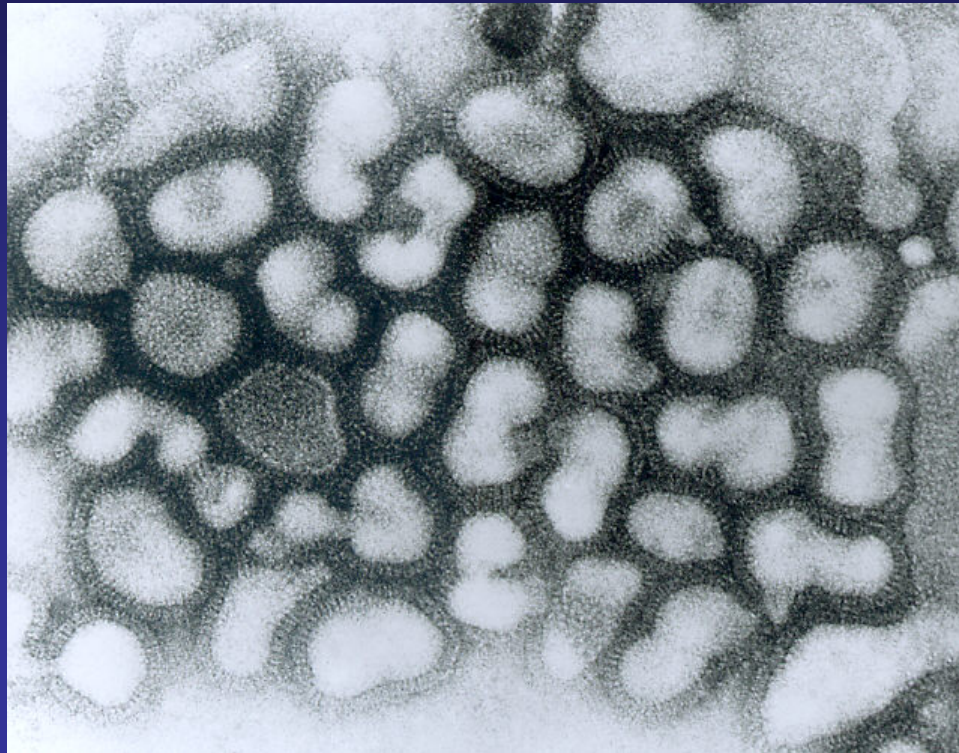
Pandemic Flu



Avian Flu

Seasonal Influenza

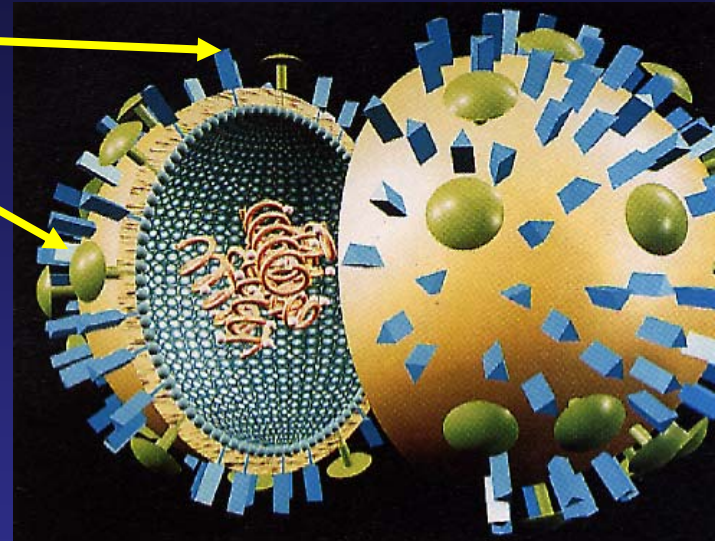
- Both influenza A and B viruses can cause seasonal/epidemic disease



Influenza A

- Flu A strains based on surface proteins
 - Hemagglutinin (HA)
 - Neuraminidase (NA)

e.g. H3N2



- Small changes (**drifts**) occur every flu season
- Big changes (**shifts**) lead to pandemics
- Usually species specific

Influenza

Transmission

Person to person via respiratory droplets



May survive on metal/plastic for 1-2 days

Influenza

- Incubation period

- Short: 1-4 days with 2 being average

Annual attack rates

- Varies by year : 5-30%
- 30-40K deaths each year
- 500K hospitalizations

Influenza

■ Clinical Presentation

– Abrupt onset of constitutional and respiratory signs and symptoms

- Fever
- Myalgia
- Headache
- Sore throat
- Non-productive cough

■ Children

- Otitis media
- N/V

Influenza

■ Clinical Course

- Uncomplicated infection usually resolves in 3-7 days
- Cough and malaise may persist > 2 weeks
- May exacerbate other cardiac or pulmonary conditions
- Lead to primary viral pneumonia or co-infections with bacterial pathogens

Influenza

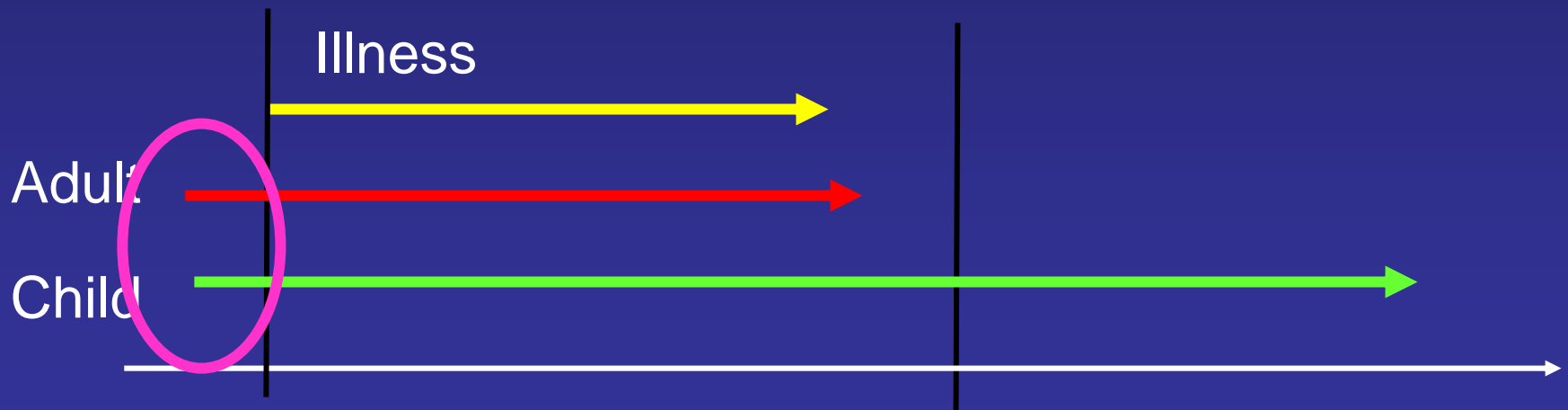
■ Clinical Course II

– Uncommonly associated with:

- Encephalopathy
- Transverse myelitis
- Myositis
- Myocarditis
- Pericarditis
- Reye syndrome

Influenza

- Period of Infectiousness
 - Starts the day BEFORE symptoms develop
 - Up through 5 days after illness onset
 - Children are infectious longer: ≥ 10 d



Influenza

- **Diagnosis - Clinical**
 - Difficult to distinguish from other respiratory illnesses on clinical grounds :
 - Studies of **clinical** criteria yield
 - False negative rates 22-37%
 - False positive rates 29-45%
 - Incidence of flu and criteria used create variability season to season

Influenza

■ Diagnosis - Laboratory

TEST	Influenza Types Detected	Acceptable Specimens	Time for Results	Rapid result available
Viral culture	A and B	NP swab ² , throat swab, nasal wash, bronchial wash, nasal aspirate, sputum	3-10 days	No
RT-PCR⁵	A and B	NP swab ² , throat swab, nasal wash, bronchial wash, nasal aspirate, sputum	1-2 days	No
Enzyme Immuno Assay (EIA)	A and B	NP swab ² , throat swab, nasal wash, bronchial wash	2 hours	No
Rapid Diagnostic Tests				
Directigen Flu A+B (Becton-Dickinson)	A and B	NP swab ² , aspirate, wash; lower nasal swab; throat swab; bronchioalveolar lavage	<30 minutes	Yes
NOW Influenza A&B (BINAX)	A and B	Nasal wash/aspirate, NP swab ²	<30 minutes	Yes
QuickVue Influenza A+B Test (Quidel)	A and B	NP swab ² , nasal wash, nasal aspirate	<30 minutes	Yes

Influenza

Q. How good are the influenza rapid tests?

A. Depends how you use them.

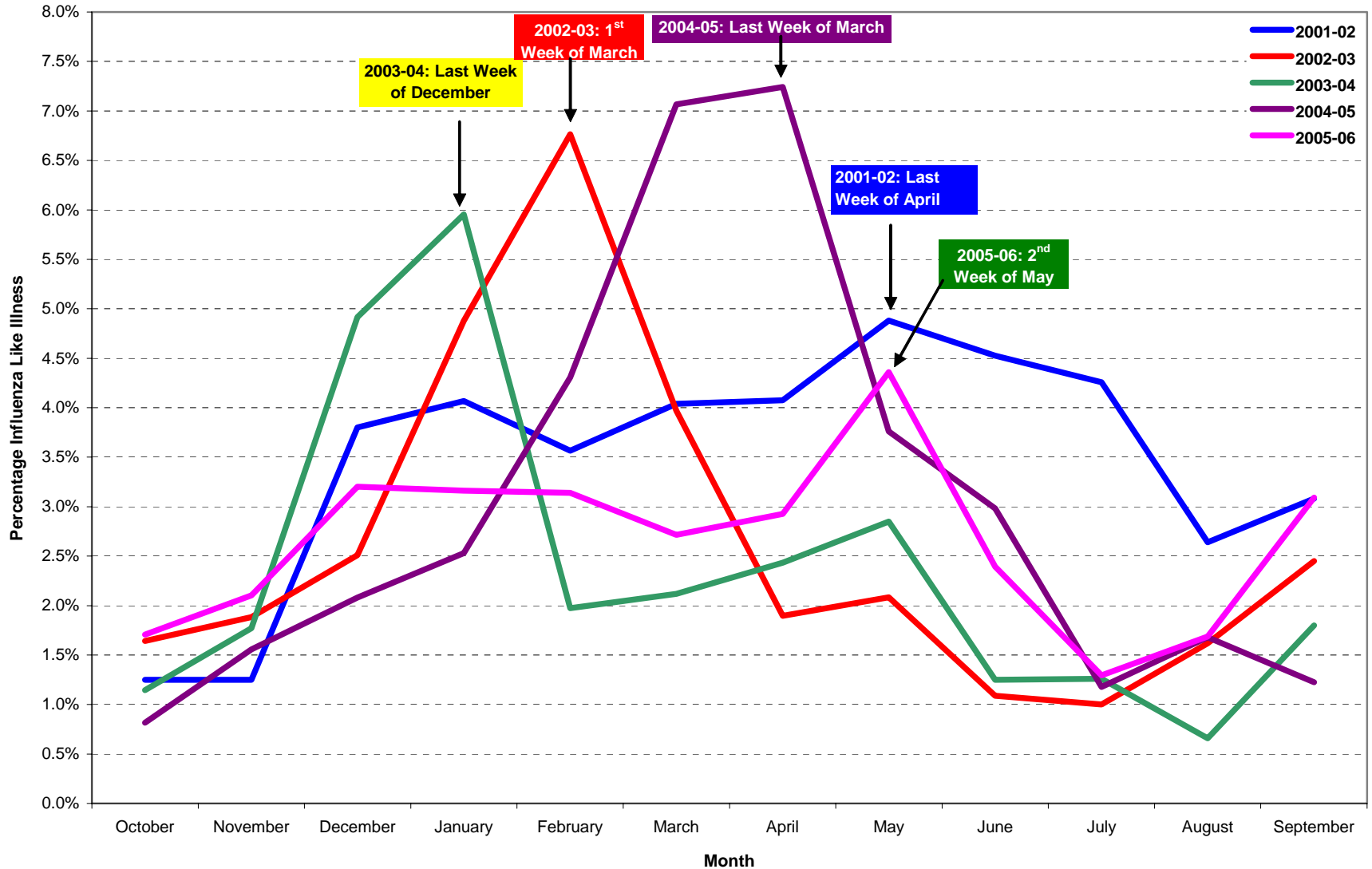
		Positive	Negative	
Flu OIA Test Result	Positive	195	188	383
	Negative	278	1,408	1,686
		473	1,596	

Positive predictive value: $(195/383) = 51\%$
Negative predictive value: $(1,408/1,686) = 84\%$

Figure. Comparison of FLU OIA and viral culture results, 2000-01 influenza season, Hawaii.

