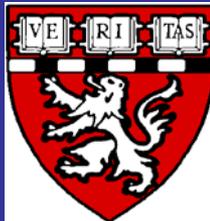


H1N1 Outbreak at Children's Hospital Boston

Stephen Monteiro MS, EMT-P
Paula Klaman, BA

Emergency Management Department
Center for Biopreparedness



Background

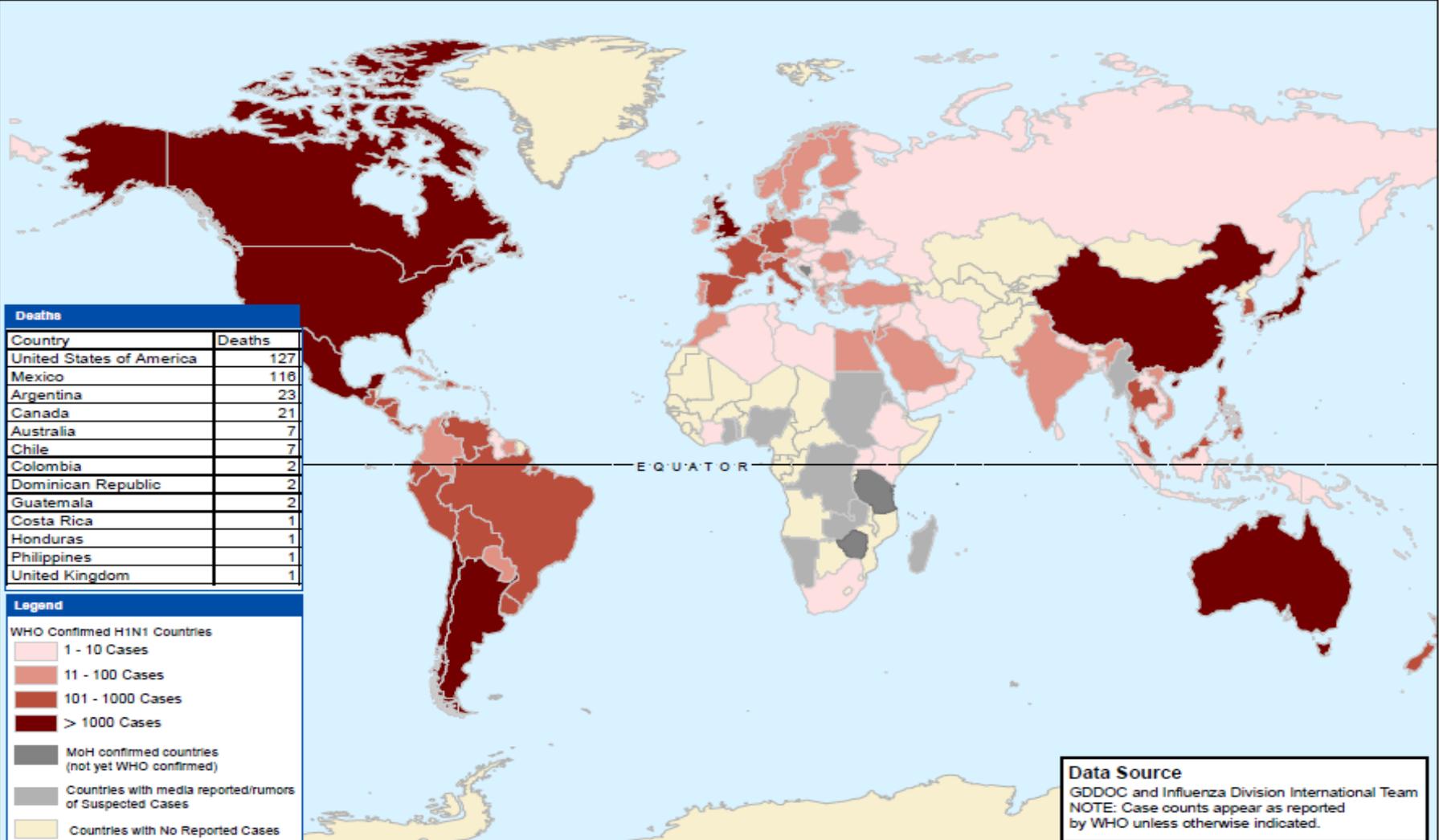
International Picture

Pandemic H1N1 – 10 JUL 2009



Novel Influenza A (H1N1) International Case and Information Tracking

