



Real-Life Public Health According to Sir Mick

**“No, you can't always get what you want
You can't always get what you want
You can't always get what you want...”**



...And if you try sometime you find
You get what you need....”

**Well, not always...Sometimes you don't
get what you expect or what you want
or what you need!**



The H1N1 Response in the United States

Surprise, Uncertainty and Too Little Information

Peter Houck, MD
CDC Division of Global Migration and Quarantine
Mexico City, June 2009



Outline

- What we expected for a pandemic
- How we had planned to respond
- What we actually saw and did
- What we are planning



What Did We Expect?

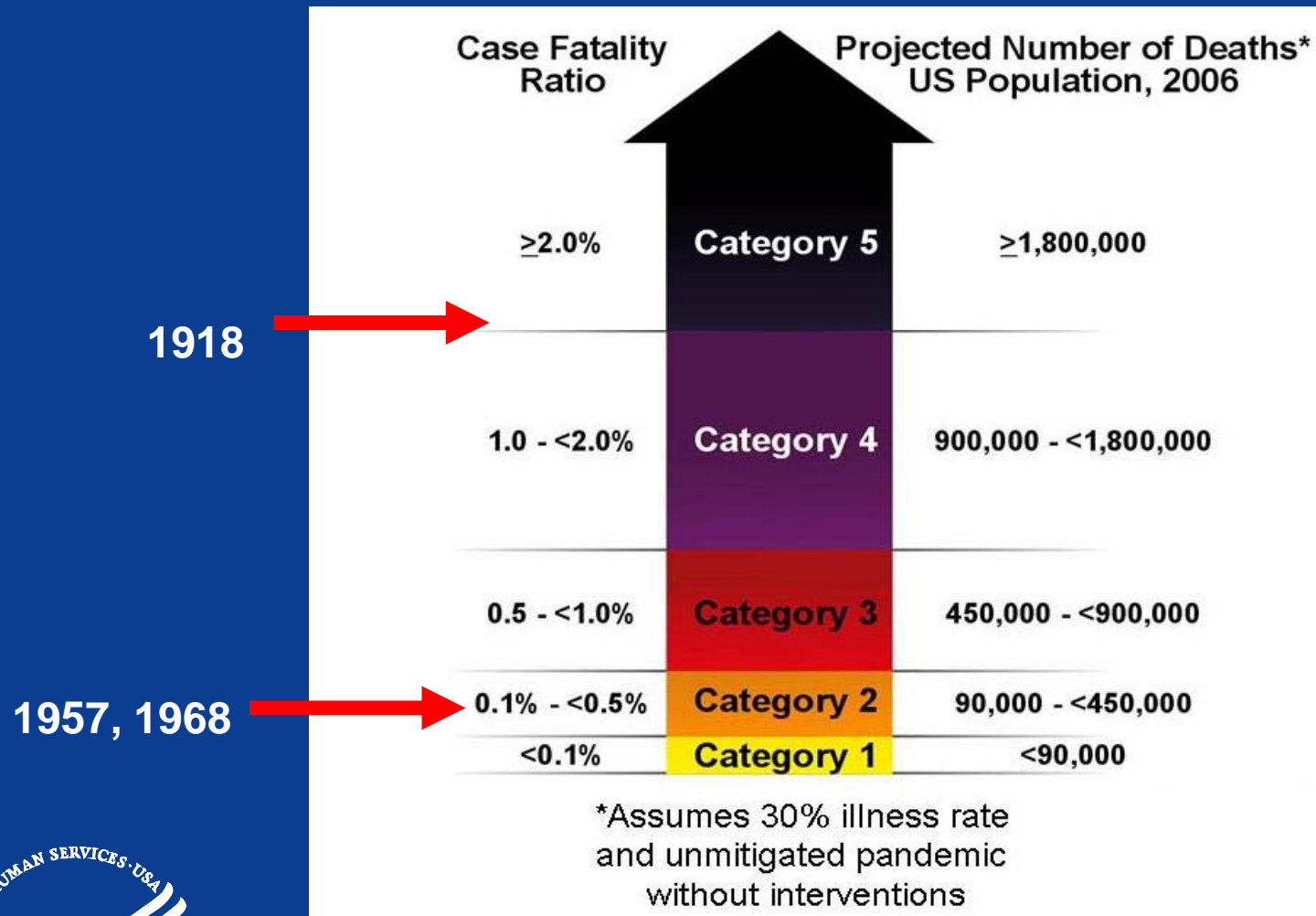


Previous Influenza A Pandemics

- 1918-19, "Spanish flu" (H1N1)
 - 20-50M died world-wide (~500K in U.S.)
 - ~50% of deaths in young, healthy adults
 - Hemorrhagic pneumonia
- 1957-58, "Asian flu" (H2N2)
 - ~70,000 attributable deaths in U.S.
- 1968-69, "Hong Kong flu" (H3N2)
 - 34K excess U.S. deaths



Pandemic Severity Index



Influenza Pandemic, 1957

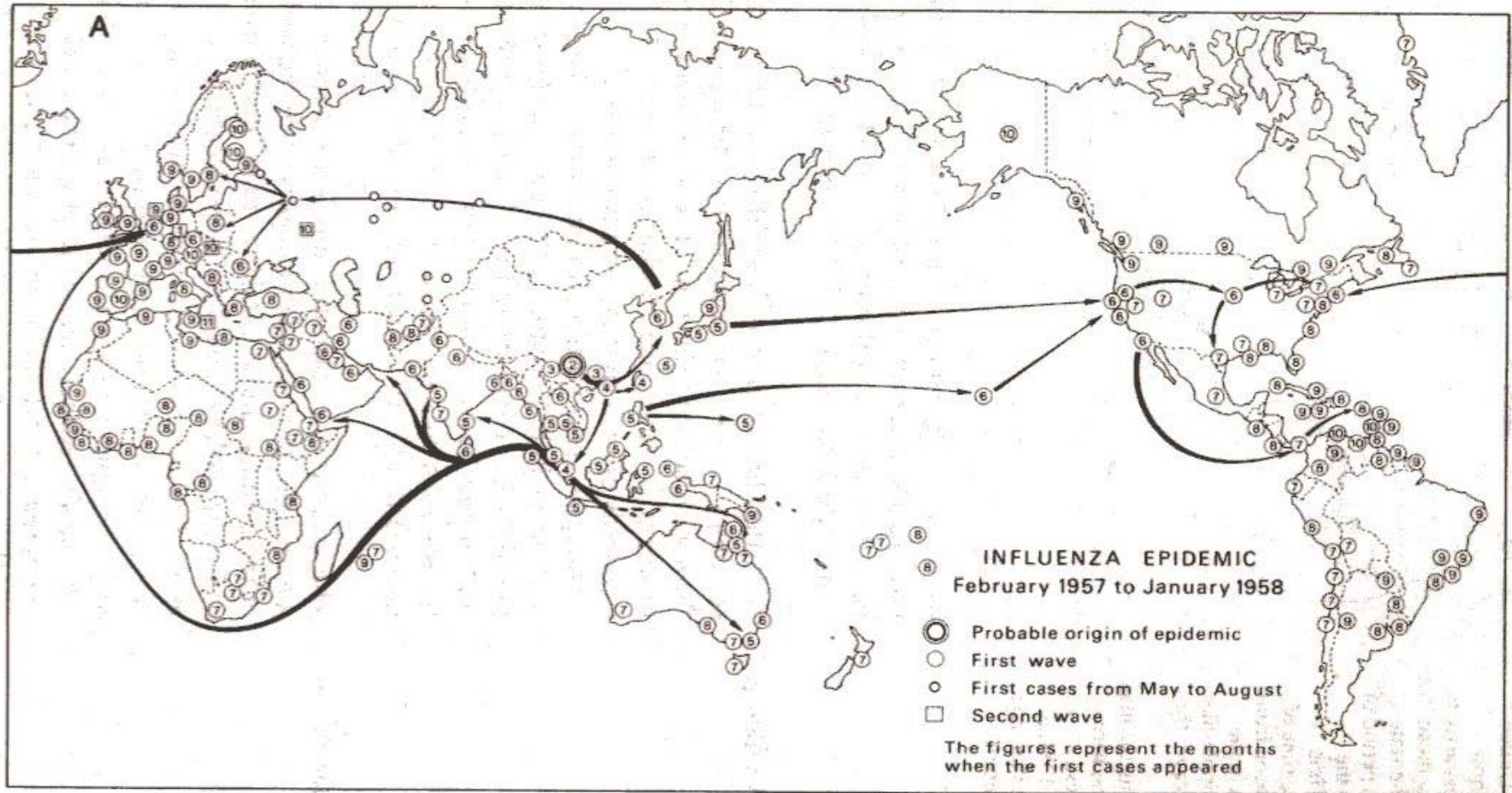
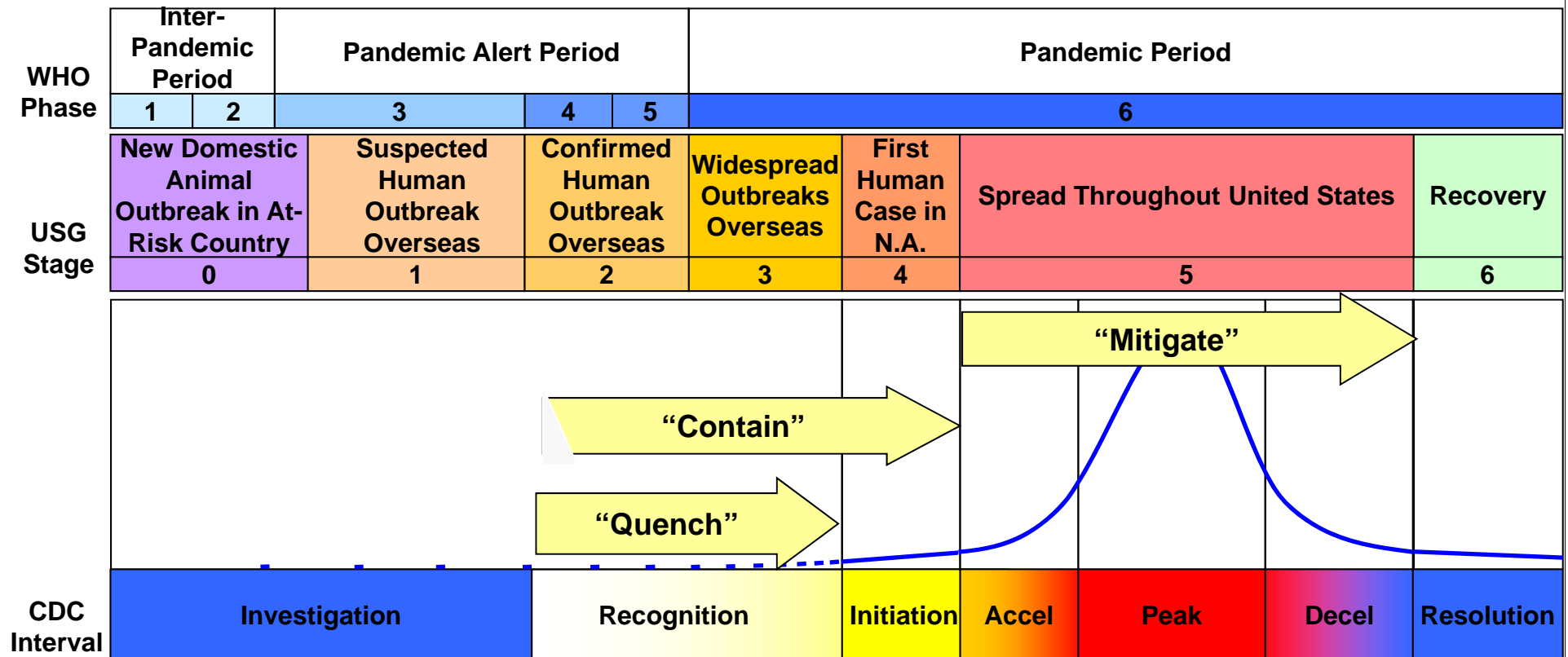