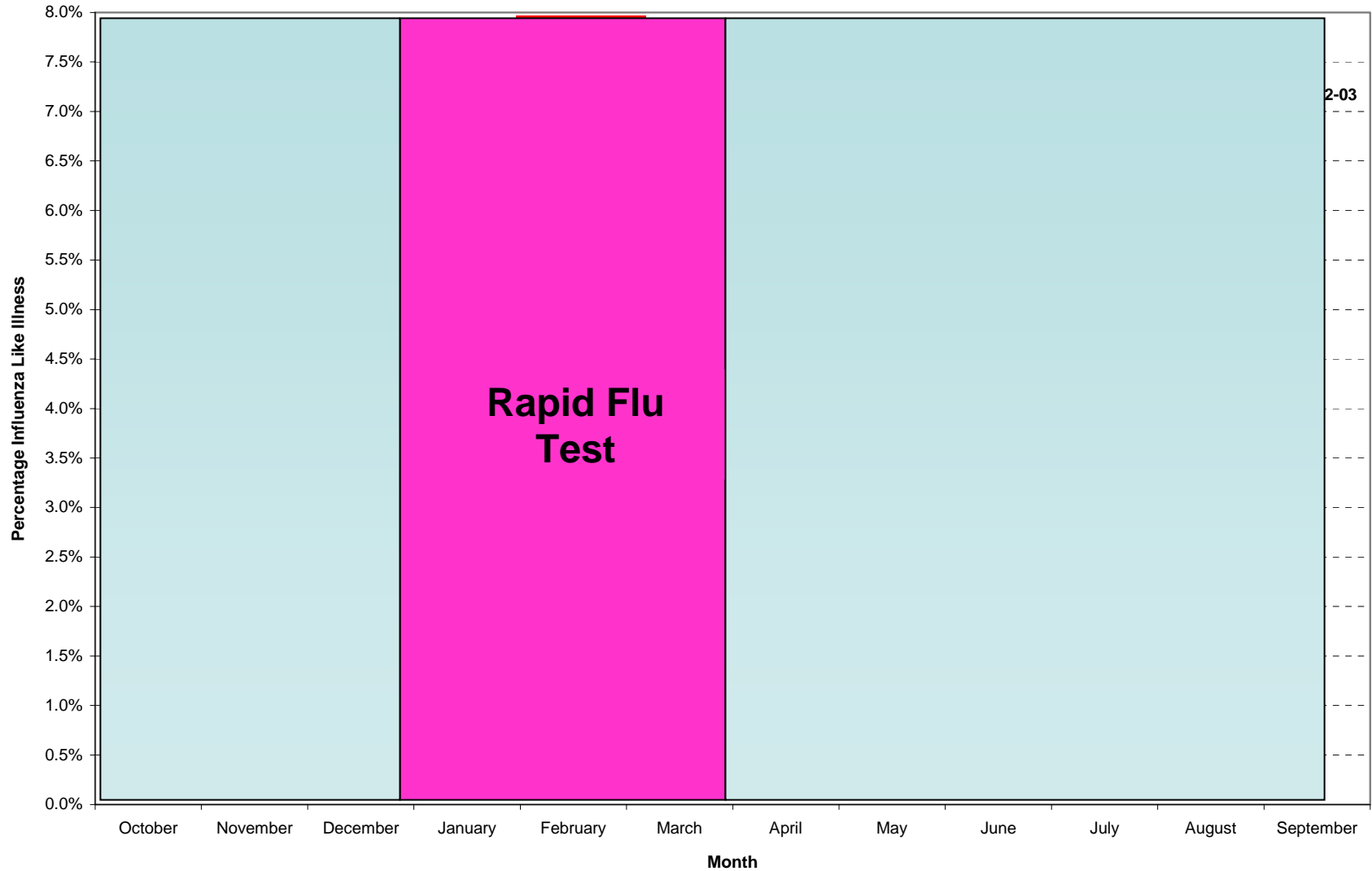
Influenza ■ Use of influenza rapid tests

Influenza Like Illness (ILI) Reported by Flu Year (October - September)



Influenza ■ Use of influenza rapid tests

Influenza Like Illness (ILI) Reported by Flu Year (October - September)



Influenza

Treatment

2 Classes of Antiviral Medications Available

- **Adamantanes**
 - Amantadine, Rimantadine
- **Neuraminidase inhibitors**
 - Oseltamivir, Zanamivir

Antiviral medications I

- Adamantanes –
 - Amantadine, Rimantadine
 - Act only against influenza A
 - Interfere with M2 ion channel of influenza A viruses
 - Interfere with virus assembly during replication of influenza A viruses
 - But resistance is now widespread (92%)
 - Not recommended

Antiviral medications II

- Neuraminidase inhibitors
 - Oseltamivir, Zanamivir
 - Activity against influenza A and B

Mechanism of action:

- Block active site of neuraminidase
- Reduce the amount of viral particles released from infected cells

Neuraminidase inhibitors

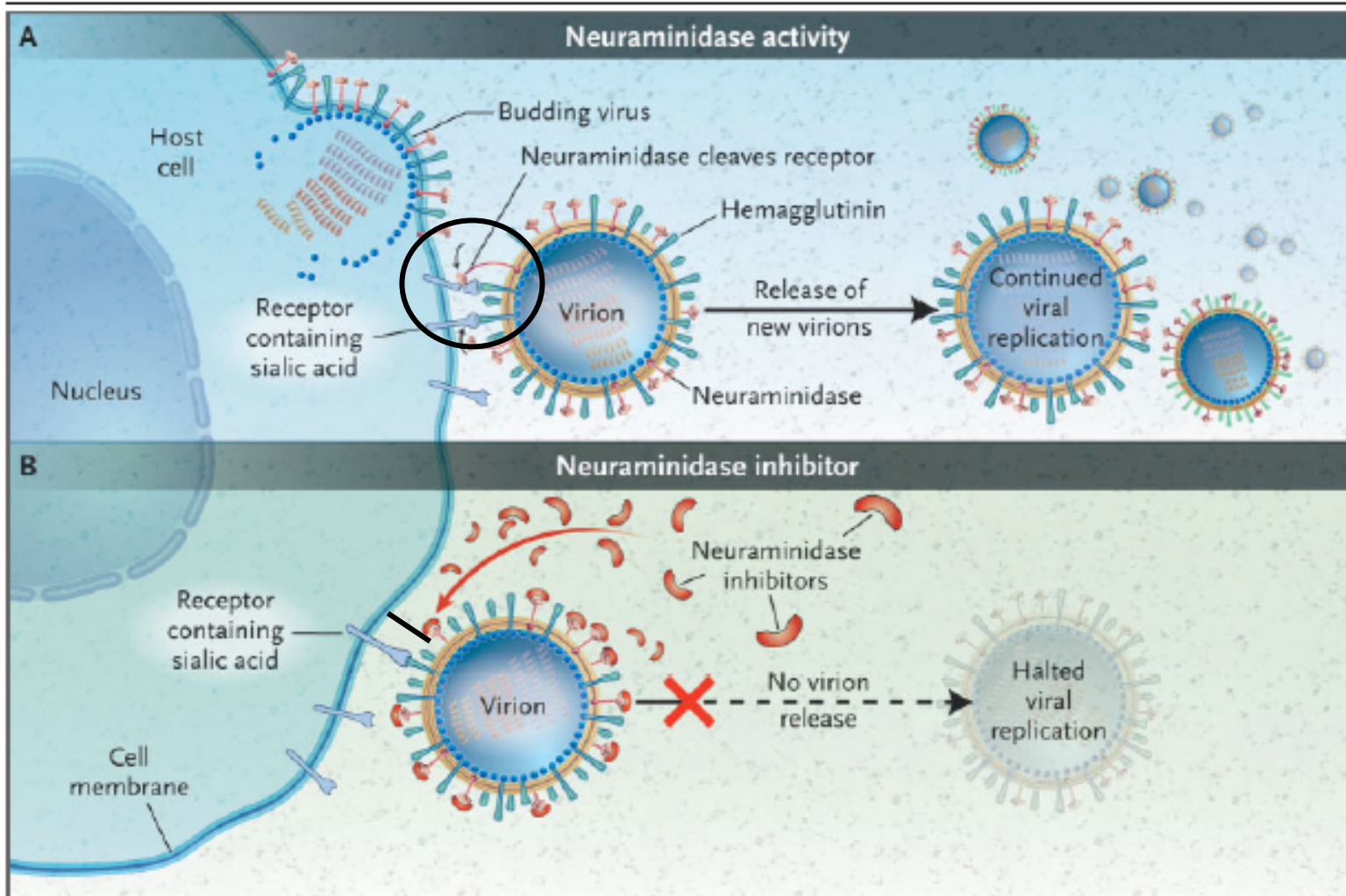


Figure 1. Mechanism of Action of Neuraminidase Inhibitors.

Panel A shows the action of neuraminidase in the continued replication of virions in influenza infection. The replication is blocked by neuraminidase inhibitors (Panel B), which prevent virions from being released from the surface of infected cells.

Neuraminidase Inhibitors

- Both NIs can be used for early treatment
 - Decrease duration and symptoms of uncomplicated influenza by 1 day
 - Early treatment with NIs can reduce some complications
 - lower respiratory tract complications
 - otitis media
 - antibiotic use
 - hospitalizations

Influenza Antiviral Medications



Oral

Parts of the DISKHALER:

COVER
keeps the DISKHALER clean and free of foreign matter; replace cover when not in use

WHITE MOUTHPIECE
where the medicine is inhaled by mouth

DARK BROWN WHEEL
rotates to the next blister of medicine

WHITE TRAY
pulls in and out of DISKHALER body

RAISED RIDGES
help you pull out the tray for loading

NEEDLE
punctures the blister to release medicine

DISKHALER BODY

HALF-CIRCLE FLAP
lifts up and down to operate plastic needle

SILVER MEDICINE DISK
contains 4 blisters of medicine; the disk fits into the dark brown wheel inside the DISKHALER

Inhaled

Neuraminidase inhibitors - Resistance

Oseltamivir

- Adults: 0.4- 1.0%
- Children: 4-8%

Zanamivir

- None found in flu A clinical isolates

Neuraminidase Inhibitors - Priority groups for treatment

- Any person experiencing a potentially life-threatening influenza-related illness
- Any person at high risk for serious complications of influenza (including PLWHA) and who is within the first 2 days of illness onset

Influenza

Vaccine

Two Formulations

Inactivated Trivalent Vaccine (Injected)

Live Attenuated Influenza Vaccine (LAIV)

Influenza

Vaccine

FLU PROGRAM: STUDENTS GET VACCINATED

SQUIRT!

A pilot project tries to fortify one of the biggest groups of germ spreaders: kids

By Gene Park
 gpark@starbulletin.com

State officials' mission to eventually vaccinate every child in Hawaii against the flu started yesterday with a spray of mist up the noses of hundreds of children.

The spray is 9-year-old Cyrus Novelo's preferred choice of flu vaccination "because it doesn't hurt. It just tickles," he said at Millani Uka Elementary School.

The state Health and Education departments teamed up to promote flu vaccination, starting with three schools in Millani.

"Kids are the biggest germ spreaders. If you think about the nature of who they are, what they are, where they go," said Sarah Park, deputy chief of the Infection Control/Health Promotion/Immunization/Adults to each other."

Park said that starting at the school level would decrease the number of absences in the classroom. If children are sick and parents cannot find day-care alternatives, the parents would stay home and expose themselves to the flu.

Please see Flu, A6



PHOTO BY GENE PARK FOR STAR BULLETIN
 Millani Uka Elementary student Karli Marakami winced in anticipation yesterday as she received a nasal dose of flu vaccine.



Del Monte quitting isles in 2 months

The abrupt announcement is a drastic change from its original plan to leave the state in 2008

Union officials call the notice "cruel" and accuse the company of exploiting the workers

By Nina Wu
 nwu@starbulletin.com

Del Monte Fresh Produce may not be gone from the state within two months instead of waiting for its current crops of pineapple in Central Oahu to mature in 2008.

The news was abrupt and astonishing to the hundreds of workers at Del Monte, as well as its Oahu landlord, the Estate of James Campbell. When Del Monte announced plans in February to pull out of Hawaii after 100 years in the state, the company had said it would

Please see Del Monte, A6

HASTY EXIT

Del Monte Fresh Produce said yesterday it will shut down its Kauai pineapple operations



Vegas police nab woman wanted for trial in Hawaii

A hearing is set for Monday on Otsuka's possible extradition

By Debra Barayoga
 dbarayoga@starbulletin.com



Lisa-Katherine Otsuka: The suspect, who is wanted for trial in Hawaii, is being held in Las Vegas

A former Maui beauty queen awaiting trial on theft and forgery charges here has been arrested by Las Vegas police after she failed to appear in Honolulu Circuit Court last month.

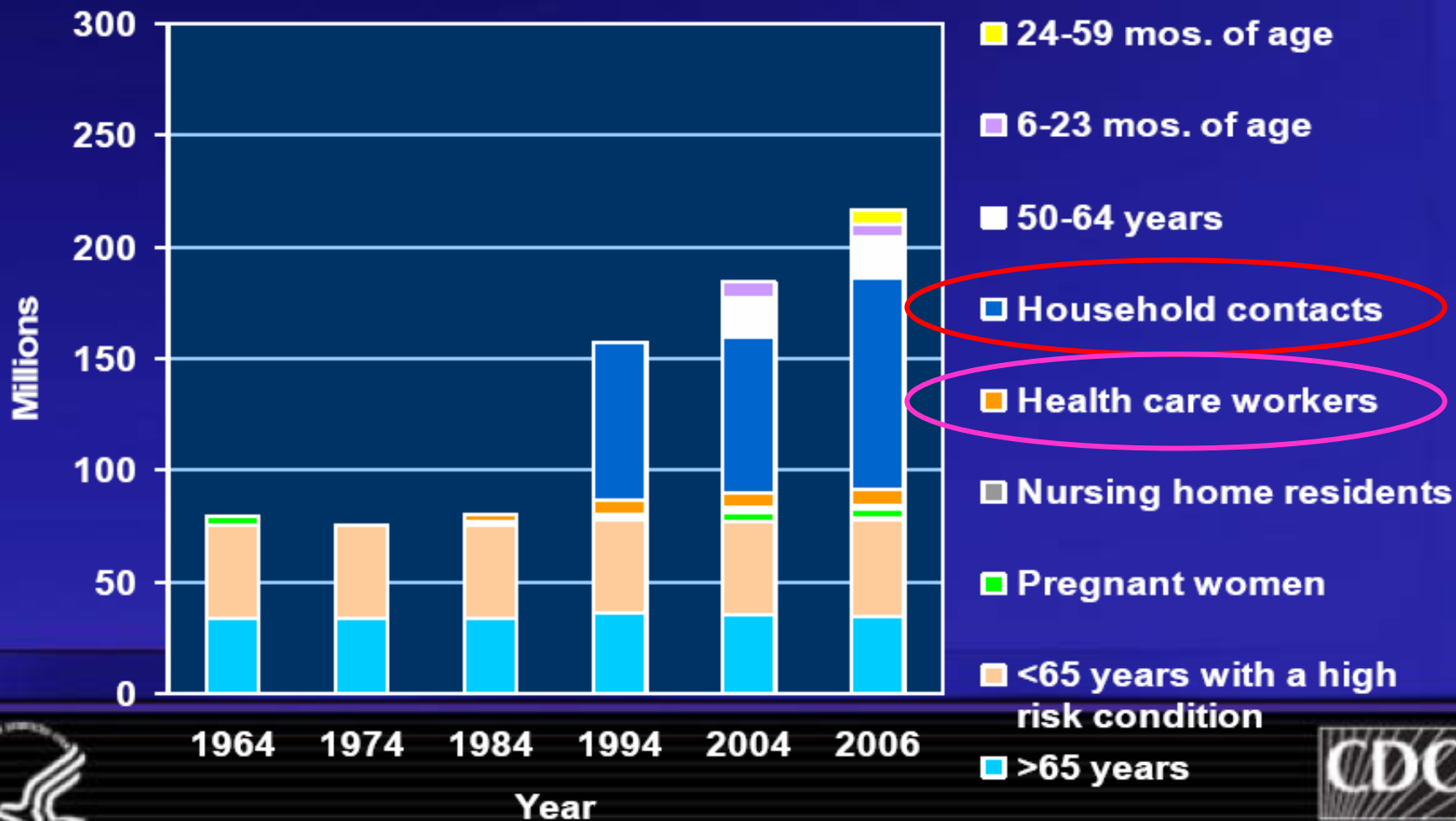
A hearing for Lisa-Katherine Otsuka, 37, is scheduled for

Monday in Las Vegas to determine whether she will be extradited, her attorney, William Harrison, confirmed yesterday.