Fig. 2.7(A) Spread of the world influenza epidemic, 1957-8. *Source:* Stuart-Harris (1965, p. 103). (B) Diffusion of same epidemic on a local scale in northern England. *Source:* Hunter and Young (1971, p. 647).



Pandemic Intervals



**Most likely candidate for next pandemic
influenza?**

Was thought to be influenza A H5N1



How Did We Plan to Respond?



Layered Defense Against a Pandemic

- Quarantine and isolation
- **Health screening at ports of entry**
- Distribution of inbound flights
- En route screening
- Health screening at ports of embarkation
- Possible travel restrictions from affected regions



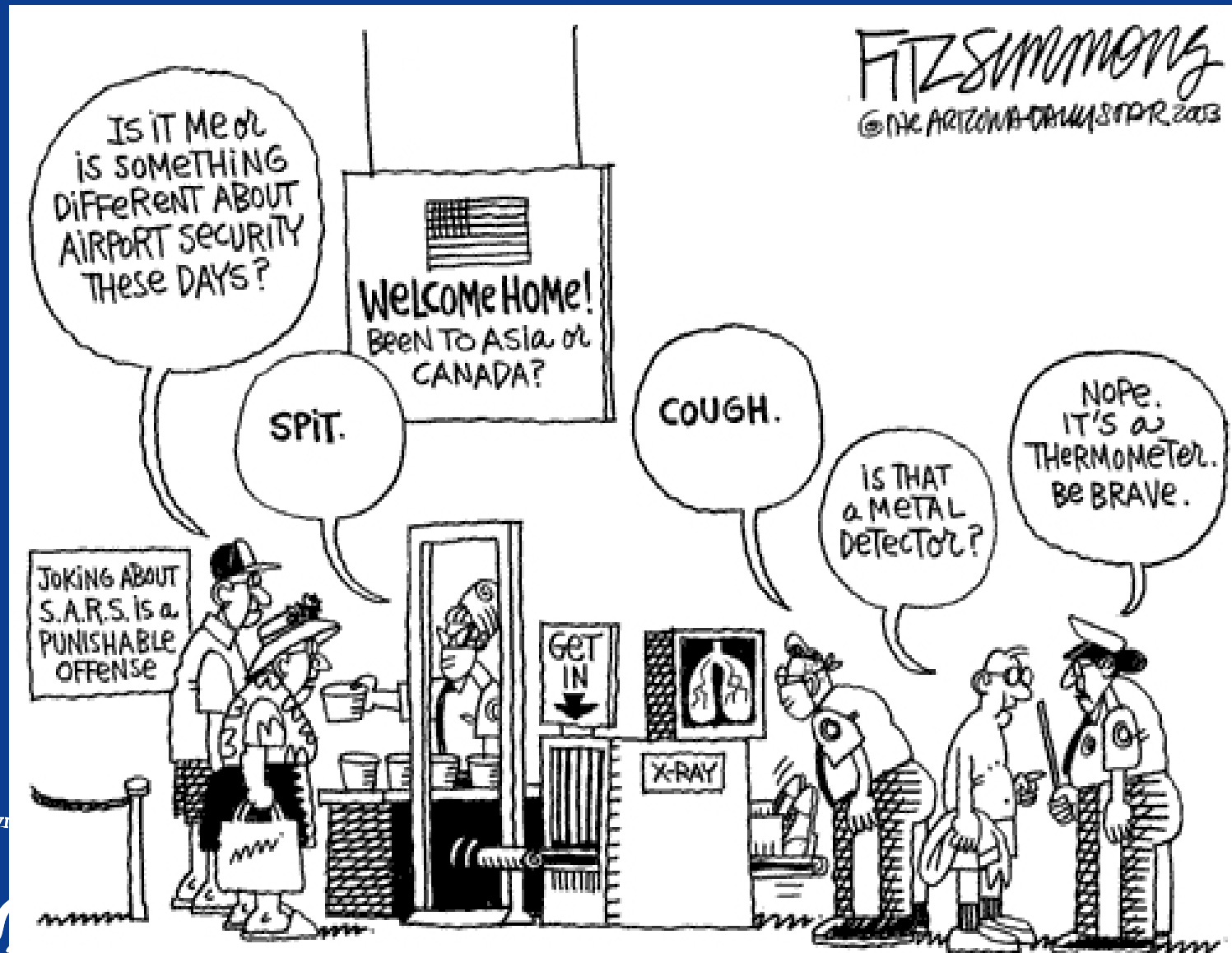
- Containment at source: travel restrictions, antivirals, quarantine, and isolation (World Health Organization Rapid Reaction)



Origin of
Pandemic



Screening at Entry



U.S. Risk-Based Border Strategy (RBBS)



SAFER • HEALTHIER • PEOPLE™



Public Health Primary Screening

1. Visual exam for obvious signs of illness
2. Review Health Declaration
3. Interview (follow up questions to traveler, if indicated)
4. Check results of thermal scanning device, if used
5. Decide if traveler is suspect ill or if presumed well

If traveler is suspect ill:

- Identify long term contacts of suspect ill traveler
- Escort suspect ill traveler and any long term contacts to Public Health Secondary Screening

If traveler is presumed well:

- Send the presumed well and short term contacts to the flight group waiting area (cohort area)

Visual Inspection



Draft Health Declaration

U.S. HEALTH DECLARATION FORM PASSENGER & CREW

DRAFT

Today's date: day month year

Airline: Flight number:

Seat Number: Seat number if moved:

Family name:

First name (given):

Middle name:

Passport issued by (country):

Passport number:

DRAFT

**A. To answer each question, please mark
an X in the YES or NO box:**

YES NO

Have you felt like you had a fever or chills in the last 24 hours?

☐ ☐

Do you have a cough or have difficulty breathing?

☐ ☐

In the last 7 days, have you been near or spent time with
someone who had a fever and cough?

☐ ☐

If YES to any of the questions above, please inform the crew on your plane.

**B. Please list all the countries where you have been (including
where you live) in the last 7 days:**

- List in order with most recent country first.
- List countries where your plane stopped if you got off the plane.

1. <input type="text"/>	4. <input type="text"/>
2. <input type="text"/>	5. <input type="text"/>
3. <input type="text"/>	6. <input type="text"/>

1. Please list the names of all persons traveling with you on this flight:

<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>

2. Are you travelling with a group on this flight? YES ☐ NO ☐

3. If yes, name of group:

Continued on other side...

4. Birth date: day month year

5. Sex: Male ☐ Female ☐

6. Home address:

City: State/Prov.:

Country:

7. Full U.S. addresses
for the next 7 days:

8. Phone numbers (where you can be reached in the next 7 days):

9. E-mail address:

10. Contact information of another person who can reach you in
the next 7 days:

Name:

Address:

Phone (home): (mobile):

E-mail:

*Under Title 18 U.S. Code section 1001, making any false statement
is a criminal offense.*

11. Signature (or parent's signature if passenger is younger than 18 years)

DRAFT

DRAFT

DRAFT

DRAFT

DRAFT

For U.S. Port of Entry Staff Only

For DHS use
(Primary Screening)

Thermal Scanner:
positive ☐ negative ☐

PH Secondary: YES ☐ NO ☐

For HHS use
(Secondary Screening)



and
migration health

Clinical Influenza Definitions vs. Laboratory Confirmation in Household Population

Definition	Sens	Spec	# cases
1. Fever 38C or 2 of symptoms *	0.57	0.81	62
2. At least 2 of symptoms †	0.57	0.90	37
3. Fever ‡ plus cough or sore throat	0.48	0.97	17
4. Fever ‡ plus cough or runny nose	0.48	0.98	16
5. Fever ‡ only	0.48	0.98	15

* Symptoms are headache, runny nose, sore throat, aches or pains in muscles or joints, cough, or fatigue.

† Symptoms are fever, cough, headache, sore throat, aches or pains in muscles or joints.

‡ Temperature $\geq 37.8\text{C}$.



Cowling et al. PLoS ONE. 2008;3:e2101.



Estimating Temperature with Thermal Imaging

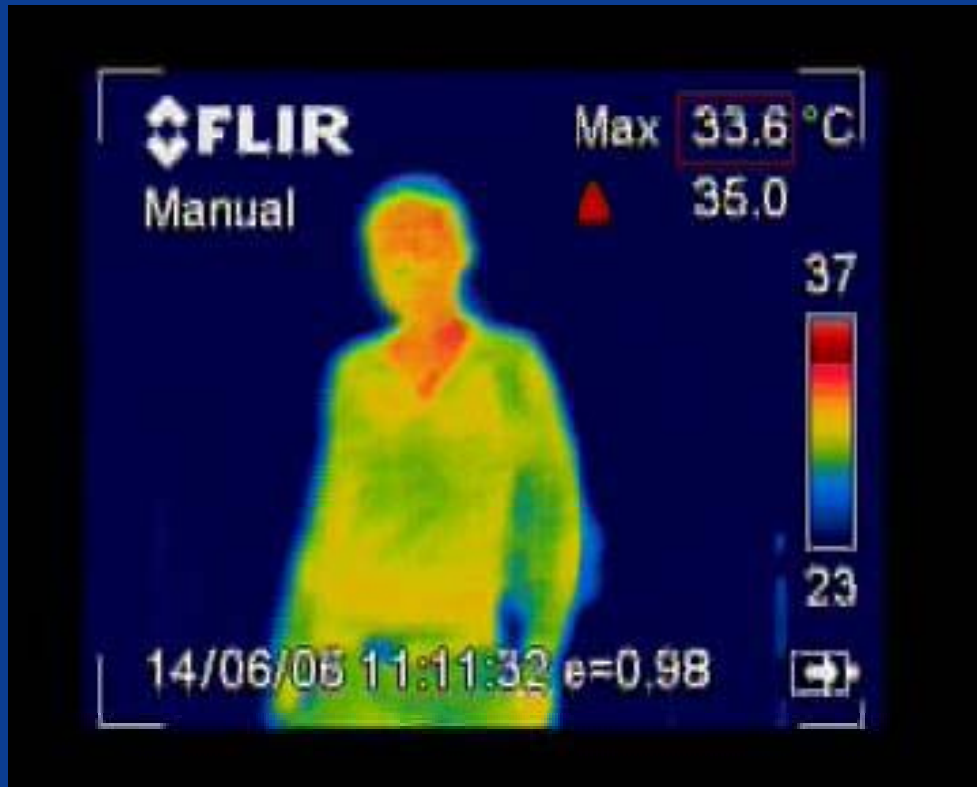


Image from McBride et al, 2007



37°C
tympanic



39°C
tympanic

Images from Ng et al, 2004



Advantages of ITDS for Mass Fever Screening

- Rapid
- High volume
- Non-contact
- Non-invasive
- Objective



Disadvantages of ITDS for Mass Fever Screening

- Personnel requirement
 - 100–500+ to run system at 20–25 IPOE
 - Trainers
 - Technicians
 - Used when human resources will be very limited
- Delay to travelers
- Space requirements
- Low accuracy and precision



False positives and negatives



Limitations of ITDS for Influenza Screening

- Detect fever, not infections!
- Cannot detect incubating or afebrile infected individuals (low sensitivity)
- Cannot distinguish infection of interest from other febrile conditions (low specificity)
- Results have low predictive value



Public Health Secondary Screening (PHSS)

Evaluate risk of potentially ill travelers

- Perform epidemiological and physical exam
- Confirm suspect ill
- Determine who may have been exposed
- Isolate ill persons, if necessary
- Quarantine contacts, if necessary
- Return other travelers to the Flight Group Waiting Area (Cohort Area)

Number of Persons Entering the United States, 2008*

Port	Daily	Annual (millions)
Air	223,000	81
Sea	71,000	26
Land	787,000	293
Total	1,081,000	400



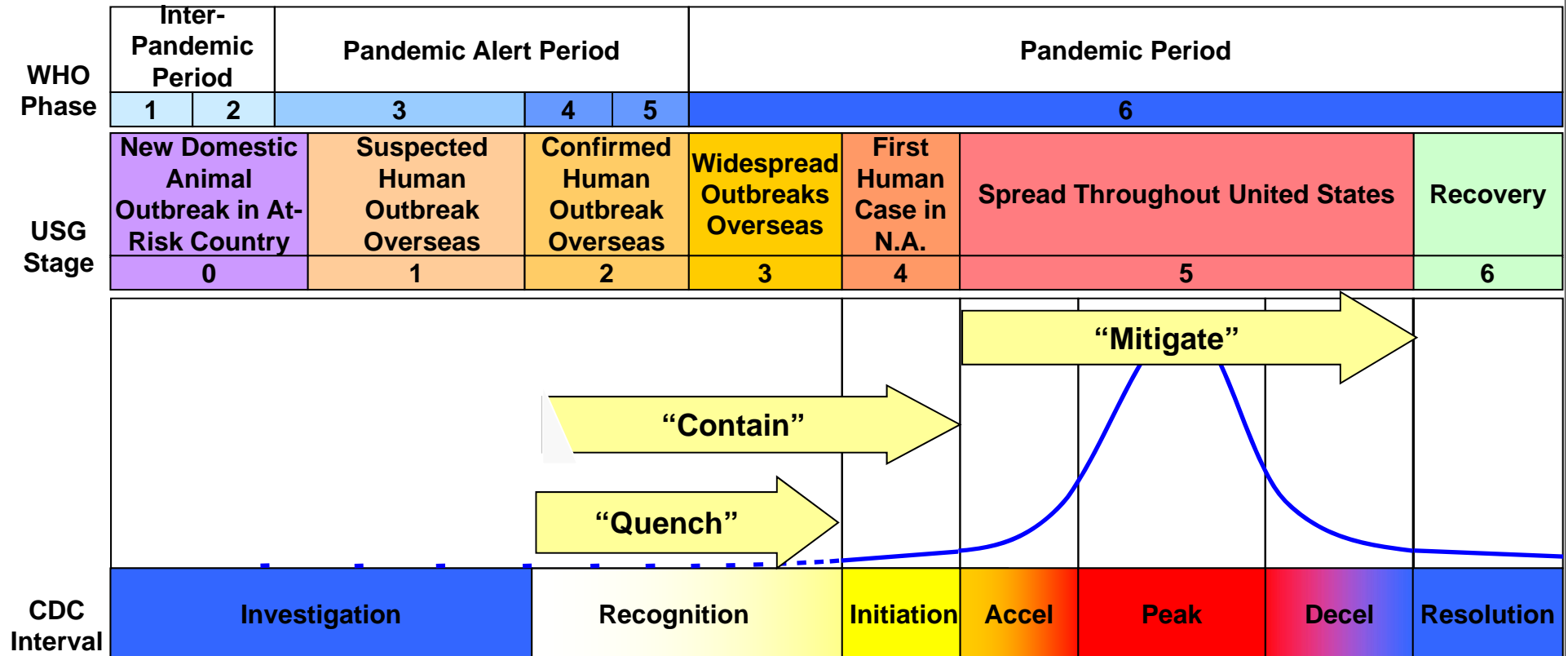
* Seaport data is based on 2005 data, the latest available from the Department of Transportation



CDC Quarantine Stations 2008 Jurisdictions



Pandemic Intervals



“Community Mitigation Strategies”

- Isolation and treatment of ill persons
- Voluntary home quarantine of household contacts
- School and childcare dismissal plus social distancing
- Workplace and community social distancing