Circuit Judge Dexter Del Rosario ordered that a bench

Please see Otsuka, A6

Estimated Size of ACIP Recommended Groups



Flu experts call for mandatory shots for health care workers

January 28, 2007

Experts from the Alexandria-based **Infectious Diseases Society of America** are insisting that all physicians, nurses, and other health workers caring for patients be vaccinated against influenza each year or decline in writing. It is the strongest call yet to plug a critical weakness in the nation's flu preparations.

Pandemic Influenza

Influenza Pandemics Happen



Credit: US National Museum of Health and Medicine

1918: “Spanish Flu”
A(H1N1)

20-40 m deaths
675,000 US deaths



1957: “Asian Flu”
A(H2N2)

1-4 m deaths
70,000 US deaths



1968: “Hong Kong Flu”
A(H3N2)

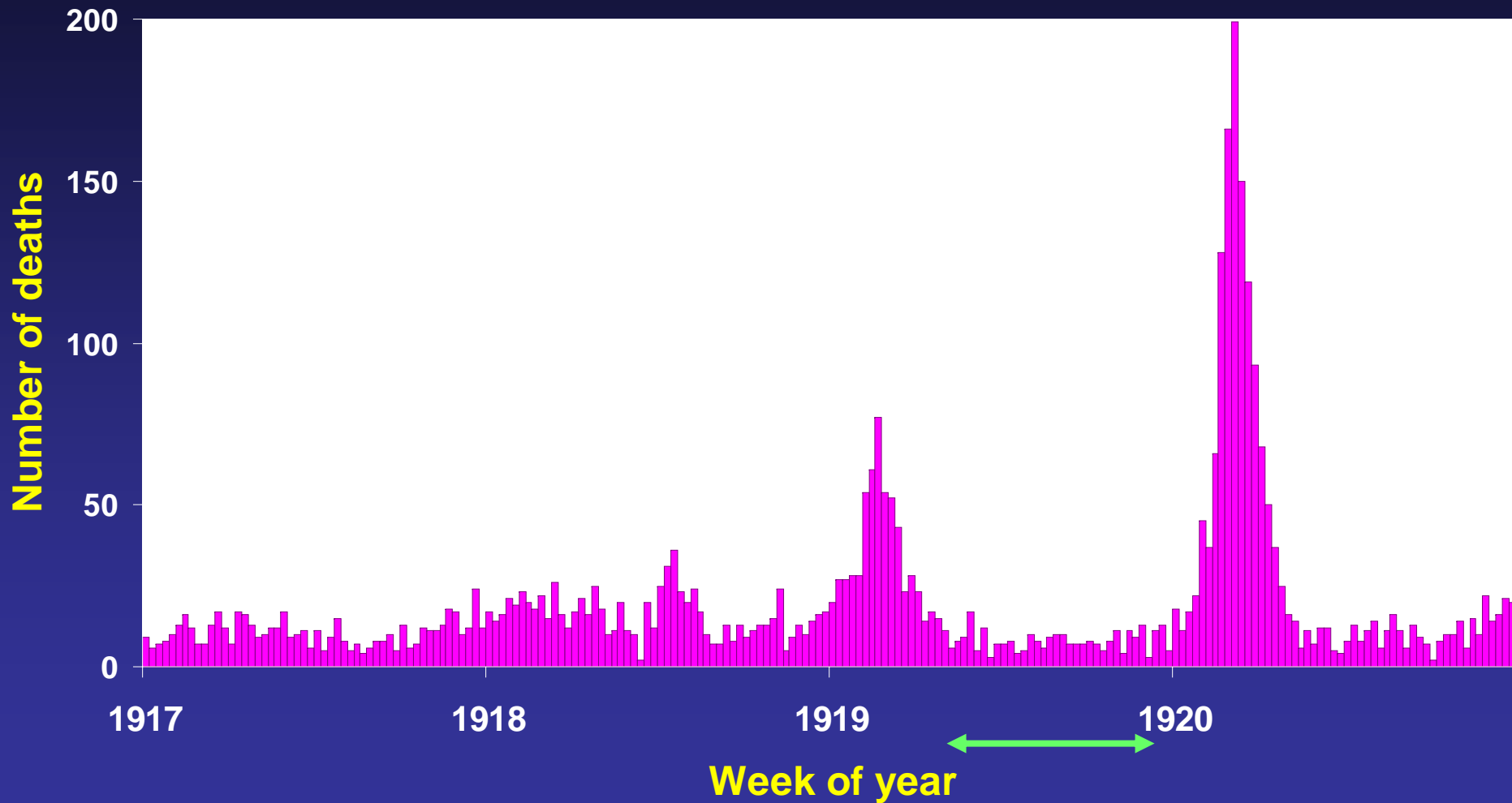
1-4 m deaths
34,000 US deaths

And they happen here.

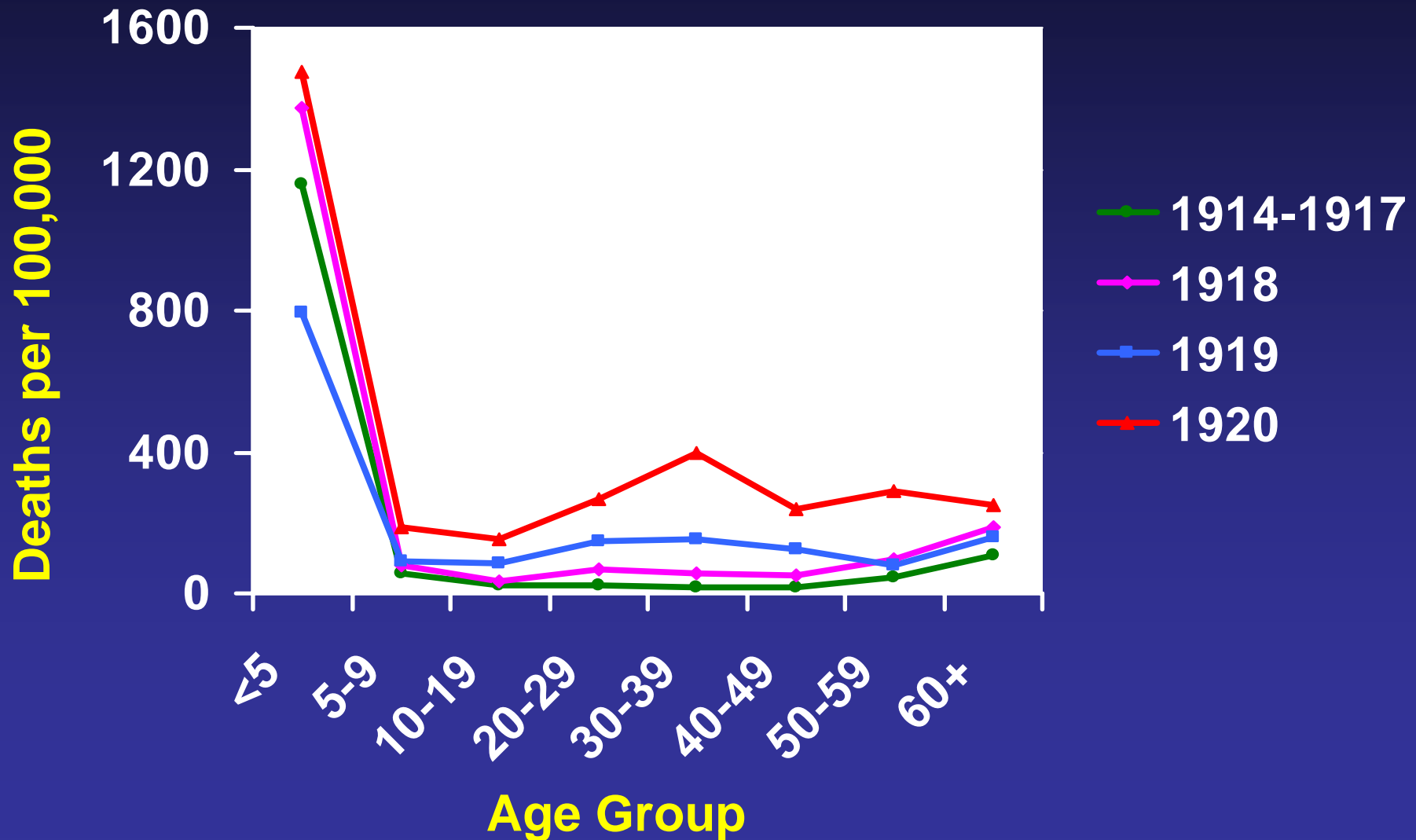


Duke Kahanamoku
Flu protection – Nov 13, 1918

Deaths from Probable Influenza – Hawaii, 1917-1920



Death Rates from Probable Influenza, by Age Group - Hawaii, 1914-1917



OF NEW CASES AND THE BOARD OF HEALTH

This is straight talk but the time has come for straight talk. The public health can no longer be safely entrusted to a so-called board of health that has displayed such incompetency, such mulish stubbornness and such callous disregard of its responsibilities to the people. It's time now for the civic and commercial bodies of Honolulu to take charge and try to undo, so far as possible, the harm that has been done by the board of health.

BOARD OF HEALTH STILL "NOT WORRIED" OVER THE INFLUENZA SITUATION

Paxson Says He Hasn't Been Paying Much Attention to It; Punahou Takes Precautions; Red Cross Closes Shops; One New Case Reported

Despite the persistent declaration of members of the territorial board of health that there is no danger of an epidemic of Spanish influenza sweeping Honolulu, notwithstanding it is already here, and President Paxson's statement that he "hasn't been paying much at-

attention. Where the average person makes a mistake," continued the secretary, "is in trying to continue at his work and fight the disease off without consulting a physician. Before he is aware of it he is seriously ill, complications develop and death may result."