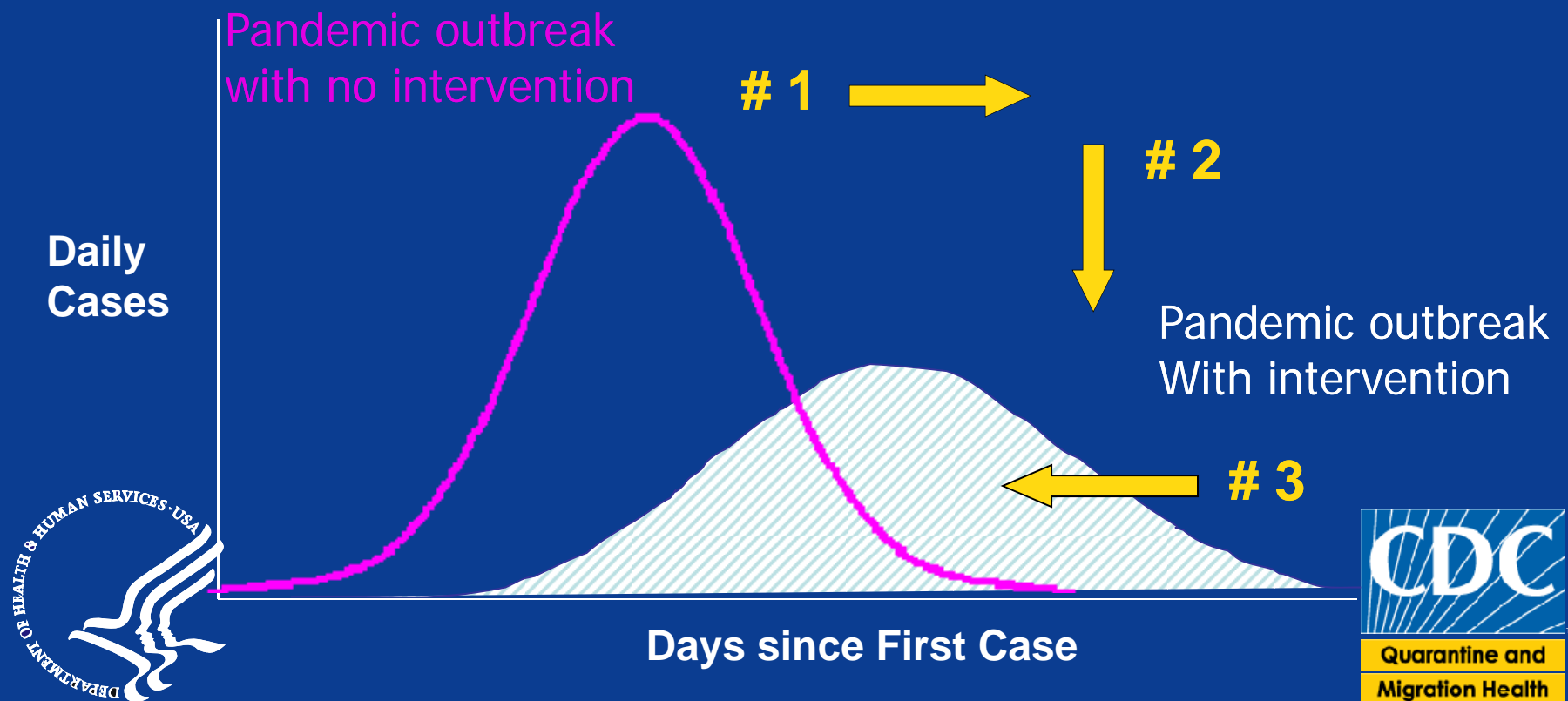


Community Mitigation by Severity Category

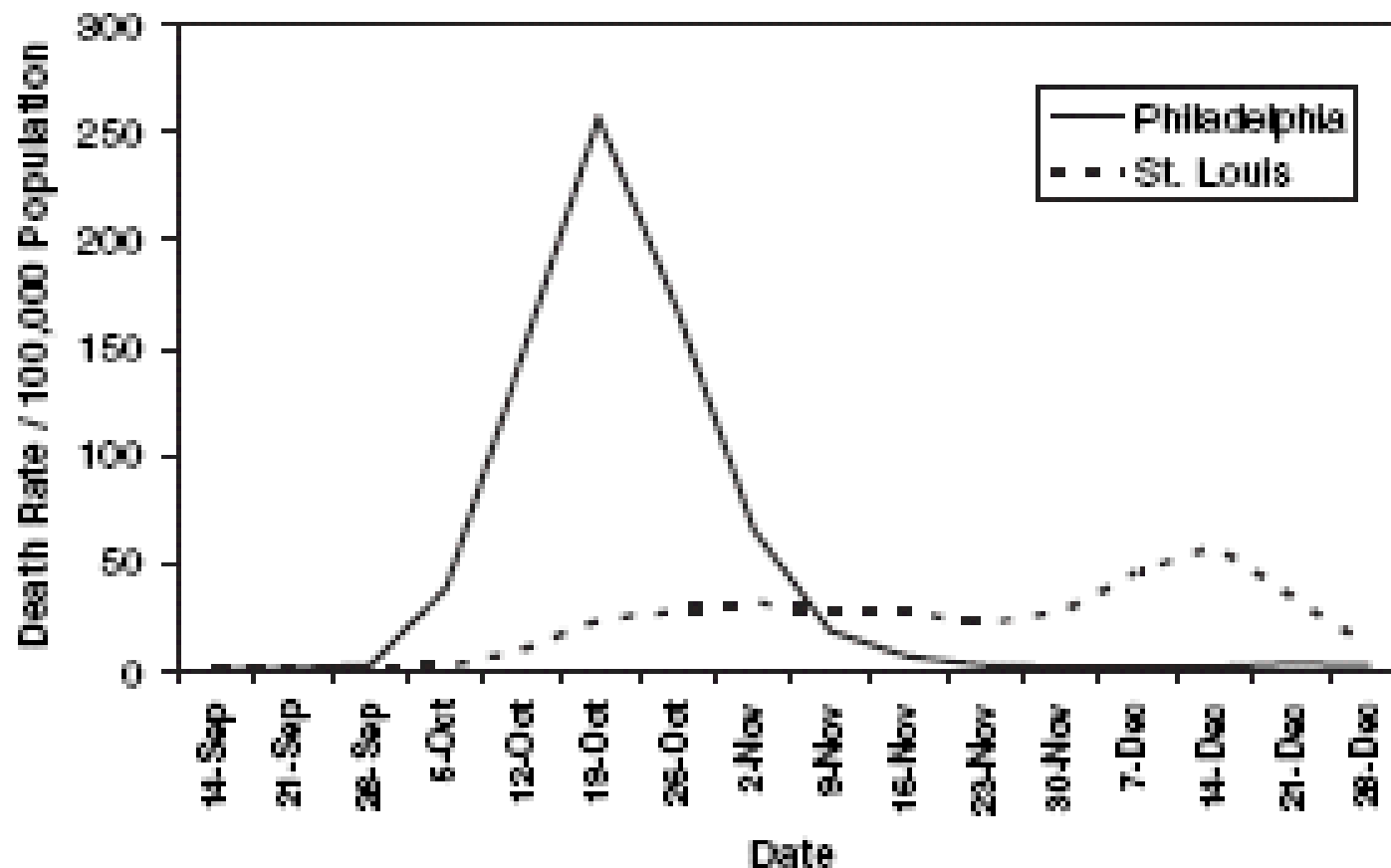
	Pandemic Severity Index		
Interventions by Setting	1	2 and 3	4 and 5
Home Voluntary isolation of ill at home (adults and children); combine with use of antiviral treatment as available and indicated Voluntary quarantine of household members in homes with ill persons (adults and children); consider combining with antiviral prophylaxis if effective, feasible, and quantities sufficient	Recommend	Recommend	Recommend
School Child social distancing –dismissal of students from schools and school-based activities, and closure of child care programs –reduce out-of-school contacts and	Generally not recommended	Consider	Recommend
	Generally not recommended	Consider: ≤ 4 weeks	Recommend: ≤ 12 weeks
	Generally not	Consider:	Recommend:

What are Our Goals?

1. Delay disease transmission and outbreak peak
2. Decompress peak burden on healthcare infrastructure
3. Diminish overall cases and health impacts



Excess P&I mortality over 1913-1917 baseline, Philadelphia & St. Louis, 1918



(from Hatchett, 2007)

What Did We Actually See and Do with Novel Influenza A (H1N1)?





Swine Influenza A (H1N1) Infection in Two Children --- Southern California, March--April 2009

On April 17, 2009, CDC determined that two cases of febrile respiratory illness occurring in children who resided in adjacent counties in southern California were caused by infection with a swine influenza A (H1N1) virus. The viruses from the two cases are closely related genetically, resistant to amantadine and rimantadine, and contain a unique combination of gene segments that previously has not been reported among swine or human influenza viruses in the United States or elsewhere. Neither child had contact with pigs; the source of the infection is unknown. Investigations to identify the source of infection and to determine whether additional persons have been ill from infection with similar swine influenza viruses are ongoing. This report briefly describes the two cases and the investigations currently under way. Although this is not a new subtype of influenza A in humans, concern exists that this new strain of swine influenza A (H1N1) is substantially different from human influenza A (H1N1) viruses, that a large proportion of the population might be susceptible to infection, and that the seasonal influenza vaccine H1N1 strain might not provide protection. The lack of known exposure to pigs in the two cases increases the possibility that human-to-human transmission of this new influenza virus has occurred. Clinicians should consider animal as well as seasonal influenza virus infections in their differential diagnosis of patients who have febrile respiratory illness and who 1) live in San Diego and Imperial counties or 2) traveled to these counties or were in contact with ill persons from these counties in the 7 days preceding their illness onset, or 3) had recent exposure to pigs. Clinicians who suspect swine influenza virus infections in a patient should obtain a respiratory specimen and contact their state or local health department to facilitate testing at a state public health laboratory.

Case Reports

Patient A. On April 13, 2009, CDC was notified of a case of respiratory illness in a boy aged 10 years who lives in San Diego County, California. The patient had onset of fever, cough, and vomiting on March 30, 2009. He was taken to an outpatient clinic, and a nasopharyngeal swab was collected for testing as part of a clinical study. The boy received symptomatic treatment, and all his symptoms resolved uneventfully within approximately 1 week. The child had not received influenza vaccine during this influenza season. Initial testing at the clinic using an investigational diagnostic device identified an influenza A virus, but the test was negative for human influenza subtypes H1N1, H3N2, and H5N1. The San Diego County Health Department was notified, and per protocol, the specimen was sent for further confirmatory testing to reference laboratories, where the sample was verified to be an unsubtypable influenza A strain. On April 14, 2009, CDC received clinical specimens and determined that the virus was swine influenza A (H1N1). The boy and his family reported that the child had had no exposure to pigs. Investigation of potential animal exposures among the boy's contacts is continuing. The patient's mother had respiratory symptoms without fever in the first few days of April 2009, and a brother aged 8 years had a respiratory illness 2 weeks before illness onset in the patient and had a second illness with cough, fever, and rhinorrhea on April 11, 2009. However, no respiratory specimens were collected from either the mother or brother during their acute illnesses. Public health officials are conducting case and contact investigations to determine whether illness has occurred among other relatives and contacts in California, and during the family's travel to Texas on April 3, 2009.

Patient B. CDC received an influenza specimen on April 17, 2009, that had been forwarded as an unsubtypable influenza A virus from the Naval Health Research Center in San Diego, California. CDC identified this specimen as a swine influenza A (H1N1) virus on April 17, 2009, and notified the California Department of Public Health. The source of the specimen, patient B, is a girl aged 9 years who resides in Imperial County, California, adjacent to San Diego County. On March 28, 2009, she had onset of cough and fever (104.3°F [40.2°C]). She was taken to an outpatient facility that was participating in an influenza surveillance project, treated with amoxicillin/clavulanate potassium and an antihistamine, and has since recovered uneventfully. The child had not received influenza vaccine during this influenza



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May 1, 2009 / 58(16);435-437

Update: Swine Influenza A (H1N1) Infections --- California and Texas, April 2009

[MMWR en Español](#)

On April 24, this report was posted as an MMWR Dispatch on the MMWR website (<http://www.cdc.gov/mmwr>).

On April 21, 2009, CDC reported that two recent cases of febrile respiratory illness in children in southern California had been caused by infection with genetically similar swine influenza A (H1N1) viruses. The viruses contained a unique combination of gene segments that had not been reported previously among swine or human influenza viruses in the United States or elsewhere ([1](#)). Neither child had known contact with pigs, resulting in concern that human-to-human transmission might have occurred. The seasonal influenza vaccine H1N1 strain is thought to be unlikely to provide protection. This report updates the status of the ongoing investigation and provides preliminary details about six additional persons infected by the same strain of swine influenza A (H1N1) virus identified in the previous cases, as of April 24. The six additional cases were reported in San Diego County, California (three cases), Imperial County, California (one case), and Guadalupe County, Texas (two cases). CDC, the California Department of Public Health, and the Texas Department of Health and Human Services are conducting case investigations, monitoring for illness in contacts of the eight patients, and enhancing surveillance to determine the extent of spread of the virus. CDC continues to recommend that any influenza A viruses that cannot be subtyped be sent promptly for testing to CDC. In addition, swine influenza A (H1N1) viruses of the same strain as those in the U.S. patients have been confirmed by CDC among specimens from patients in

**Quarantine and
Migration Health**

The Disease was Already in the US When We Detected It

- Entry screening at borders wouldn't help
- Was it arriving in US by aircraft?
- Severity?

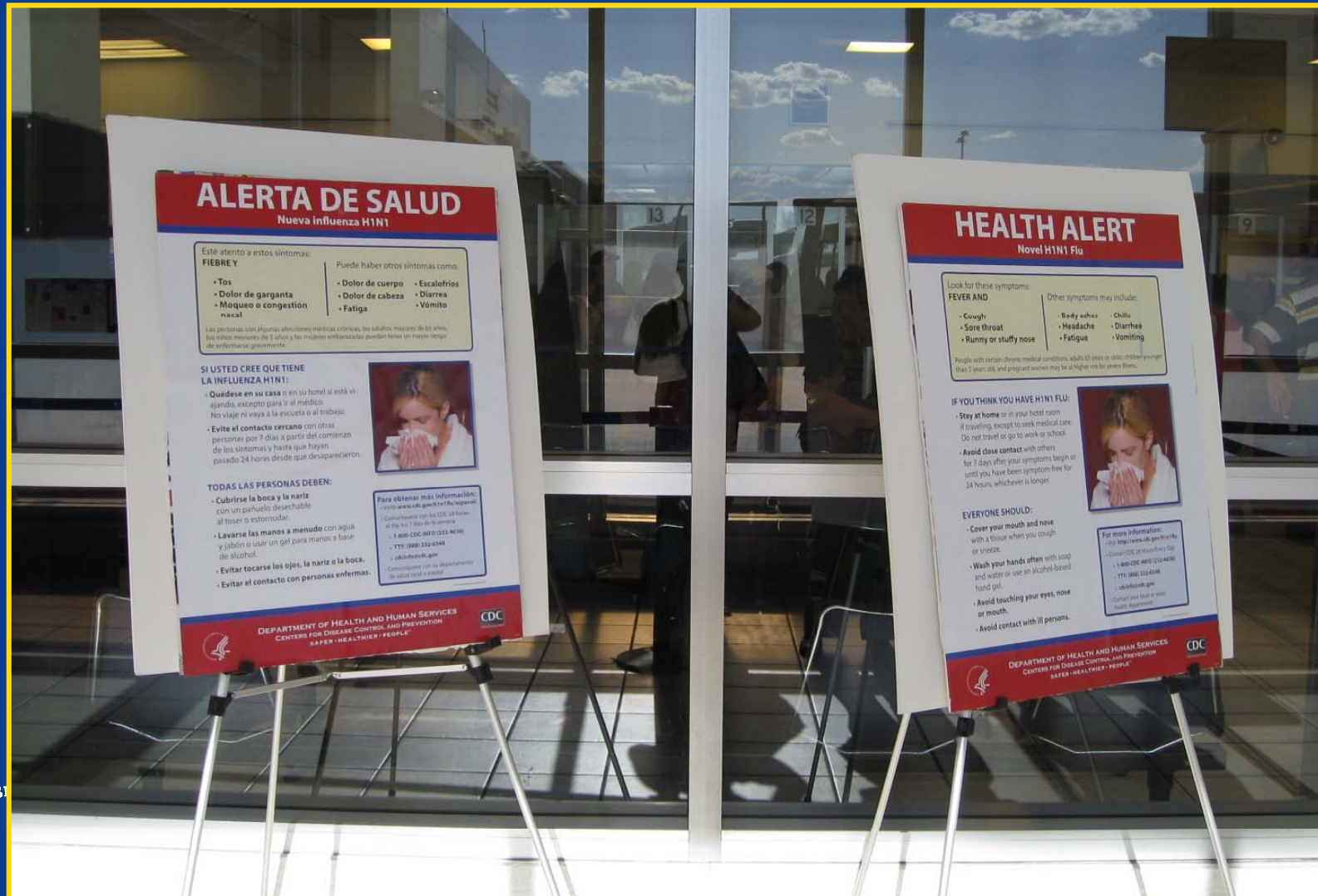


At International Points of Entry We Did What We Always Do

- **Customs/immigration/crew report illness**
- **Quarantine staff evaluate ill passengers**
- **Early in outbreak some contact tracing**
- **Education of travelers**
- **No new screening activities**
- **No exit screening**



Health Alert Poster



THAN Yellow

You may have been exposed to novel H1N1 flu during your travels

IMPORTANT!

Do you have a fever AND a cough, or sore throat, runny or stuffy nose, body aches, headache, chills, or fatigue?

If you have severe illness or you are at high risk for flu complications, contact your health care provider or seek medical care.

Whether or not you feel ill, within the date below, save this card for the next 7 days, and follow the instructions on the next page.

Today's date: _____

Save this card and follow these steps for the next 7 days:

1) Observe for symptoms of novel H1N1 flu.

The symptoms of novel H1N1 flu virus in people are similar to the symptoms of seasonal flu and include fever, cough, sore throat, runny or stuffy nose, body aches, headache, chills, and fatigue. A significant number of people who have been infected with this virus also have reported diarrhea and vomiting.

2) If you develop flu-like symptoms and are concerned about your health:

- Avoid close contact with others.
- Cover your mouth and nose with a tissue when coughing or sneezing.
- Wash your hands often with soap and water, especially after you cough or sneeze. Alcohol-based gels are also effective.
- Stay home or in your hotel room for 7 days after your symptoms begin, or at least 24 hours after symptoms go away.
- If you have to go out, wear a mask to cover your mouth and nose with a tissue.
- Do not travel.

3) The high risk groups for novel H1N1 flu are not known at this time but it's possible that they may be the same as for seasonal influenza. People at higher risk of serious complications from seasonal flu include people age 65 years and older, children younger than 5 years old, pregnant women, and people of any age with chronic medical conditions (such as asthma, diabetes, or heart disease).

4) Be sure to contact your medical provider if you become severely ill or experience the following:

- Difficulty breathing or shortness of breath.
- Purple or blue discoloration of the lips.
- Vomiting and being unable to keep liquids down.
- Signs of dehydration, such as dizziness when standing or being unable to urinate. For infants, this may mean a lack of tears when crying.

Help prevent the spread of novel H1N1 flu and protect yourself!

- Avoid contact with ill persons.
- Cover your nose and mouth with a tissue when you cough or sneeze. Throw used tissues in a trash can.
- Wash your hands often with soap and water or use an alcohol-based hand gel.
- Avoid touching your eyes, nose or mouth.

If you have severe illness or you are at high risk for flu complications, contact your health care provider or seek medical care.

- Your health care provider will determine whether flu testing or treatment is needed. Be aware that if the flu becomes wide spread, there will be little need to continue testing people, so your health care provider may decide not to test for the flu virus.
- Antiviral treatment may be indicated. Current guidelines can be found at <http://www.cdc.gov/h1n1flu/guidance/>.

- Contact your local or state health department.
- Visit <http://www.cdc.gov/h1n1flu/>
- Contact CDC (open 24 Hours Every Day):
 - 1-800-CDC-INFO (232-4636)
 - TTY: (888) 232-4634
 - cdcinfo@cdc.gov

Usted puede haber estado expuesto al virus nuevo de la influenza H1N1 durante su viaje

IMPORTANTE

¿Le viene con fiebre Y tiene tos o dolor de garganta, mocos o secreción nasal, dolor en el cuerpo, dolor de cabeza, escalofríos o fatiga?

Si tiene una enfermedad grave o si usted es alto riesgo de tener complicaciones por la influenza, contacte a su proveedor de atención médica o busque cuidados médicos.