Current Situation: Highly Pathogenic Avian Influenza (HPAI) H5N1

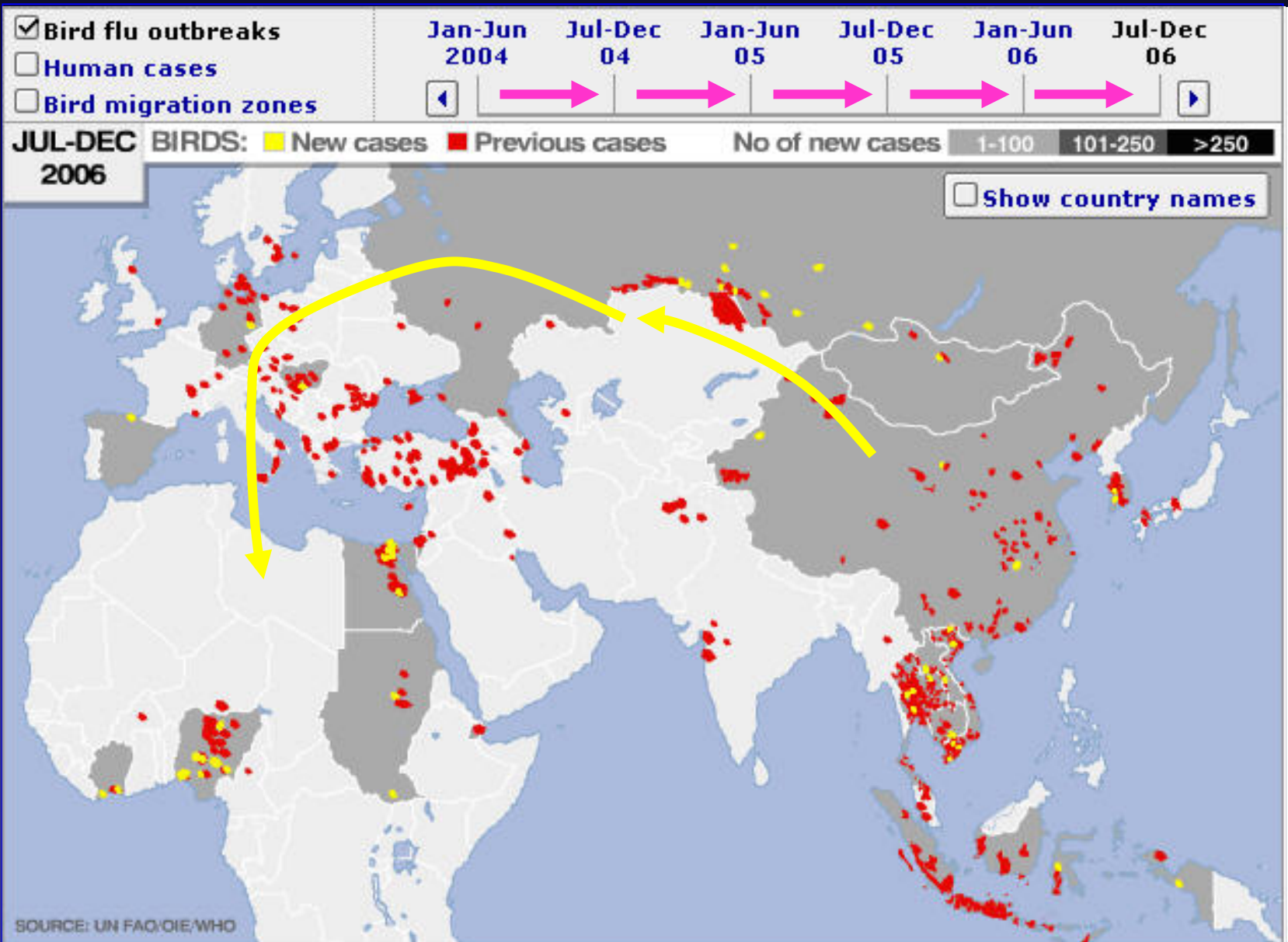
- Very lethal among avian species



H5N1 Avian Influenza

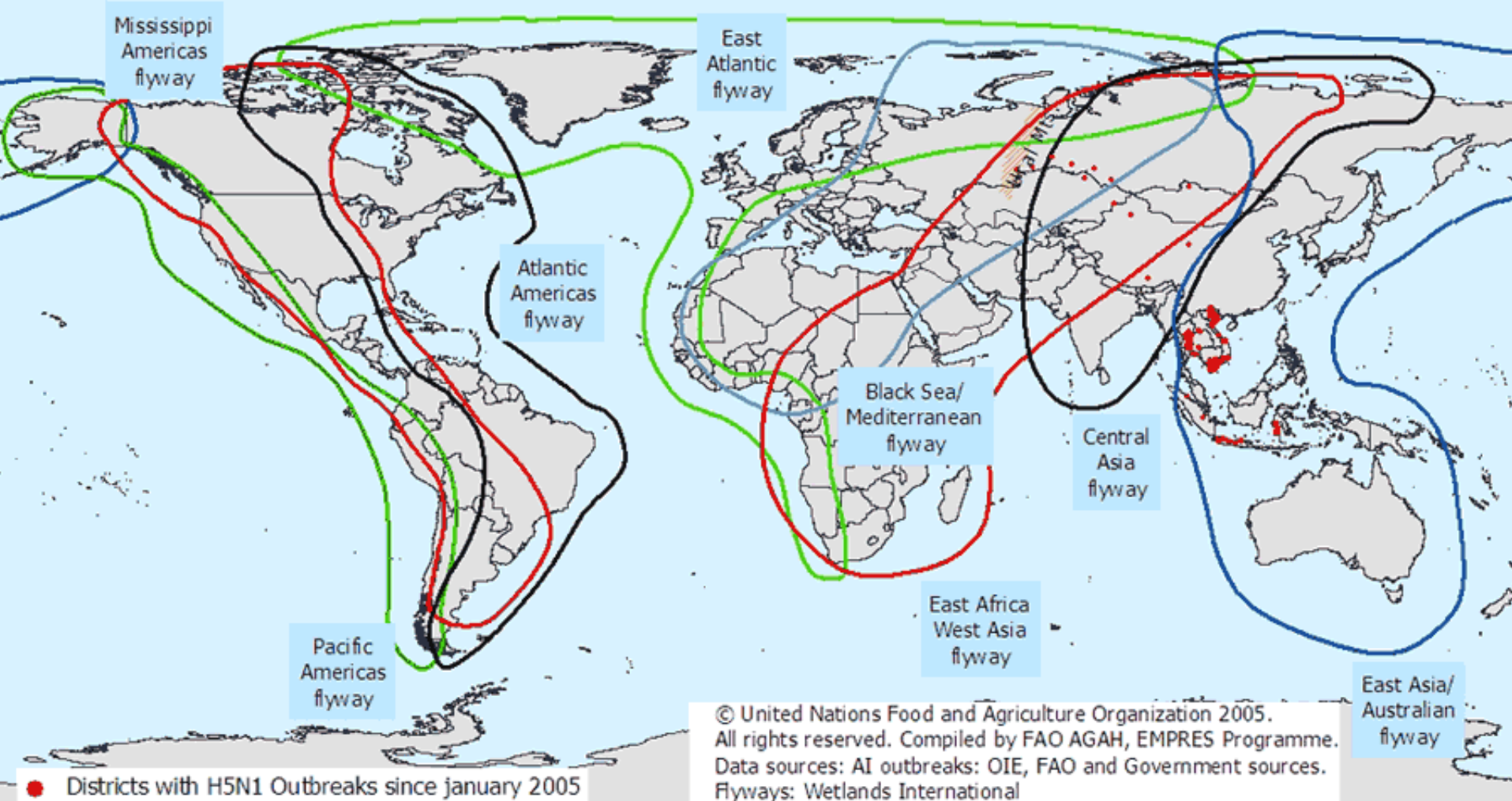


H5N1 Avian Influenza Situation Update in Birds



H5N1 outbreaks in 2005 and major flyways of migratory birds

Situation on 30 August 2005



Highly Pathogenic Avian Influenza (HPAI) H5N1

- Transmission to humans through direct contact with poultry - not efficient at present
- Limited evidence human-to-human transmission
- Dynamic situation

From 1997 to mid-November 2005, 126 people, all in Asia, contracted the H5N1 avian flu, and 64 died (left, the mother of flu victim Virat Phrapong, 7, at his funeral near Bangkok in 2004). Officials say the victims acquired the virus by direct contact with infected poultry (workers at a poultry market in Shanghai in 2005).

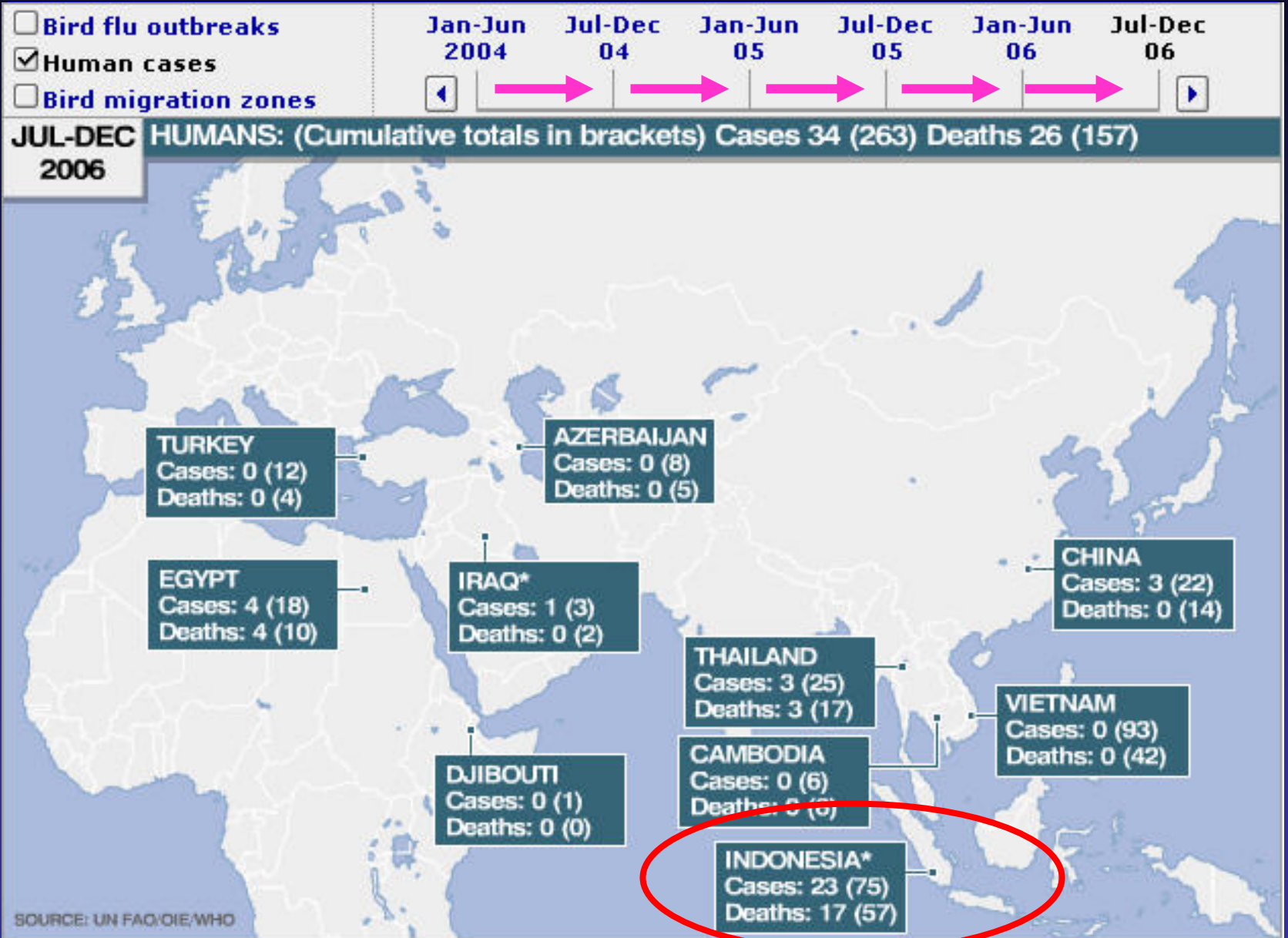


Close contact with chickens.



Very close contact with chickens.

H5N1 Avian Influenza Situation Update - Humans



H5N1 Avian Influenza Situation Update Humans

Cumulative Number of Confirmed Human Cases of Avian Influenza A/(H5N1) Reported to WHO

31-Dec-06

Country	2003		2004		2005		2006		Total	
	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths
Azerbaijan	0	0	0	0	0	0	8	5	8	5
Cambodia	0	0	0	0	4	4	2	2	6	6
China	0	0	0	0	8	5	13	8	21	14
Djibouti	0	0	0	0	0	0	1	0	1	0
Egypt	0	0	0	0	0	0	18	10	15	7
Indonesia	0	0	0	0	19	12	56	46	74	56
Iraq	0	0	0	0	0	0	3	2	3	2
Thailand	0	0	17	12	5	2	3	3	25	17
Turkey	0	0	0	0	0	0	12	4	12	4
Viet Nam	3	3	29	20	61	19	0	0	93	42
Total	3	3	46	32	95	41	116	80	264	159

60% Mortality

WHO reports only laboratory-confirmed cases.



“The transmission of H5N1 to even just a relatively few people,” Webster has said (a 3-year-old patient at a hospital in Jakarta in November 2005), “was an ominous sign that it has the potential to adapt to humans.”

H5N1 Avian Influenza Situation Update 2003-2006

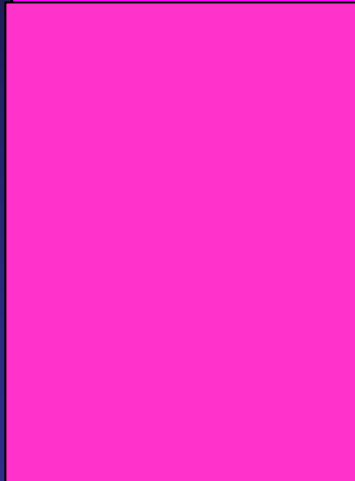
Humans



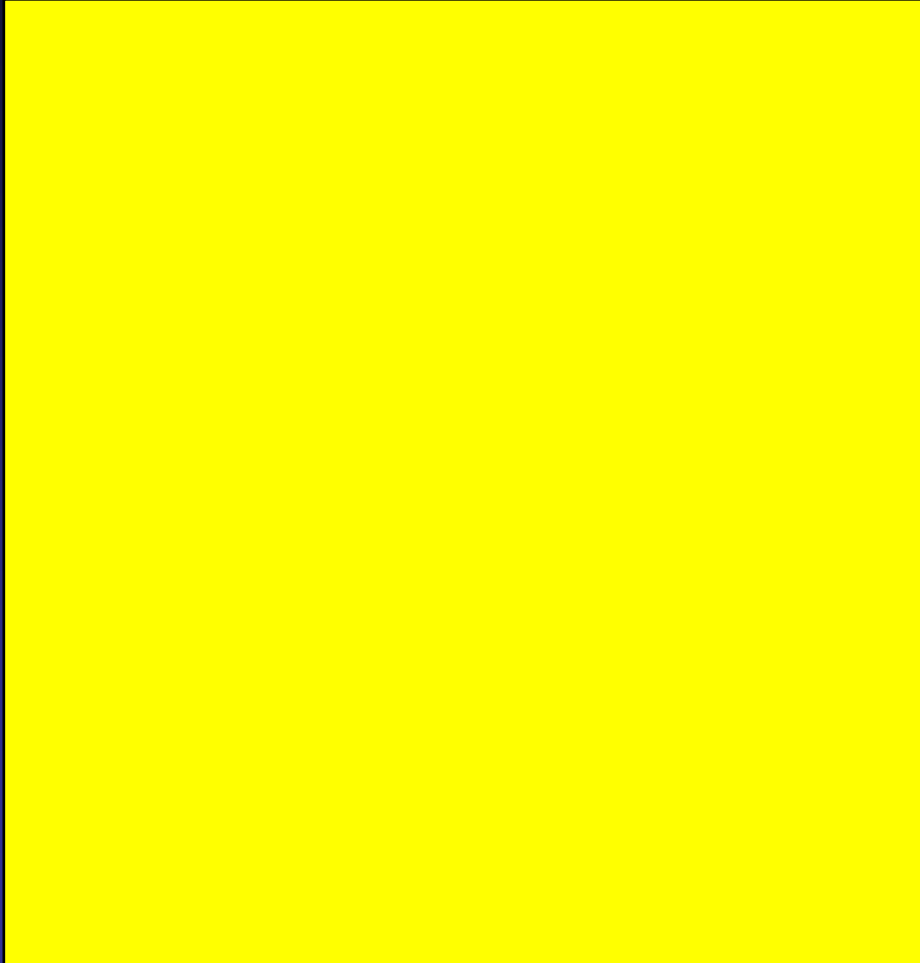
Should Hawaii be concerned?

- Nearly 7.5 million visitors in 2005

**Hawaii's Resident
Population**



Hawaii's Visitor Population



The worldwide air transportation network: Anomalous centrality, community structure, and cities' global roles

R. Gulmezi¹, S. Mossa², A. Turtschi², and L. A. N. Amaral^{1,3}

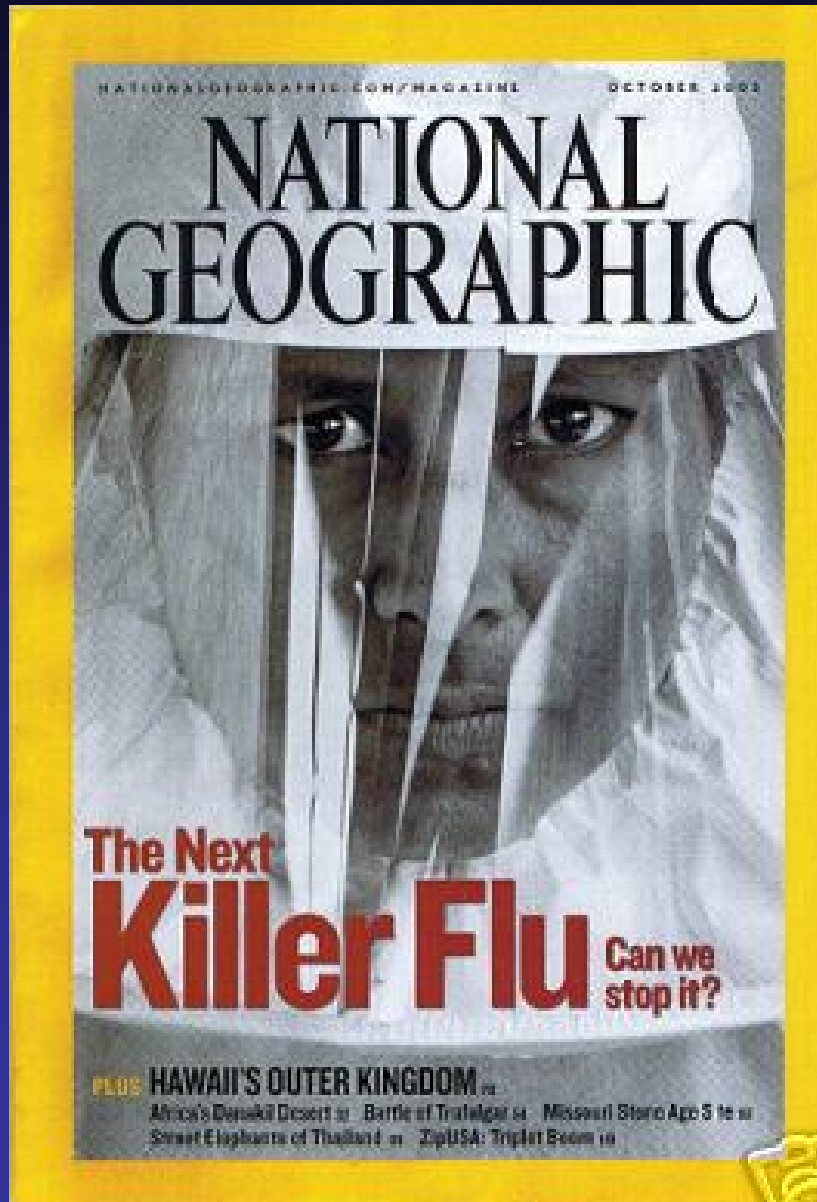


(c) The 25 most central cities in the world.