Y si usted tiene síntomas o no, escriba la fecha en la parte de abajo, guarde esta tarjeta por los próximos 7 días y siga las instrucciones que hay en las páginas siguientes.

Fecha de hoy: _____

Guarde esta tarjeta y siga los siguientes pasos durante los próximos 7 días:

1) Está atento a los síntomas de la nueva influenza H1N1.

Los síntomas del virus nuevo de la influenza H1N1 en las personas son similares a los síntomas de la influenza estacional y incluyen: fiebre, tos, dolor de garganta, mocos o secreción nasal, dolor en el cuerpo, dolor de cabeza, escalofríos y fatiga. Una cantidad significativa de personas infectadas por este virus también han reportado vómito y diarrea.

2) Si usted tiene síntomas percibidos o los de la influenza:

- Evite el contacto con otras personas.
- Cubrase la nariz y la boca con un pañuelo desechable al toser o al estornudar. Bote a la basura los pañuelos usados.
- Lávese las manos a menudo con agua y jabón, o use un gel para manos a base de alcohol.
- Evite tocarse los ojos, la nariz o la boca.
- Si usted tiene una enfermedad grave o si usted es alto riesgo de tener complicaciones por la influenza, contacte a su proveedor de atención médica o busque cuidados médicos.
- Si persona de atención médica determina si es necesario hacer pruebas de detección de la influenza o darle tratamiento. Tenga en cuenta que si la influenza se propaga en forma generalizada, habrá poca necesidad de hacerles pruebas a las personas, por lo que es posible que su proveedor de atención médica decida no hacerle pruebas por la detección del virus de la influenza.
- Se podría recomendar la realización de un tratamiento antiviral. Los antivirales actuales se pueden encontrar en <http://www.cdc.gov/h1n1flu/guidance/>.
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Tenga en cuenta:

Si usted tiene una enfermedad grave o si usted es alto riesgo de tener complicaciones por la influenza, contacte a su proveedor de atención médica o busque cuidados médicos.

Evite el contacto con otras personas.

Cubrase la nariz y la boca con un pañuelo desechable al toser o al estornudar.

Lávese las manos a menudo con agua y jabón, o use un gel para manos a base de alcohol.

Evite tocarse los ojos, la nariz o la boca.

Si usted tiene una enfermedad grave o si usted es alto riesgo de tener complicaciones por la influenza, contacte a su proveedor de atención médica o busque cuidados médicos.

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Se podría recomendar la realización de un tratamiento antiviral.

Los antivirales actuales se pueden encontrar en <http://www.cdc.gov/h1n1flu/guidance/>.

Si usted tiene síntomas percibidos o los de la influenza:

Evite el contacto con otras personas.

Cubrase la nariz y la boca con un pañuelo desechable al toser o al estornudar.

Lávese las manos a menudo con agua y jabón, o use un gel para manos a base de alcohol.

Evite tocarse los ojos, la nariz o la boca.

Si usted tiene una enfermedad grave o si usted es alto riesgo de tener complicaciones por la influenza, contacte a su proveedor de atención médica o busque cuidados médicos.

Si persona de atención médica determina si es necesario hacer pruebas de detección de la influenza o darle tratamiento.

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Se podría recomendar la realización de un tratamiento antiviral.

Los antivirales actuales se pueden encontrar en <http://www.cdc.gov/h1n1flu/guidance/>.

3) En este momento no se conocen los grupos de personas que están en alto riesgo debido a la nueva influenza H1N1, pero es posible que sean los mismos que sufren complicaciones por la influenza estacional. Las personas más propensas a sufrir complicaciones graves debido a la influenza estacional incluyen a las personas de 65 años de edad o más, los niños menores de 5 años, las mujeres embarazadas y las personas de cualquier edad con enfermedades médicas crónicas (tales como diabetes o enfermedades cardíacas).

4) Asegúrese de contactar a su proveedor médico si se enferma gravemente o experimenta lo siguiente:

- Dificultad para respirar o e cuando se duerme.
- Coloración morada o azulada en los labios.
• Vómito e imposibilidad para retener los líquidos que coma.
- Signos de deshidratación como mareos cuando usted se levanta o no puede orinar. En los bebés, esto se refleja como falta de lágrimas al llorar.

Ayude a prevenir la transmisión de la nueva influenza H1N1 y protéjase a usted mismo:

- Evite el contacto con personas enfermas.
- Cubrase la nariz y la boca con un pañuelo desechable al toser o al estornudar. Bote a la basura los pañuelos usados.
- Lávese las manos a menudo con agua y jabón, o use un gel para manos a base de alcohol.
- Evite tocarse los ojos, la nariz o la boca.

Si tiene una enfermedad grave o si usted es alto riesgo de tener complicaciones por la influenza, contacte a su proveedor de atención médica o busque cuidados médicos.

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- Se podría recomendar la realización de un tratamiento antiviral. Los antivirales actuales se pueden encontrar en <http://www.cdc.gov/h1n1flu/guidance/>.

- Contacte a su departamento de salud local o estatal.
- Visite <http://www.cdc.gov/h1n1flu/>
- Contacte con la CDC (de 24 horas al día, los 7 días a la semana):
 - 1-800-CDC-INFO (232-4636)
 - TTY: (888) 232-4634
 - cdcinfo@cdc.gov

Vous avez peut-être été exposé à la nouvelle grippe H1N1 au cours de vos voyages

IMPORTANT!

Avez-vous de la fièvre ET de la toux, ou la gorge irritée, le nez qui coule ou bouché, des douleurs musculaires, des maux de tête, des frissons, ou des sensations de fatigue?

Si vous avez une maladie grave ou si vous avez un risque élevé de complications à la grippe, contactez votre prestataire de soins de santé ou demandez de l'aide médicale.

Que vous vous sentiez malade ou non, inscrivez la date ci-dessous, conservez cette carte pendant les 7 prochains jours et suivez les instructions figurant dans les pages suivantes.

Date d'aujourd'hui: _____

Conservez cette carte et suivez les étapes indiquées ci-après pendant les 7 jours qui suivent:

1) Surveillez l'apparition des symptômes de la nouvelle grippe H1N1.

Les symptômes de la nouvelle grippe H1N1 chez les humains sont similaires à ceux de la grippe saisonnière: à savoir, fièvre, toux, mal de gorge, courbatures, frissons, maux de tête, douleurs musculaires, maux de tête, personnes infectées par ce virus ont également été atteintes de diarrhées et des vomissements.

2) Si vous présentez des symptômes de type grippal et si vous avez des inquiétudes au sujet de votre état de santé:

- Évitez les contacts rapprochés avec d'autres personnes.
- Couvrez-vous la bouche et le nez à l'aide d'un mouchoir jetable ou d'un tissu.
- Lavez-vous régulièrement les mains avec du savon et de l'eau, particulièrement après avoir toussé ou éternué. Les gels à base d'alcool sont également efficaces.
- Restez à la maison ou dans votre chambre d'hôtel pendant les 7 jours qui suivent l'apparition des symptômes, ou au moins 24 heures après la disparition de tous les symptômes des virus grippaux.
- Si vous devez sortir, portez un masque ou protégez-vous lorsque vous toussiez ou éternuez.
- Ne parlez pas en voyage.

Si vous avez une maladie grave ou si vous avez un risque élevé de complications à la grippe, contactez votre prestataire de soins de santé ou demandez de l'aide médicale.

- Votre prestataire de soins de santé peut vous recommander des médicaments pour soulager vos symptômes.
- Tenez compte que si la grippe se propage largement, il y a une chance que vous ne puissiez plus être testé.
- Un traitement antiviral peut être indiqué. Les recommandations actuelles peuvent être trouvées à l'adresse suivante: <http://www.cdc.gov/h1n1flu/guidance/>.

3) Les groupes présentant un risque élevé de contracter la nouvelle grippe H1N1 ne sont pas connus à ce jour, mais il est possible qu'ils soient les mêmes que pour la grippe saisonnière. Les personnes présentant le risque de complications le plus élevé face à la grippe saisonnière sont les personnes âgées de 65 ans et au-delà, les enfants de moins de 5 ans, les femmes enceintes, et les personnes de tout âge présentant des conditions chroniques (asthme, diabète, ou maladie cardiaque, par exemple).

4) Veillez à contacter votre prestataire de soins de santé si vous développez gravement une maladie ou si vous constatez les symptômes suivants:

- Respiration difficile ou essouffement.
- Décoloration violette ou bleue des lèvres.
- Vomissements et incapacité de garder les liquides.
- Signes de déshydratation, par exemple, étourdissements ou maux de tête lorsque vous vous levez, ou si vous ne pouvez pas uriner. Chez les bébés, cela peut se manifester par une absence de larmes lorsqu'ils pleurent.

Contribuez à empêcher la dissémination du virus de la nouvelle grippe H1N1 et protégez-vous:

- Évitez tout contact avec des personnes malades.
- Couvrez-vous la bouche et le nez à l'aide d'un mouchoir jetable ou d'un tissu.
- Lavez-vous régulièrement les mains avec du savon et de l'eau, particulièrement après avoir toussé ou éternué. Les gels à base d'alcool sont également efficaces.
- Évitez de vous toucher le nez, la bouche ou les yeux.

Si vous avez une maladie grave ou si vous avez un risque élevé de complications à la grippe, contactez votre prestataire de soins de santé ou demandez de l'aide médicale.

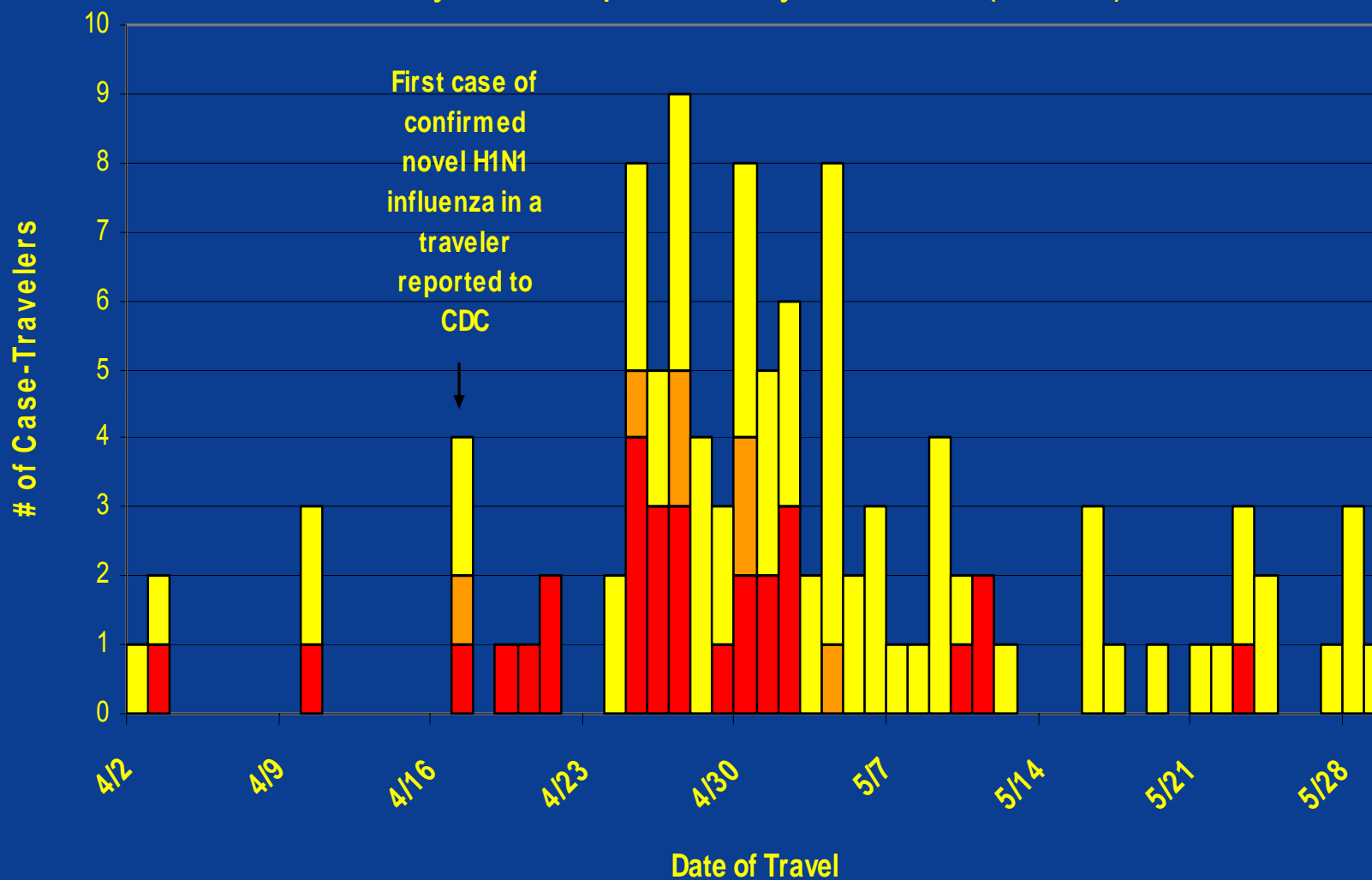
- Votre prestataire de soins de santé peut vous recommander des médicaments pour soulager vos symptômes.
- Tenez compte que si la grippe se propage largement, il y a une chance que vous ne puissiez plus être testé.
- Un traitement antiviral peut être indiqué. Les recommandations actuelles peuvent être trouvées à l'adresse suivante: <http://www.cdc.gov/h1n1flu/guidance/>.

- Contactez les autorités sanitaires locales ou nationales.
- Visitez <http://www.cdc.gov/h1n1flu/>
- Contactez les Centres de prévention et de contrôle des maladies CDC (ouvert 24 heures sur 24, les 7 jours sur 7):
 - 1-800-CDC-INFO (232-4636)
 - TTY: (888) 232-4634
 - cdcinfo@cdc.gov



Quarantine and Migration Health

Domestic Travelers, Reported to the Quarantine Activity Reporting System, April 1 - May 31, 2009 (n=107)



Confirmed Probable Suspect



Meanwhile...Community Mitigation

- Voluntary isolation
- Education about handwashing, covering coughs, stay home
- Develop guidance documents
- **School closure**





Update: Infections With a Swine-Origin Influenza A (H1N1) Virus -- - United States and Other Countries, April 28, 2009

On April 28, this report was posted as an MMWR Dispatch on the MMWR website (<http://www.cdc.gov/mmwr>).

Since April 21, 2009, CDC has reported cases of respiratory infection with a swine-origin influenza A (H1N1) virus (S-OIV) transmitted through human-to-human contact ([1,2](#)). This report updates cases identified in U.S. states and highlights certain control measures taken by CDC. As of April 28, the total number of confirmed cases of S-OIV infection in the United States had increased to 64, with cases in California (10 cases), Kansas (two), New York (45), Ohio (one), and Texas (six). CDC and state and local health departments are investigating all reported U.S. cases to ascertain the clinical features and epidemiologic characteristics. On April 27, CDC distributed an updated case definition for infection with S-OIV ([Box](#)).

Of the 47 patients reported to CDC with known ages, the median age was 16 years (range: 3--81 years), and 38 (81%) were aged <18 years; 51% of cases were in males. Of the 25 cases with known dates of illness onset, onset ranged from March 28 to April 25 (Figure). To date, no deaths have been reported among U.S. cases, but five patients are known to have been hospitalized. Of 14 patients with known travel histories, three had traveled to Mexico; 40 of 47 patients (85%) have not been linked to travel or to another confirmed case. Information is being compiled regarding vaccination status of infected patients, but is not yet available. According to the World Health Organization (WHO), as of April 27, a total of 26 confirmed cases of S-OIV infection had been reported by Mexican authorities. Canada has reported six cases and Spain has reported one case.*

Severity of Disease Was Not Clear

- Looked like very severe disease in Mexico
- Mild disease in US
- What to do??????????





Swine-Origin Influenza A (H1N1) Virus Infections in a School --- New York City, April 2009

On April 30, this report was posted as an MMWR Dispatch on the MMWR website (<http://www.cdc.gov/mmwr>).

On April 24, 2009, CDC reported eight confirmed cases of swine-origin influenza A (H1N1) virus (S-OIV) infection in Texas and California ([1](#)). The strain identified in U.S. patients was confirmed by CDC as genetically similar to viruses subsequently isolated from patients in Mexico ([1](#)). Since April 24, the number of cases in the United States* and elsewhere[†] has continued to rise. As of April 28, approximately half (45) of all U.S. cases of S-OIV infection had been confirmed among students and staff members at a New York City (NYC) high school. This report describes the initial outbreak investigation by the NYC Department of Health and Mental Hygiene (DOHMH) and provides preliminary details about 44 of the 45 patients (the remaining patient resides outside of NYC and was not included in the analysis). The preliminary findings from this investigation indicate that symptoms in these patients appear to be similar to those of seasonal influenza. DOHMH will continue monitoring for changes in the epidemiology and/or clinical severity of S-OIV infection.

Epidemiologic and Laboratory Investigations

On April 23, DOHMH was notified of approximately 100 cases of mild (uncomplicated) respiratory illness among students at an NYC school (high school A) with 2,686 students and 228 staff members. During April 23--24, a total of 222 students visited the school nursing office and left school because of illness. On April 24, a student was later determined to be a case of S-OIV infection in Mexico. DOHMH decided to rapidly mobilize staff members





Outbreak of Swine-Origin Influenza A (H1N1) Virus Infection --- Mexico, March--April 2009

[MMWR en Español](#)

On April 30, this report was posted as an MMWR Dispatch on the MMWR website (<http://www.cdc.gov/mmwr>).

In March and early April 2009, Mexico experienced outbreaks of respiratory illness and increased reports of patients with influenza-like illness (ILI) in several areas of the country. On April 12, the General Directorate of Epidemiology (DGE) reported an outbreak of ILI in a small community in the state of Veracruz to the Pan American Health Organization (PAHO) in accordance with International Health Regulations. On April 17, a case of atypical pneumonia in Oaxaca State prompted enhanced surveillance throughout Mexico. On April 23, several cases of severe respiratory illness laboratory confirmed as swine-origin influenza A (H1N1) virus (S-OIV) infection were communicated to the PAHO. Sequence analysis revealed that the patients were infected with the same S-OIV strain detected in two children residing in California ([1](#)). This report describes the initial and ongoing investigation of the S-OIV outbreak in Mexico.