Will H5N1 evolve into the next
pandemic influenza?



Will H5N1 go pandemic?



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THE FLU
IS COMING!

THE FLU
IS COMING!

THE FLU
IS COMING!

THE FLU
IS COMING!



CHICKEN LITTLE 2005

ISSN 0028-280X

nature

HOWE TUBERCULOSES
Cattle movements spread disease

SOLAR SYSTEM EVOLUTION
When the planets hold sway

PLANT HORMONES
Hb-ant, an odour receptor

WILDLIFE MARCH
Can't see for looking?



AVIAN FLU

Ready for a pandemic?

NEW FRONTIERS
Gene therapy

When it happens Next Pandemic will cost lives and money: CDC Estimates for the U.S.

- 38 - 89 million may be clinically ill
- 18 - 42 million will require outpatient care
- 314,000 - 734,000 will be hospitalized
- 89,000 - 207,000 will die
- Economic losses of \$71 - \$166 billion

Source: Martin I. Meltzer, Nancy J. Cox, and Keiji Fukuda. 1999. *The Economic Impact of Pandemic Influenza in the United States: Priorities for Intervention*. Emerging Infectious Diseases. Vol. 5, No. 5 September–October

Not if but when?



Approach

- We cannot predict the future of HPAI H5N1 or the probability of another pandemic.
- We have to prepare.



Hawaii Pandemic Influenza Preparedness & Response

- Command and control
- Influenza surveillance: routine and pandemic
- Pandemic influenza vaccines
- Antiviral medications
- Health care delivery
- Isolation & quarantine
- Communications

Components of Hawaii's Influenza Surveillance

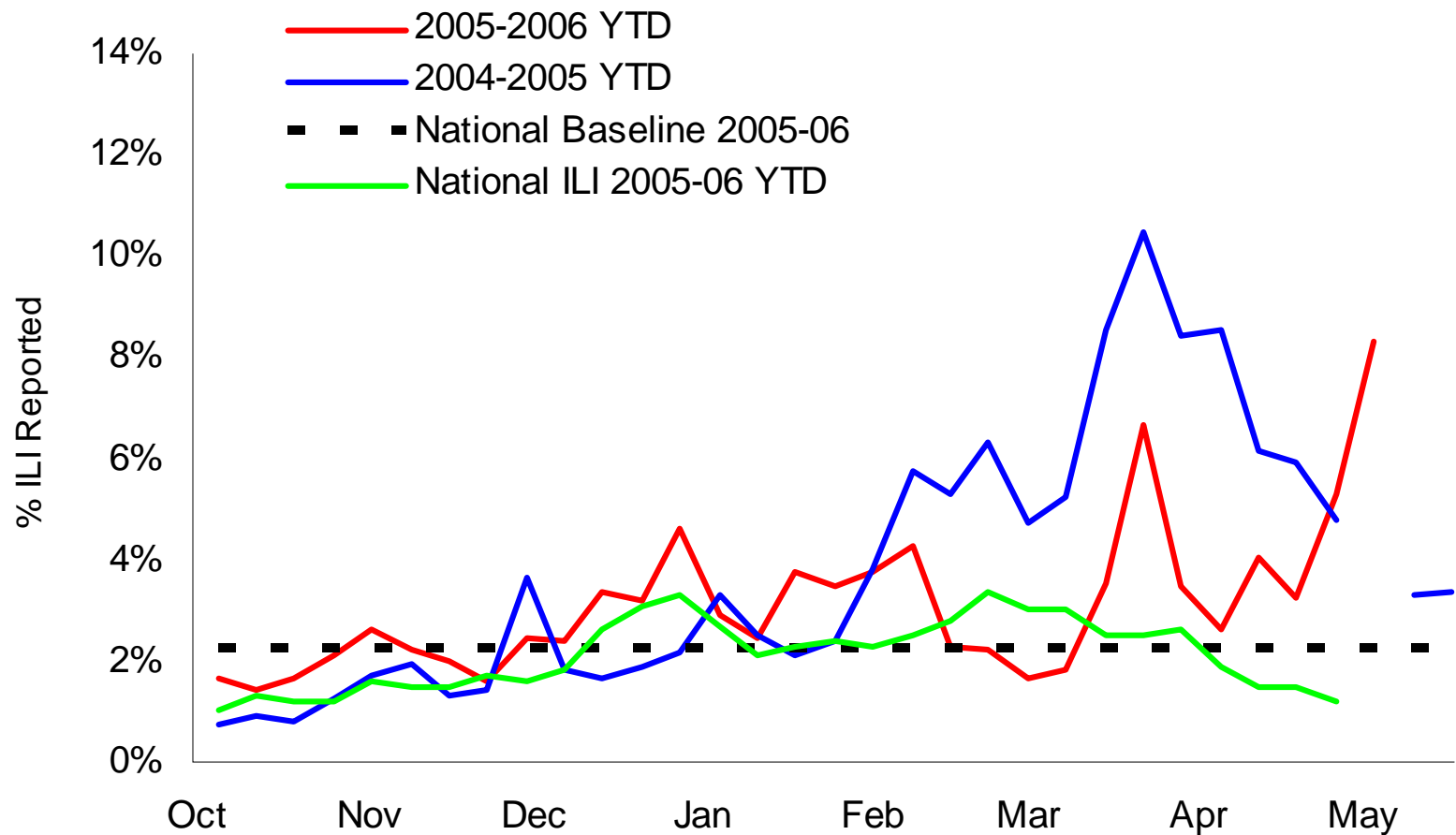
Sentinel MD
ILI Reports

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graph TD; A[Sentinel MD ILI Reports] --> B[Influenza Surveillance]
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Influenza Surveillance

Hawaii Influenza Surveillance: 2004-06 Flu Seasons

Percentage of Visits for Influenza Like Illness (ILI) Reported by Hawaii Sentinel Providers



Components of Hawaii's Influenza Surveillance

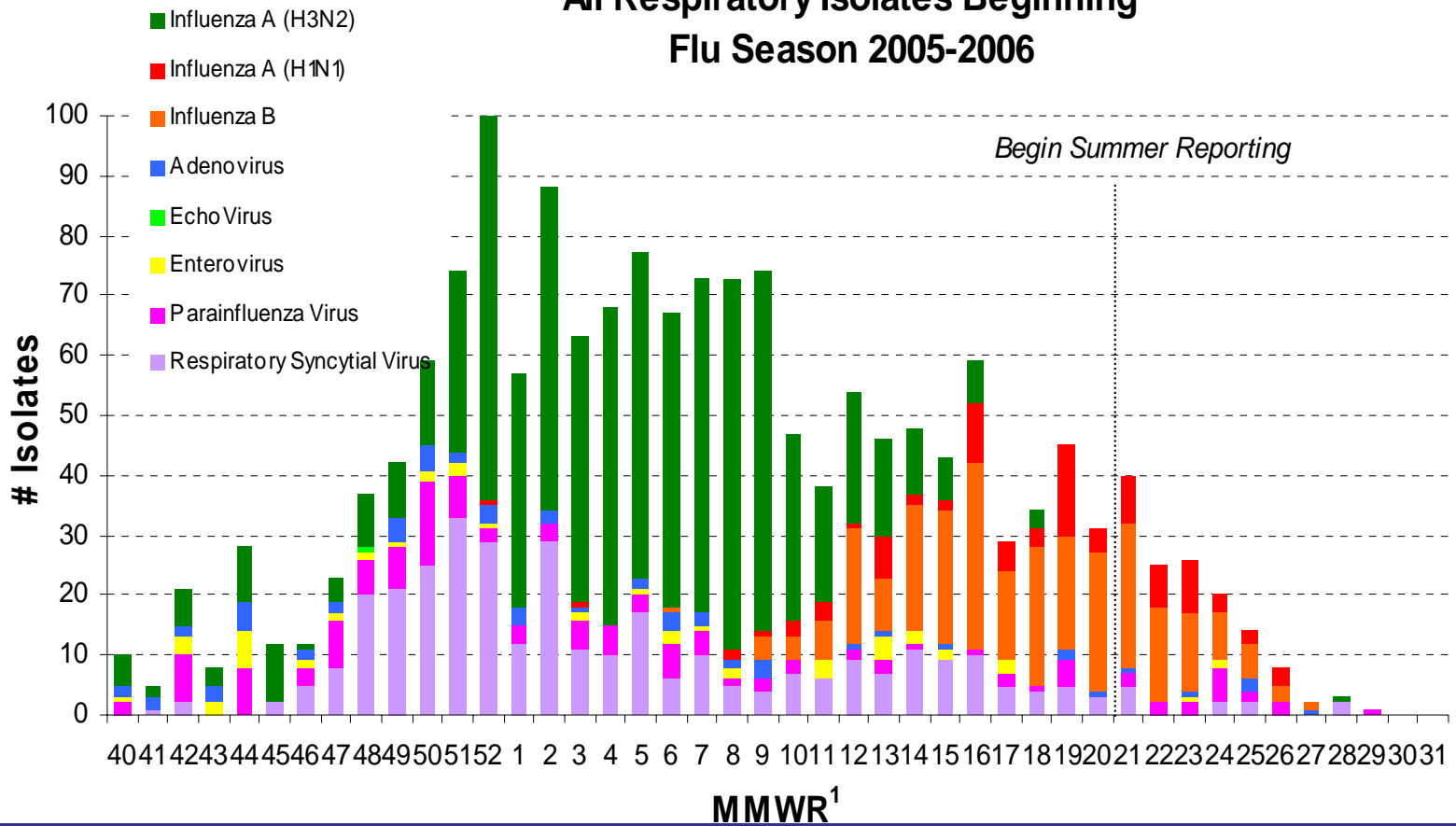
Sentinel MD
ILI Reports

Lab
Reports of Flu

Influenza Surveillance

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graph TD; A[Sentinel MD ILI Reports] --> C[Influenza Surveillance]; B[Lab Reports of Flu] --> C;
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All Respiratory Isolates Beginning Flu Season 2005-2006



Robust Virologic Influenza

Surveillance targets four groups:

- 1. Early seasonal flu illnesses**
- 2. Severe flu-like illnesses**
- 3. Flu-like illnesses in persons with recent travel overseas**
- 4. Late illnesses**

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Back Forward Stop Home Search Favorites Refresh Print Mail Stop Send To Settings

Address <https://www.providerportal.doh.hawaii.gov/> Go Links

Google Go Bookmarks 25 blocked Check AutoLink AutoFill Send to

Hawaii Online Flu Submission Portal

[HDOH](#) | [eHawaii.gov](#) | [Aloha Alerts](#)

- [Hawaii Medical Library](#)
- [UH Medical Library](#)
- [Pub Med](#)
- [CDC's MMWR](#)
- [Emerging Infectious](#)



HAWAII STATE DEPARTMENT OF HEALTH
 HEALTHY PEOPLE - HEALTHY COMMUNITIES - HEALTHY ISLANDS

Hawaii Online Influenza Specimen Submission Portal

Welcome to the Hawaii State Department of Health's online influenza specimen submission portal. Please login below with your username and password to submit specimens for influenza testing to the Hawaii Department of Health and to check your results.

If this is the first time you are accessing your account, please sign up below!

Forgotten your login or password? Please contact the Hawaii Department of Health's Influenza Surveillance Program at 586-4586 or email us at flu_surveillance@doh.hawaii.gov for assistance.

Please login



Username:

Password:

Login

Login

Is this your first time here?



for a free account!

- [Hawaii Influenza Surveillance](#)
- [Hawaii Pandemic Flu Preparedness](#)
- [CDC Seasonal Flu](#)
- [CDC Avian flu](#)
- [PandemicFlu.gov](#)
- [WHO Influenza Surveillance](#)



Submission Form

Submit a specimen for influenza testing

***You will be automatically logged out if no activity is registered for 20 minutes. Please complete your submission in one session if possible.**

Aloha Dr. Paul Effler!

I. Patient Identification

In House Patient ID# (if available)

Last Name*

Date of Birth* mm/dd/yyyy

Address

Zip esp. 96817-3083

*required fields in yellow (5)

First Name* Middle Initial

Sex Resident?

City State

II. Clinical Information

Date of illness* mm/dd/yyyy

Fever If yes, Temp (*F)

Cough

Muscle Aches

Other Symptoms

Sore throat Malaise Chills

Diarrhea Vomiting Headache

III. Prioritization Information

Patient Admitted to Hospital?

Patient Experiencing Acute Respiratory Distress (ARDS)?

Patient clinically diagnosed with pneumonia?

If yes, admission date mm/dd/yyyy

If yes, X-ray confirmed?

Travel outside Hawaii within 10 days prior to onset of symptoms?