Enhanced Surveillance

TABLE. Number and percentage of confirmed cases of novel influenza A (H1N1) virus infection, by patient age group and hospitalization status — United States and Mexico, March 1–May 5, 2009

Age (yrs)	United States			Mexico		
	Total	Hospitalized		Total	Hospitalized	
		No.	(%)		No.	(%)
<5	51	7	(14)	115	6	(5)
5–14	204	9	(4)	248	4	(2)
15–29	250	9	(4)	313	13	(4)
30–44	68	9	(13)	154	16	(10)
45–59	36	1	(3)	94	7	(7)
≥60	10	0	(0)	21	2	(10)
Not available	23	0	(0)	4	4	(100)
Total	642	35	(5)	949	52	(6)

MMWR Weekly May 8, 2009 /58(17);453-458



www.cdc.gov/H1N1flu





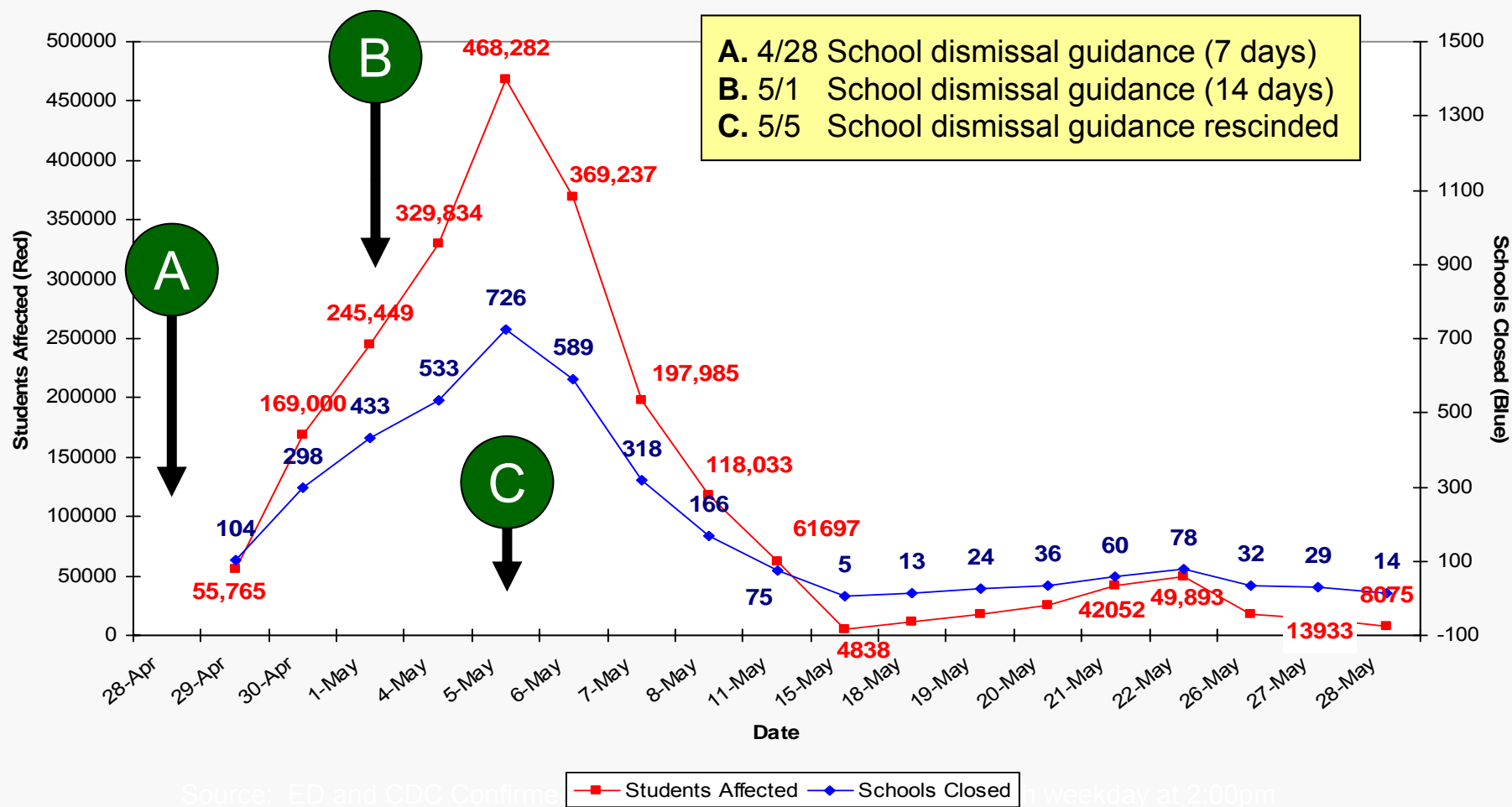
Division of Global Migration and Quarantine
Novel Influenza A (H1N1) - 29 May 2009
School Dismissal, United States, 4/29 – 5/27, 2009



14 schools closed due to H1N1 in 4 states today: MA, NY, TX, and WA

The closures impacted 8075 students and 613 teachers

12 schools reopened in MA, NJ, and NY affecting approx. 5035 students and 471 teachers



Public Health Research

- Intense investigation of first four flights with confirmed H1N1 case passengers
- Investigation of outbreak among crew of cruise ship between Seattle and Alaska
- Evaluation of community mitigation





Division of Global Migration and Quarantine
Novel Influenza A (H1N1) – 26 June 2009
Nonpharmaceutical Interventions



Anecdotal or Data-based Evidence - 2009

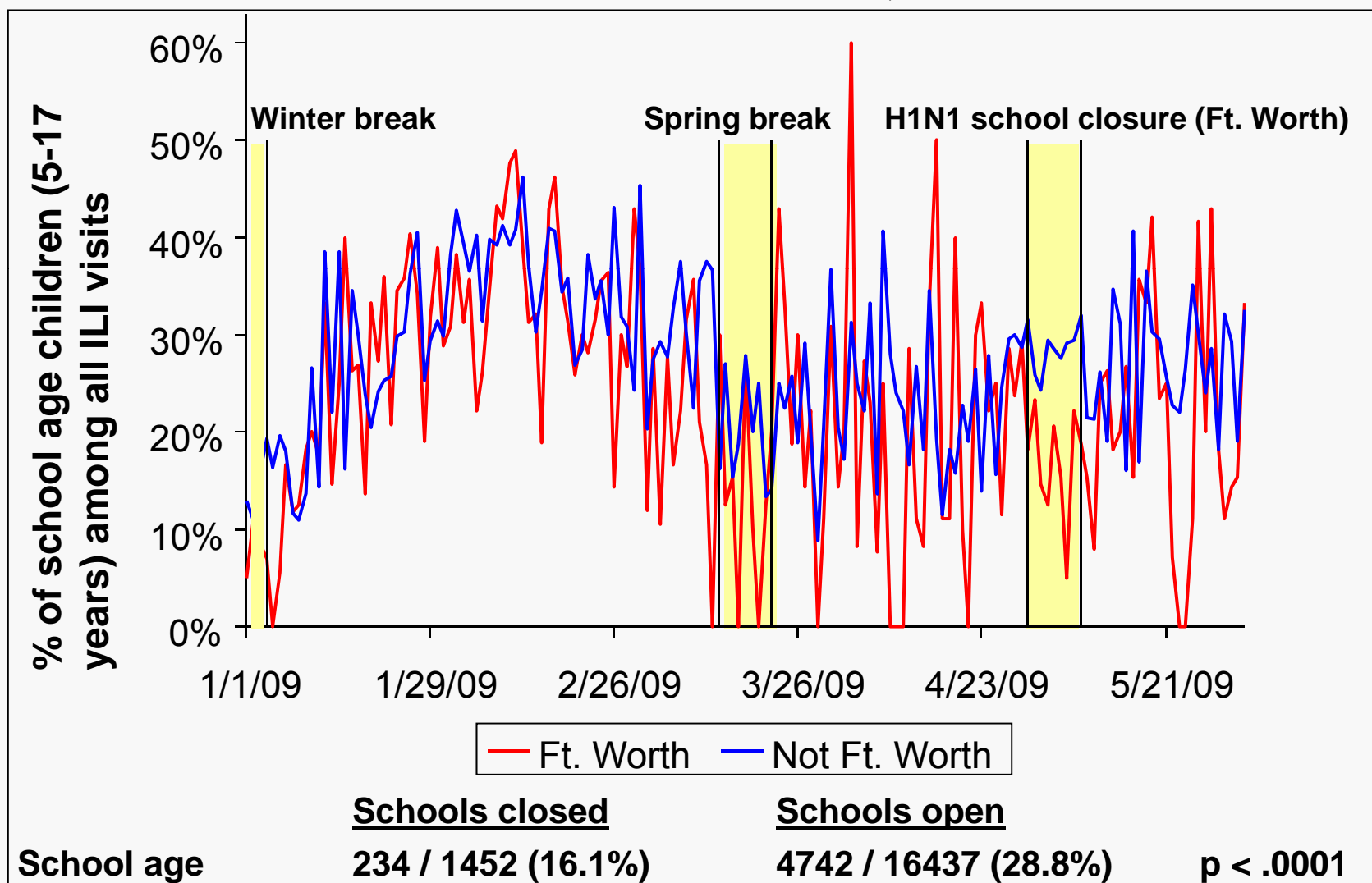
- **School closures “seems” to work**
 - UK – early school closure, case treatment, school and HH prophylaxis (London, Birmingham) – aborted secondary transmission if done within 48 hours (achievable 1 of 3 instances)
 - Japan – cases in schools, 2 cities with school outbreaks – district-wide closure for 7 – 14 days – aborted outbreak
 - NYC only 1 school saw recurrence of cases after reopening
 - Discrepancy of ILI visits of school age children in Dallas/Ft. Worth
- **Messaging to college students on appropriate behavior seems effective**
- **Absenteeism data alone not good surrogate for H1N1**
- **More opportunities to learn:**
 - **Mexico: School and business closures**
 - **Chile: School closure, antiviral use in students/HH**
 - **Australia: moving from containment to protection**
 - **NYC: 451 schools under observation**
 - **Summer Camps**



Division of Global Migration and Quarantine
Novel Influenza A (H1N1) – 26 June 2009
Nonpharmaceutical Interventions



Proportion of ILI Cases in School-aged Children
Tarrant and Dallas Counties, 2009



Current Unknowns

- Scope and duration of current outbreak
- Potential for second wave
- Potential for increased severity



Plans

- Assume the worst
- Plan for border screening
- Put most effort into mitigation



Gracias!



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