If yes, US Mainland

Country

* Ctrl key to multi-select / deselect

Comments

IV. Specimen Information

Collection Date* mm/dd/yyyy

Lab

Specimen Type

***Please review all information before submitting, Mahalo!**

Submit Specimen

*Submit specimen first before printing

Reset Form

[Print Submission Form](#)



Medical Microbiology Branch
Hawaii State Department of Health
2725 Waimano Home Road
Pearl City, Hawaii 96782

Date Received by State Lab:

State Dept. of Health Accession #:

SPECIMENS COLLECTED FOR INFLUENZA SURVEILLANCE
CLINICAL DIAGNOSIS: INFLUENZA LIKE ILLNESS

PHYSICIAN: **Dr. Effler**
BUSINESS NAME: **Dr. Paul Effler**

SPECIMEN PRIORITY IDENTIFICATION:

SENTINEL PHYSICIAN ID#
PATIENT HOSPITALIZED? **Y** if yes, DATE
ARDS OF UNKNOWN ETIOLOGY? **Yes**
PATIENT CLINICALLY DIAGNOSED WITH PNEUMONIA?
XRAY CONFIRMED PNEUMONIA? **No**
TRAVEL OUTSIDE HAWAII WITHIN 10 DAYS PRIOR TO ONSET?
Yes
if yes, US Mainland State:
International: **Cambodia**

PATIENT IDENTIFICATION:

PATIENT ID#
LASTNAME: **Test** FIRST: **Patient**
DATE OF BIRTH: **12/12/1950** AGE: SEX: **F**
ADDRESS: **1132 Bishop Street**
CITY: **Honolulu** STATE: **HAWAII** ZIP: **96814**
COMMENTS:

SPECIMEN COLLECTION / TESTING INFORMATION:

COLLECTION DATE: **02/07/2007**
SPECIMEN SITE: **Nasopharyngeal Swab**
CLINICAL LAB HANDLING SPECIMEN: **Hawaii State Laboratory**
RAPID TESTING DATE:
RAPID TEST RESULTS:

CLINICAL SIGNS AND SYMPTOMS:

DATE OF ONSET: **02/07/2007**
FEVER: **Y** (MAXIMUM TEMPERATURE: **100** °F
COUGH: **Y** MUSCLE ACHES: **Y**
SORE THROAT: **N** DIARRHEA: **N**
MALAISE: **N** VOMITTING: **N**
CHILLS: **N** HEADACHE: **N**
OTHER SYMPTOMS:

SECTION BELOW FOR DEPARTMENT OF HEALTH USE

PCR RESULTS - PRESUMPTIVE:
PCR SUBTYPE (if applicable):
VIRAL CULTURE RESULTS:
VIRAL CULTURE SUBTYPE (if applicable):
VIRAL STRAIN:
REASON FOR REJECTION (if any):

VACCINATION HISTORY

DID PATIENT RECEIVE FLU VACCINE IN THE LAST 6 MONTHS: **Y**
DATE OF LAST VACCINATION: **12/06/2006**

SECTION BELOW FOR DEPARTMENT OF HEALTH USE

Print Form

[Print Specimen](#)

[Return to Patient Submission](#)

[Return to Patient Results](#)



Review Results

Submission #	In-house Patient ID	Last Name	First Name	Date of Birth	Practice Name	Collection Date	Lab	Report Date	Rapid Flu Test	RT PCR RESULT	SUBTYPE (PCR)	Viral Culture	Subtype Culture	Strain
378		Test	Patient	12/12/1950	Dr. Paul Effler	02/07/2007	Hawaii State Laboratory		Negative	Positive A		Influenza A	H3	

Records 1 to 1 of 1

The above table reflects your flu submissions to the Hawaii State Department of Health.. Once laboratory testing is complete, results will be updated in the above table.

To print out your patient's Influenza Specimen Submission Form, click on the respective [Submission #](#). The form that pulls up will automatically populate with all results available at that time.

(the above records) to CSV file



[Logout](#) [Back to portal function page](#) [Main DOH website](#)

Components of Hawaii's Influenza Surveillance

Sentinel MD
ILI Reports

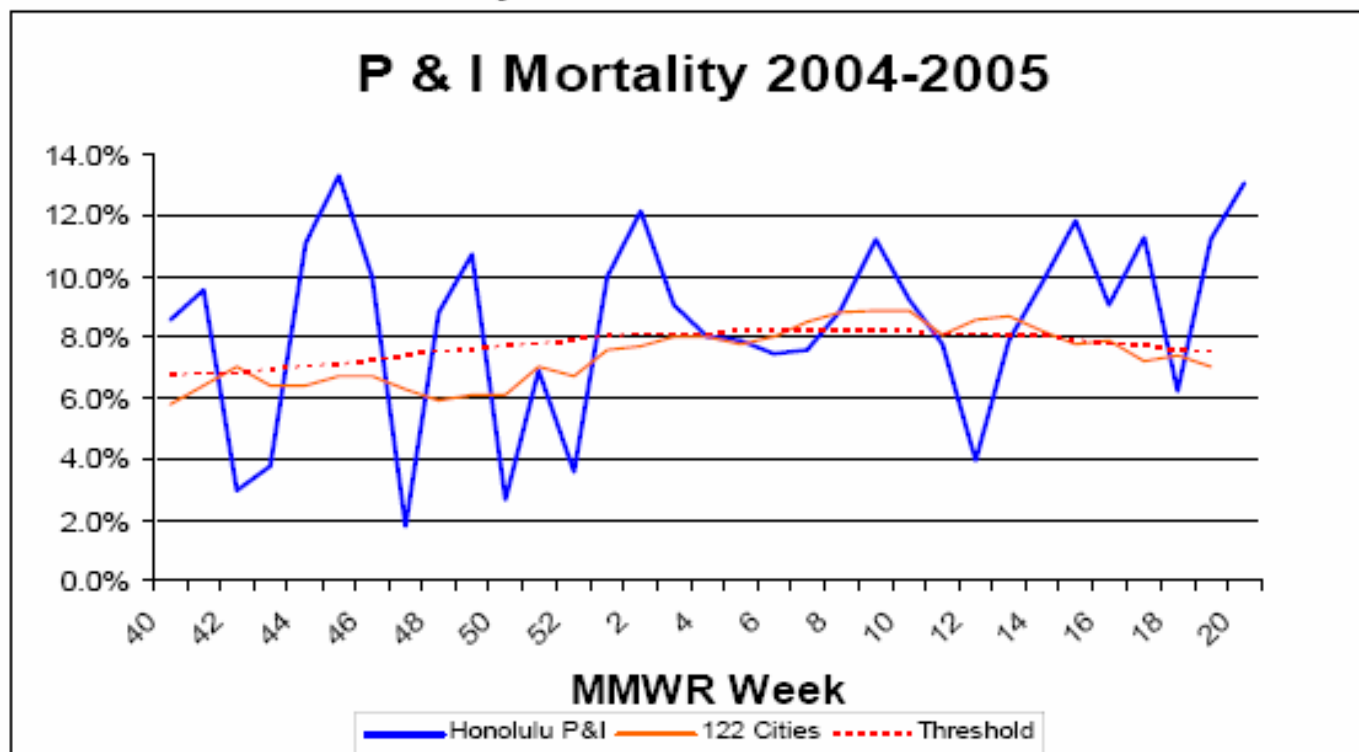
Lab
Reports of Flu

P & I Deaths

Influenza Surveillance

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graph TD; A[Sentinel MD ILI Reports] --> D[Influenza Surveillance]; B[Lab Reports of Flu] --> D; C[P & I Deaths] --> D;
```

II. Pneumonia & Influenza Mortality:



Components of Hawaii's Influenza Surveillance

Sentinel MD
ILI Reports

Lab
Reports of Flu

P & I Deaths

Clustered ILI
Activity and
Absenteeism

Influenza Surveillance

```
graph TD; A[Sentinel MD ILI Reports] --> D[Influenza Surveillance]; B[Lab Reports of Flu] --> D; C[P & I Deaths] --> D; E[Clustered ILI Activity and Absenteeism] --> D;
```

“Hawaii begins first program to detect avian flu at airport. New surveillance is designed to stop and react quickly to a possible pandemic.”



Vaccine



Antiviral Medications

Total State Purchase of Antiviral Courses	172487
SNS Antiviral Commitment (#of courses)	186,093
Grand Total (Antiviral Courses expected)	358,580



Supply is here - but not enough for prophylaxis.

Will there be resistance?

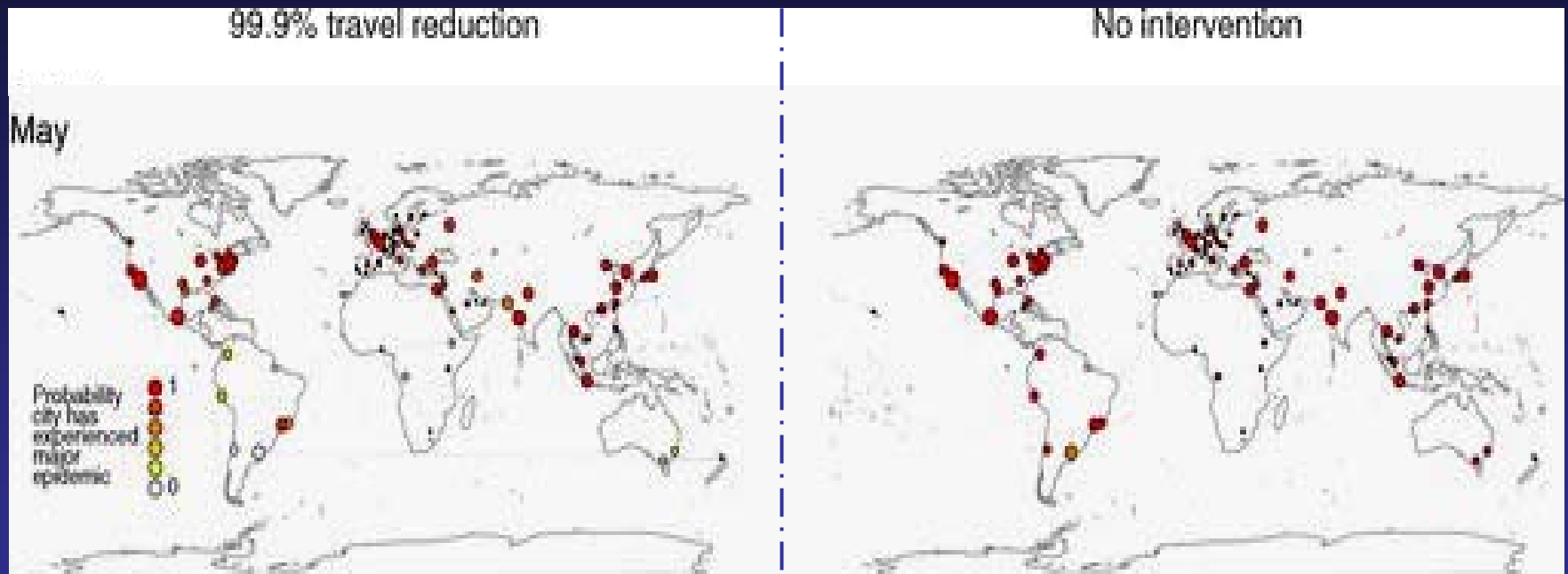
Hawaii Preparedness & Response: Health Care Delivery

- Will likely exceed capacity
- Close collaboration with hospitals
- Explore alternate facilities or home care options
- Establish surge capacity for health care personnel

Hawaii Preparedness & Response: Isolation and Quarantine

- Isolation of **sick** people
- Quarantine of **exposed** people
- Both require adequate supplies for daily living and personal protection
- Enforcement

Why not just quarantine the entire State?



10 month interval: August to May

Hawaii Preparedness & Response: Population-Based Isolation and Quarantine

- “Social Distancing” for those **not yet exposed in the population at large**
- Non Pharmaceutical Interventions
- Community Mitigation Strategies

INFLUENZA

FREQUENTLY COMPLICATED WITH

PNEUMONIA

IS PREVALENT AT THIS TIME THROUGHOUT AMERICA.

THIS THEATRE IS CO-OPERATING WITH THE DEPARTMENT OF HEALTH.

YOU MUST DO THE SAME

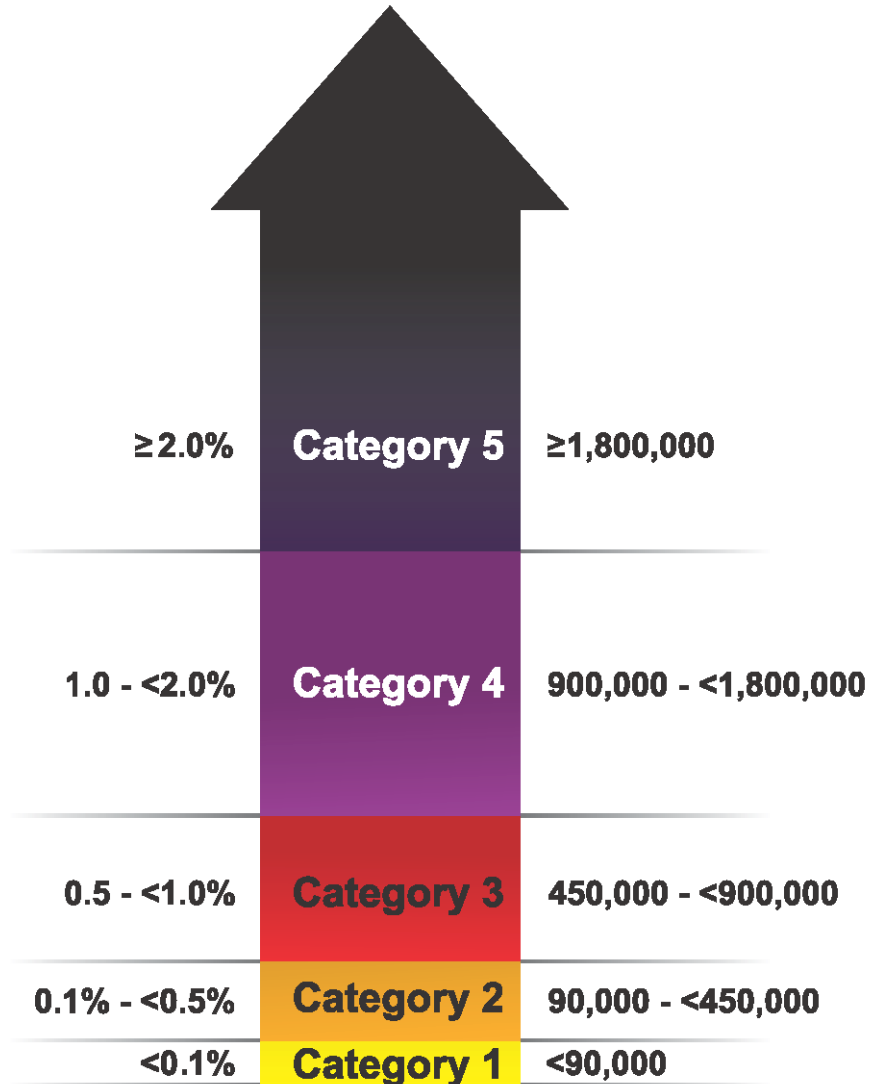
IF YOU HAVE A COLD AND ARE COUGHING AND
SNEEZING DO NOT ENTER THIS THEATRE.

GO HOME AND GO TO BED UNTIL YOU ARE WELL.

Chicago poster urging voluntary social distancing in theatres - 1918

**Case
Fatality
Ratio**

**Projected
Number of Deaths*
US Population, 2006**

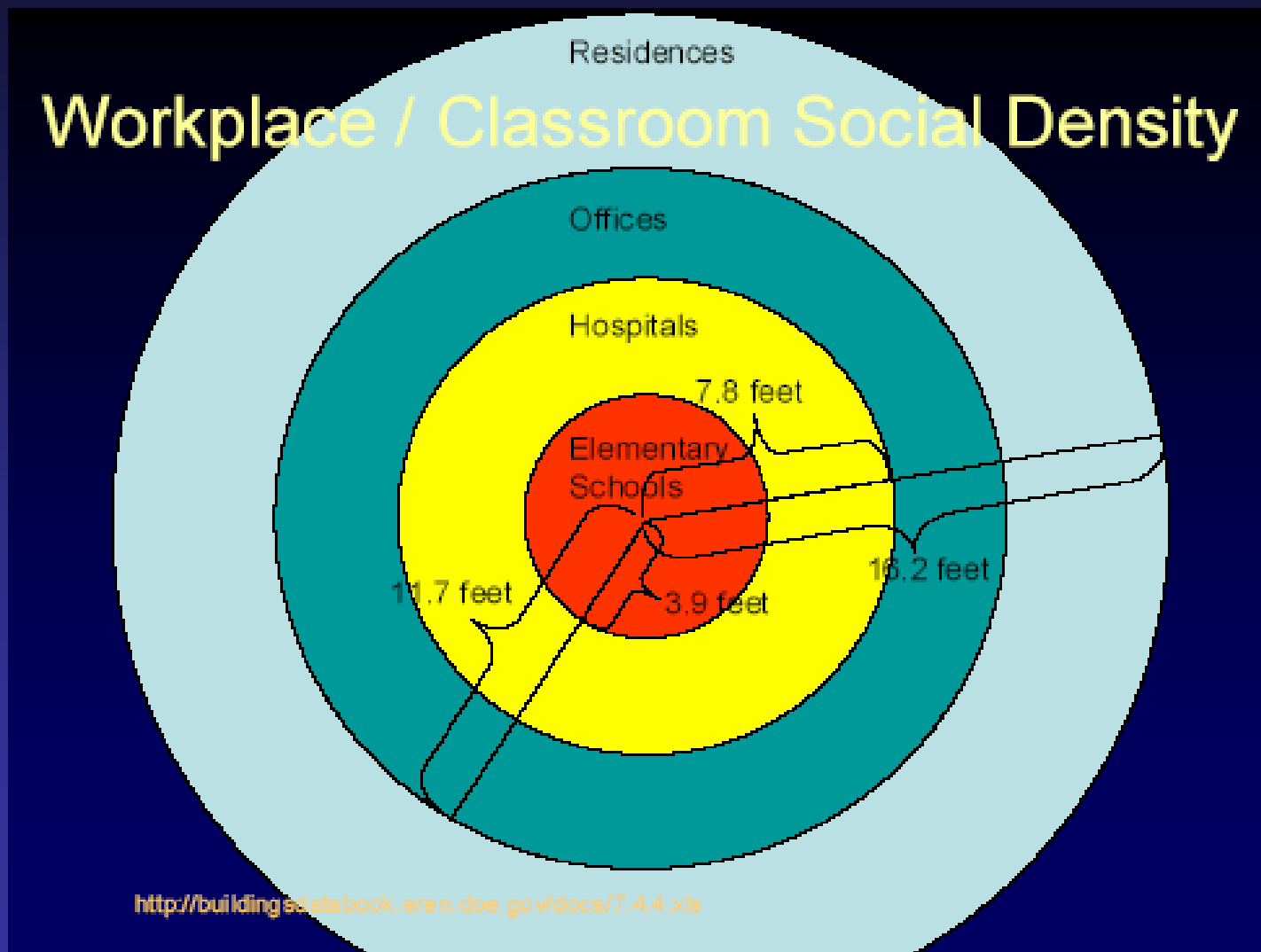


*Assumes 30% Illness Rate and Unmitigated
Pandemic Without Interventions

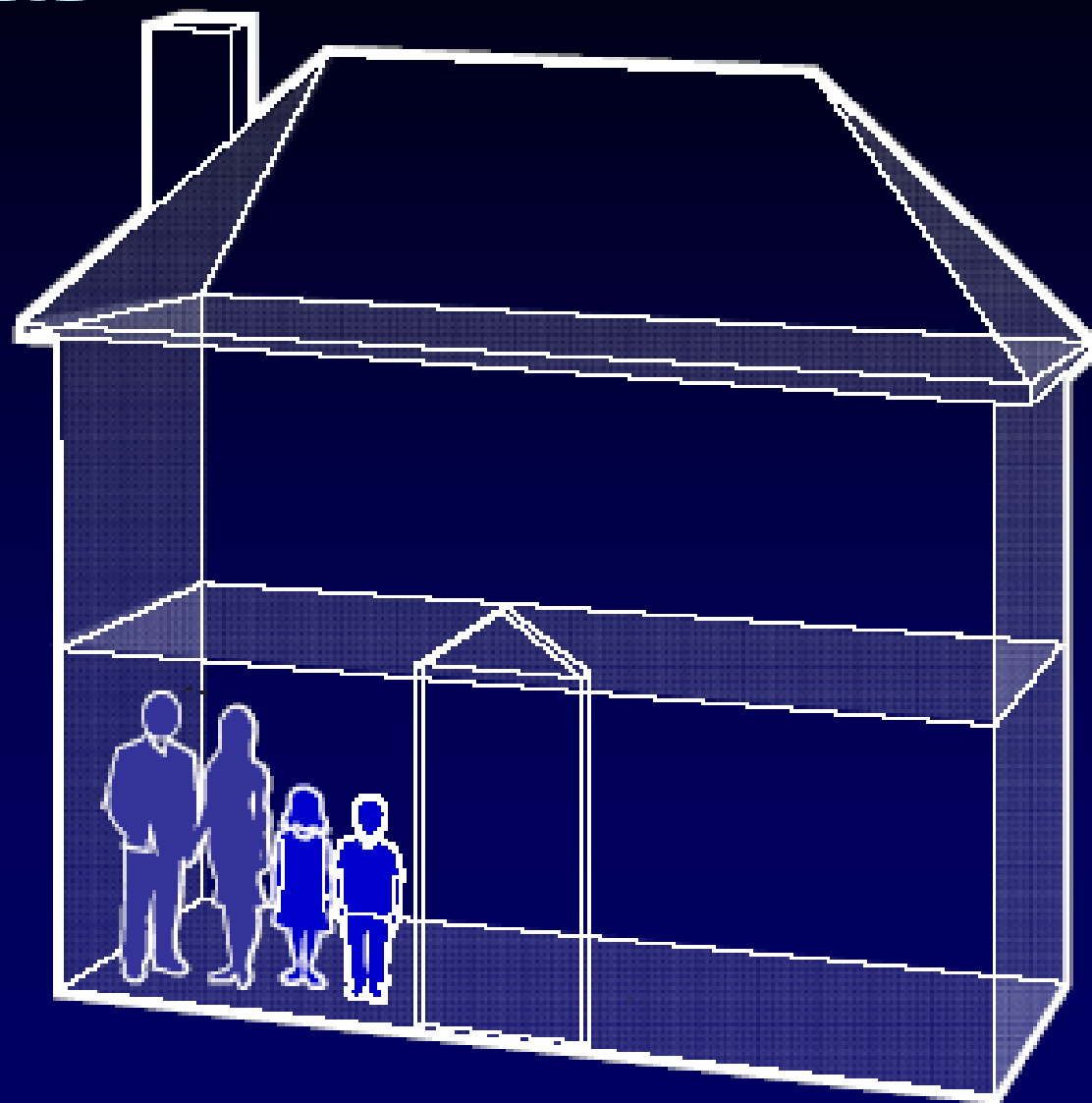
Table 2. Summary of the Community Mitigation Strategy by Pandemic Severity

Interventions* by Setting	Pandemic Severity Index		
	1	2 and 3	4 and 5
Home Voluntary isolation of ill at home (adults and children); combine with use of antiviral treatment as available and indicated	Recommend†§	Recommend†§	Recommend†§
Voluntary quarantine of household members in homes with ill persons¶ (adults and children); consider combining with antiviral prophylaxis if effective, feasible, and quantities sufficient	Generally not recommended	Consider**	Recommend**
School Child social distancing -dismissal of students from schools and school based activities, and closure of child care programs -reduce out-of-school social contacts and community mixing	Generally not recommended Generally not recommended	Consider: ≤4 weeks†† Consider: ≤4 weeks††	Recommend: ≤12 weeks§§ Recommend: ≤12 weeks§§
Workplace / Community Adult social distancing -decrease number of social contacts (e.g., encourage teleconferences, alternatives to face-to-face meetings) -increase distance between persons (e.g., reduce density in public transit, workplace) -modify postpone, or cancel selected public gatherings to promote social distance (e.g., postpone indoor stadium events, theatre performances) -modify work place schedules and practices (e.g., telework, staggered shifts)	Generally not recommended Generally not recommended Generally not recommended Generally not recommended	Consider Consider Consider Consider	Recommend Recommend Recommend Recommend

3. Planning in Private and Non-Health Sectors

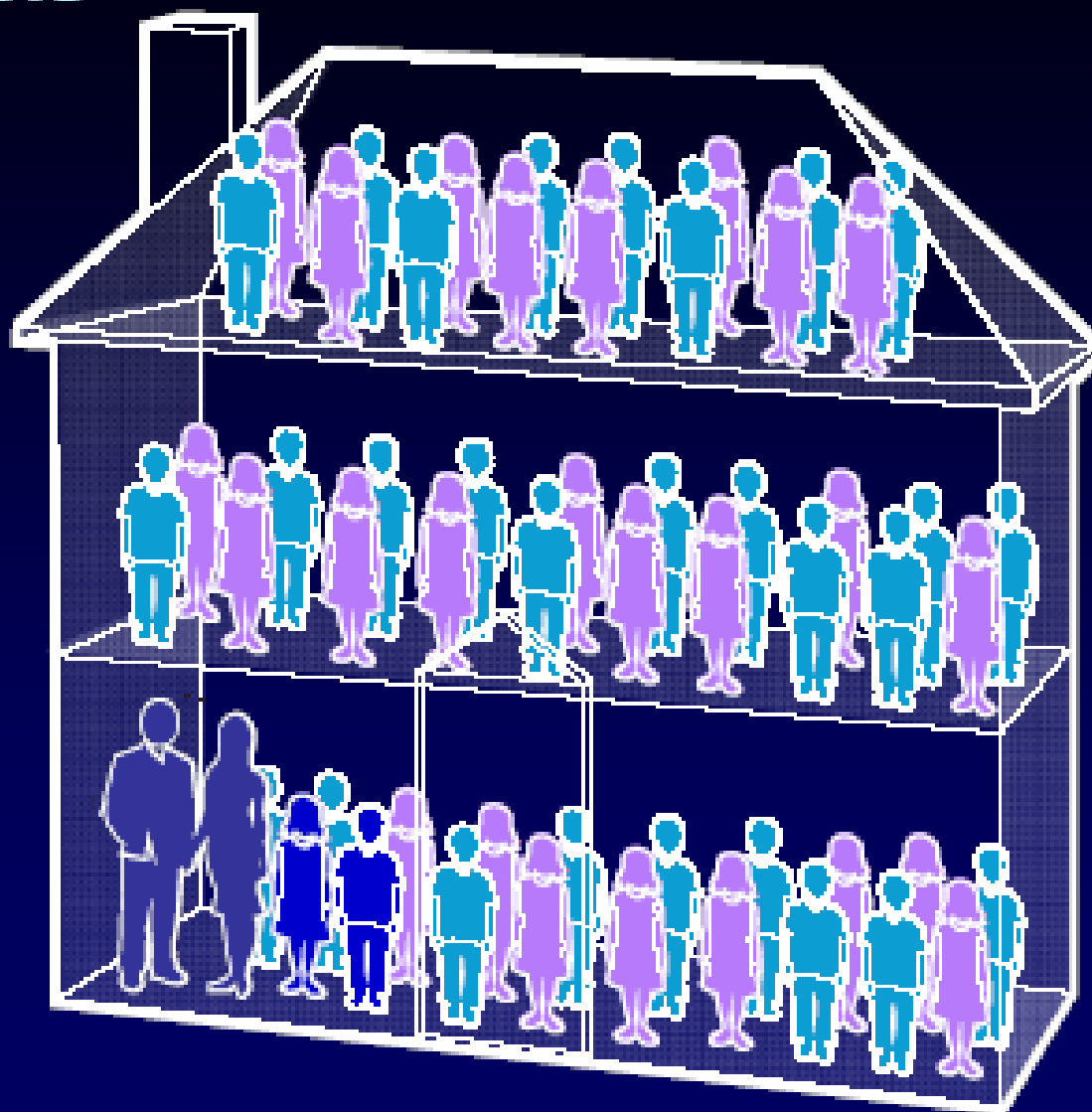


Spacing of people: If homes were like schools



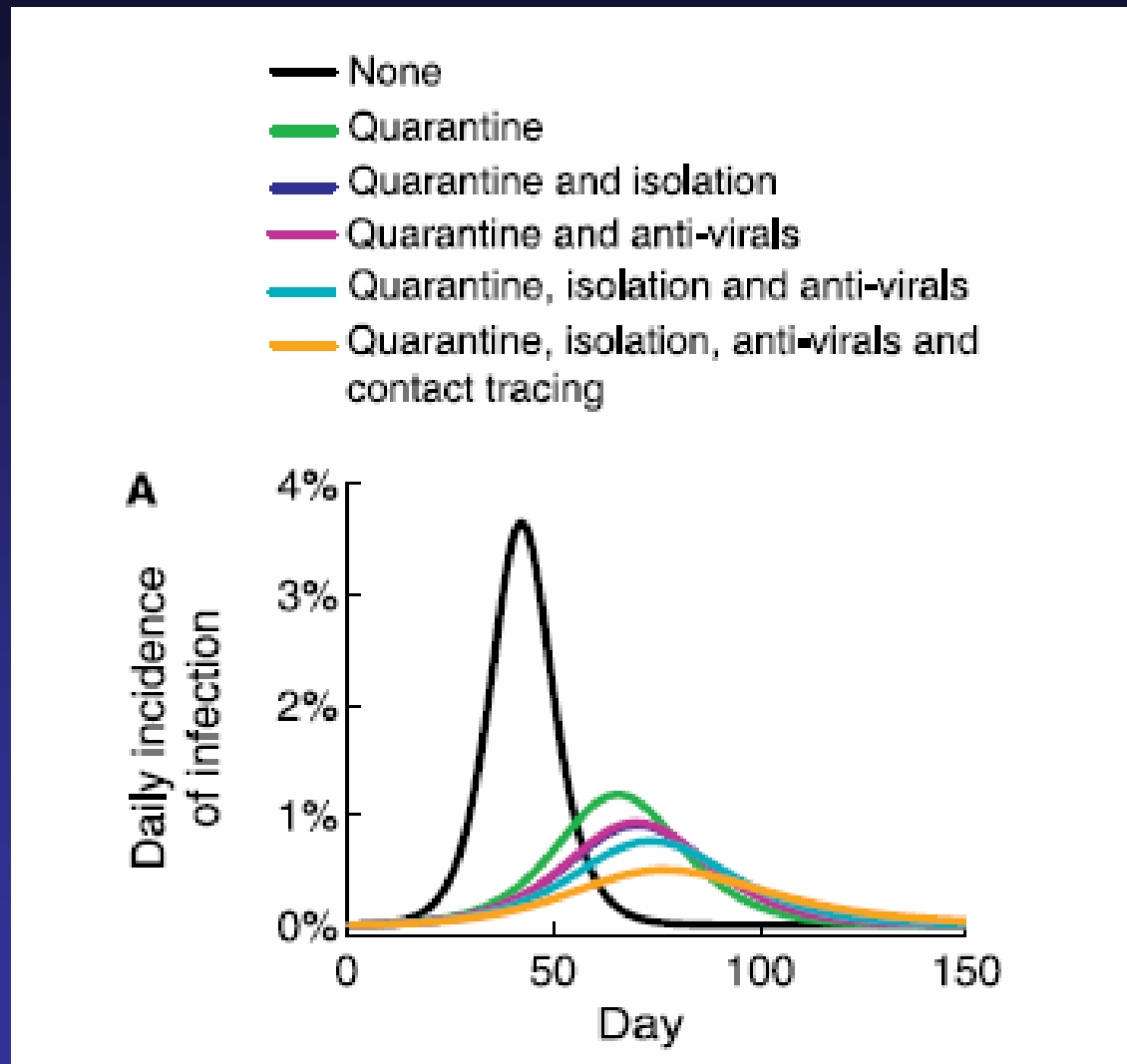
*Based on avg. 2,600 sq. ft. per single family home

Spacing of people: If homes were like schools



*Based on avg. 2,600 sq. ft. per single family home

Incidence of Infection using various control strategies for a pandemic



Hawaii Preparedness & Response: Communications

- Critical
- Consistent, accurate messages
- Collaborate with partners:
 - State agencies
 - Federal/DOD, local government
 - Healthcare professionals
 - Businesses
 - Media
 - Public

What individuals can do to fight flu

- Get your annual flu vaccine

TOP

3 reasons
to get your
flu vaccine

- 1 Prevents influenza-related death.**
Each year over 39,000 people in the U.S. die because of the flu—most are 65 or older. More people die from flu than from any other vaccine-preventable disease.
- 2 Prevents severe illness.**
In the U.S. influenza puts about 200,000 people in the hospital each year. Children younger than 2 years old are as likely to be hospitalized as adults who are 65 or older.
- 3 Protects other people.**
You should get vaccinated if you live with or care for others who are at high risk of complications from the flu. Getting a flu vaccination yourself can help protect your family members, including seniors and young children.

What individuals can do to fight flu

- Get your annual flu vaccine

“Heterosubtypic immunity: Immunization with one influenza A virus subtype (eg, **H1N1**) may offer some protection from challenge with a second influenza A subtype (eg, **H5N2**).

Homosubtypic immunity: Immunization with one strain within a subtype (eg, **A/Hong Kong/03/68[H3N2]**) will frequently offer some protection against challenge with a second strain within the same subtype (eg, **A/Fujian/447/2003[H3N2]**).”

What you can do to fight flu

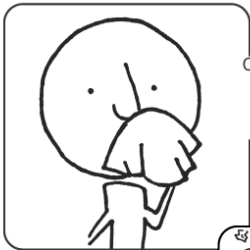
- Get your annual flu vaccine
- Stay home from work/school if you're ill
- Practice cough etiquette



What you can do to fight flu

Stop the spread of germs that make you and others sick!

Cover your Cough



Cover your mouth and nose with a tissue when you cough or sneeze

or
cough or sneeze into your upper sleeve, not your hands.

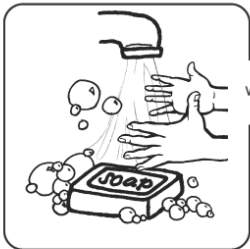


Put your used tissue in the waste basket.



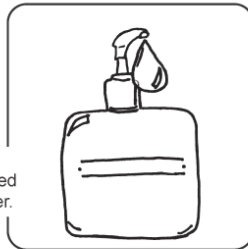
Clean your Hands

after coughing or sneezing.



Wash hands with soap and warm water

or
clean with alcohol-based hand cleaner.



Overview for Businesses

BUSINESS PANDEMIC INFLUENZA PLANNING CHECKLIST



In the event of pandemic influenza, businesses will play a key role in protecting employees' health and safety as well as limiting the negative impact to the economy and society. Planning for pandemic influenza is critical. To assist you in your efforts, the Department of Health and Human Services (HHS) and the Centers for Disease Control and Prevention (CDC) have developed the following checklist for large businesses. It identifies important, specific activities large businesses can do now to prepare, many of which will also help you in other emergencies. Further information can be found at www.pandemicflu.gov and www.cdc.gov/business.

1.1 Plan for the impact of a pandemic on your business:

Completed	In Progress	Not Started	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Identify a pandemic coordinator and/or team with defined roles and responsibilities for preparedness and response planning. The planning process should include input from labor representatives.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Identify essential employees and other critical inputs (e.g. raw materials, suppliers, sub-contractor services/ products, and logistics) required to maintain business operations by location and function during a pandemic.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Train and prepare ancillary workforce (e.g. contractors, employees in other job titles/descriptions, retirees).
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Develop and plan for scenarios likely to result in an increase or decrease in demand for your products and/or services during a pandemic (e.g. effect of restriction on mass gatherings, need for hygiene supplies).
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Determine potential impact of a pandemic on company business financials using multiple possible scenarios that affect different product lines and/or production sites.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Determine potential impact of a pandemic on business-related domestic and international travel (e.g. quarantines, border closures).
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Find up-to-date, reliable pandemic information from community public health, emergency management, and other sources and make sustainable links.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Establish an emergency communications plan and revise periodically. This plan includes identification of key contacts (with back-ups), chain of communications (including suppliers and customers), and processes for tracking and communicating business and employee status.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Implement an exercise/drill to test your plan, and revise periodically.

1.2 Plan for the impact of a pandemic on your employees and customers:

Completed	In Progress	Not Started	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Forecast and allow for employee absences during a pandemic due to factors such as personal illness, family member illness, community containment measures and quarantines, school and/or business closures, and public transportation closures.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Implement guidelines to modify the frequency and type of face-to-face contact (e.g. hand-shaking, seating in meetings, office layout, shared workstations) among employees and between employees and customers (refer to CDC recommendations).
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Encourage and track annual influenza vaccination for employees.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Evaluate employee access to and availability of healthcare services during a pandemic, and improve services as needed.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Evaluate employee access to and availability of mental health and social services during a pandemic, including corporate, community, and faith-based resources, and improve services as needed.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Identify employees and key customers with special needs, and incorporate the requirements of such persons into your preparedness plan.

1.3 Establish policies to be implemented during a pandemic:

Completed	In Progress	Not Started	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Establish policies for employee compensation and sick-leave absences unique to a pandemic (e.g. non-punitive, liberal leave), including policies on when a previously ill person is no longer infectious and can return to work after illness.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Establish policies for flexible worksite (e.g. telecommuting) and flexible work hours (e.g. staggered shifts).
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Establish policies for preventing influenza spread at the worksite (e.g. promoting respiratory hygiene/cough etiquette, and prompt exclusion of people with influenza symptoms).
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Establish policies for employees who have been exposed to pandemic influenza, are suspected to be ill, or become ill at the worksite (e.g. infection control response, immediate mandatory sick leave).
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Establish policies for restricting travel to affected geographic areas (consider both domestic and international sites), evacuating employees working in or near an affected area when an outbreak begins, and guidance for employees returning from affected areas (refer to CDC travel recommendations).
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Set up authorities, triggers, and procedures for activating and terminating the company's response plan, altering business operations (e.g. shutting down operations in affected areas), and transferring business knowledge to key employees.

1.4 Allocate resources to protect your employees and customers during a pandemic:

Completed	In Progress	Not Started	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Provide sufficient and accessible infection control supplies (e.g. hand-hygiene products, tissues and receptacles for their disposal) in all business locations.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Enhance communications and information technology infrastructures as needed to support employee telecommuting and remote customer access.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ensure availability of medical consultation and advice for emergency response.

1.5 Communicate to and educate your employees:

Completed	In Progress	Not Started	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Develop and disseminate programs and materials covering pandemic fundamentals (e.g. signs and symptoms of influenza, modes of transmission), personal and family protection and response strategies (e.g. hand hygiene, coughing/sneezing etiquette, contingency plans).
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Anticipate employee fear and anxiety, rumors and misinformation and plan communications accordingly.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ensure that communications are culturally and linguistically appropriate.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Disseminate information to employees about your pandemic preparedness and response plan.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Provide information for the at-home care of ill employees and family members.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Develop platforms (e.g. hotlines, dedicated websites) for communicating pandemic status and actions to employees, vendors, suppliers, and customers inside and outside the worksite in a consistent and timely way, including redundancies in the emergency contact system.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Identify community sources for timely and accurate pandemic information (domestic and international) and resources for obtaining counter-measures (e.g. vaccines and antivirals).

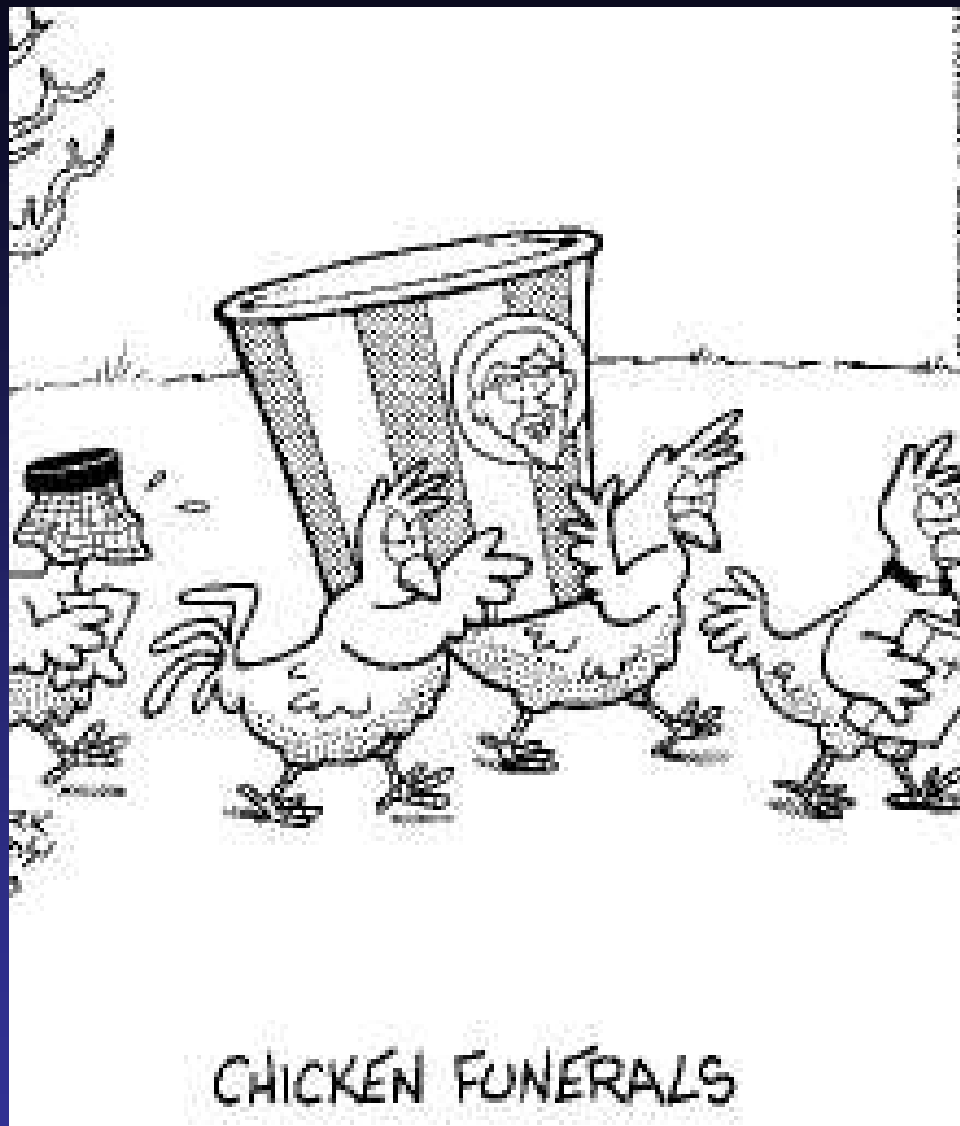
1.6 Coordinate with external organizations and help your community:

Completed	In Progress	Not Started	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Collaborate with insurers, health plans, and major local healthcare facilities to share your pandemic plans and understand their capabilities and plans.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Collaborate with federal, state, and local public health agencies and/or emergency responders to participate in their planning processes, share your pandemic plans, and understand their capabilities and plans.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Communicate with local and/or state public health agencies and/or emergency responders about the assets and/or services your business could contribute to the community.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Share best practices with other businesses in your communities, chambers of commerce, and associations to improve community response efforts.

Pandemic Influenza Planning

“History teaches us that everything we do today to prepare for that eventuality will have many lasting benefits for the future.”

- Michael Leavitt, HHS Secretary



Thank you.

Sources of Information

- Hawaii Dept of Health website:
<http://www.hawaii.gov/health>
- Centers for Disease Control & Prevention website: <http://www.cdc.gov/flu/pandemic/>
- US government website:
<http://www.pandemicflu.gov/>

Thank You.