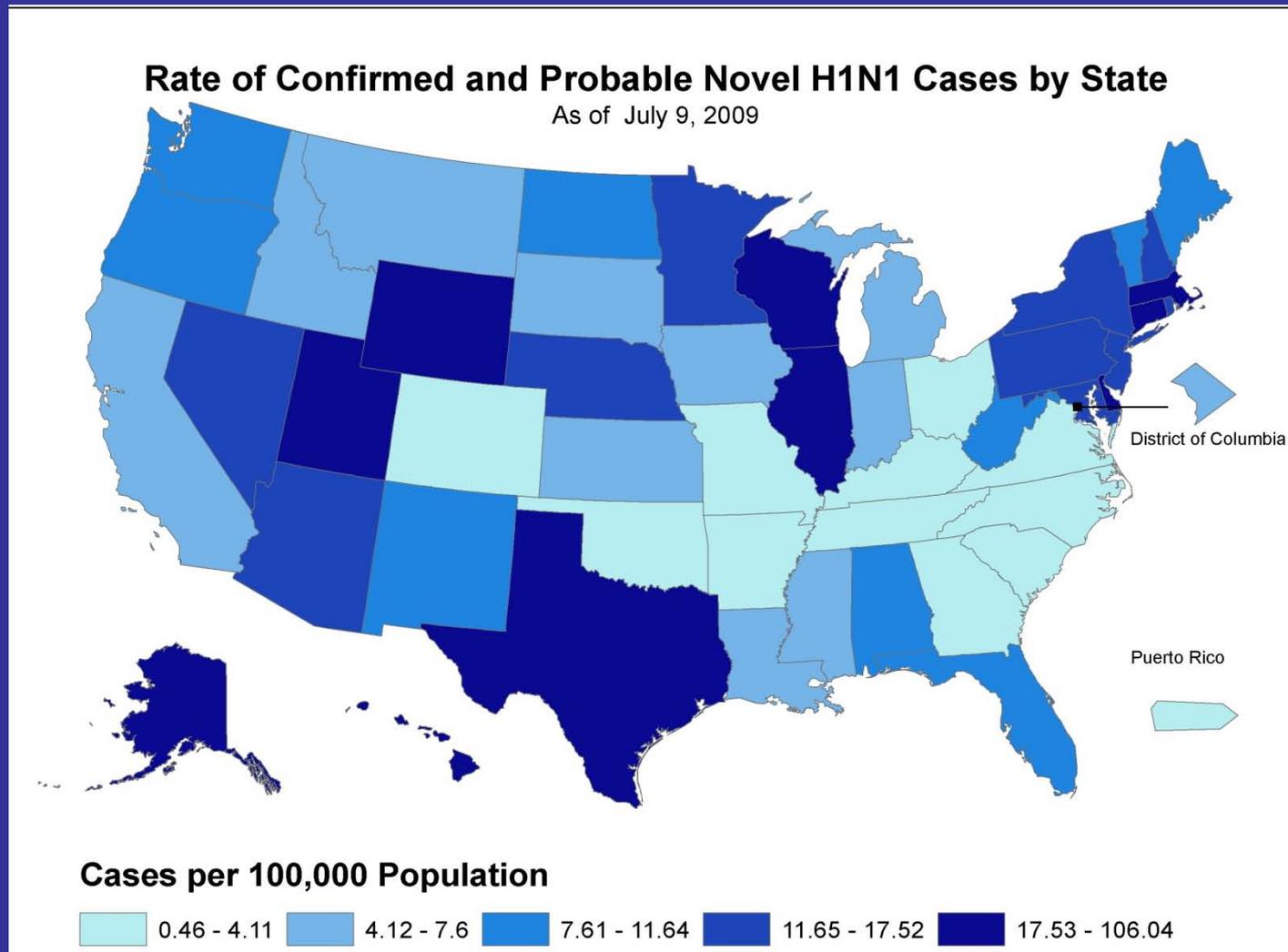
As of
09 July 2009
0800 EDT



Pandemic H1N1 Cases by State

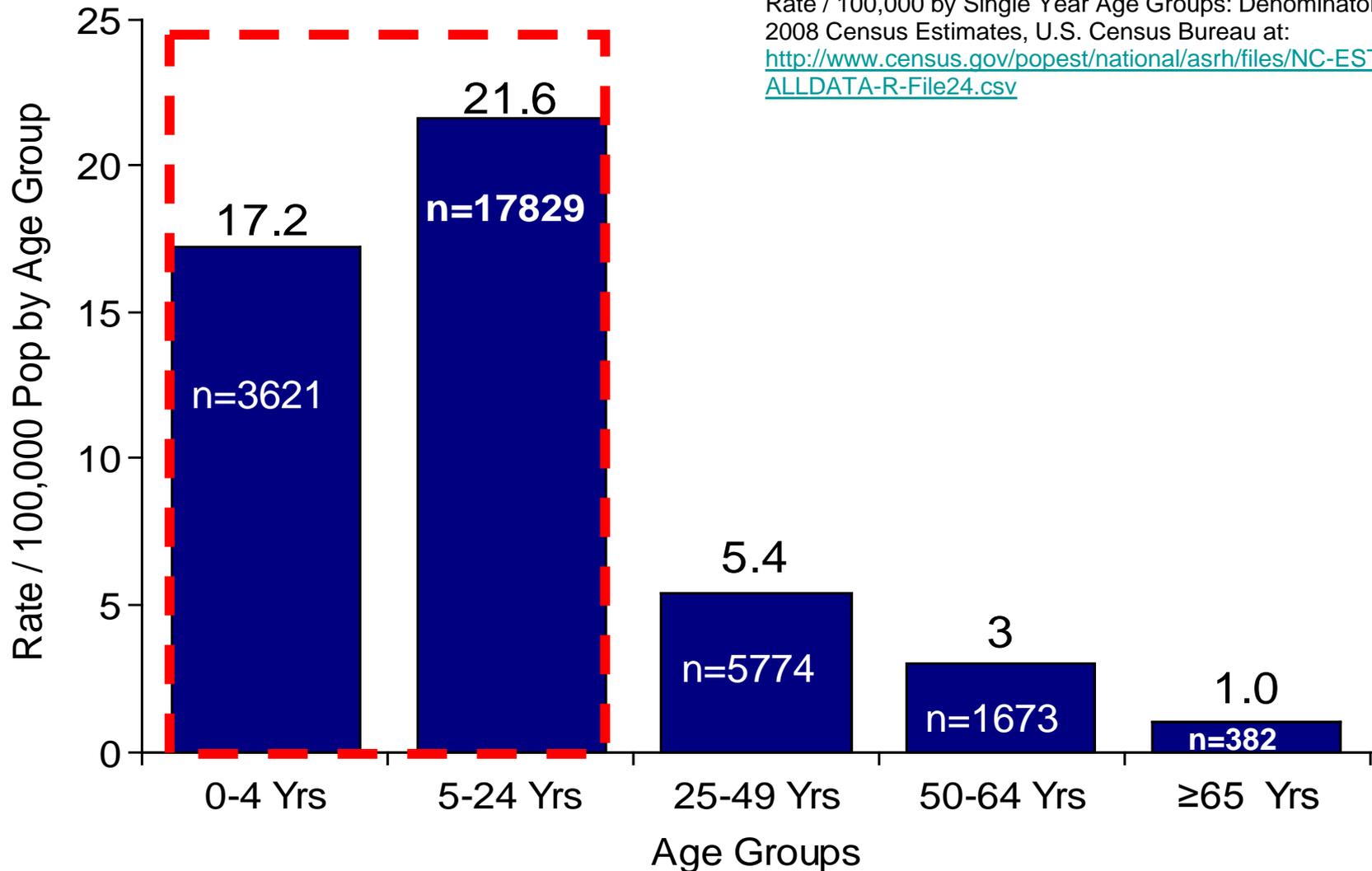
Rate / 100,000 State Population

As of 9 JUL 2009

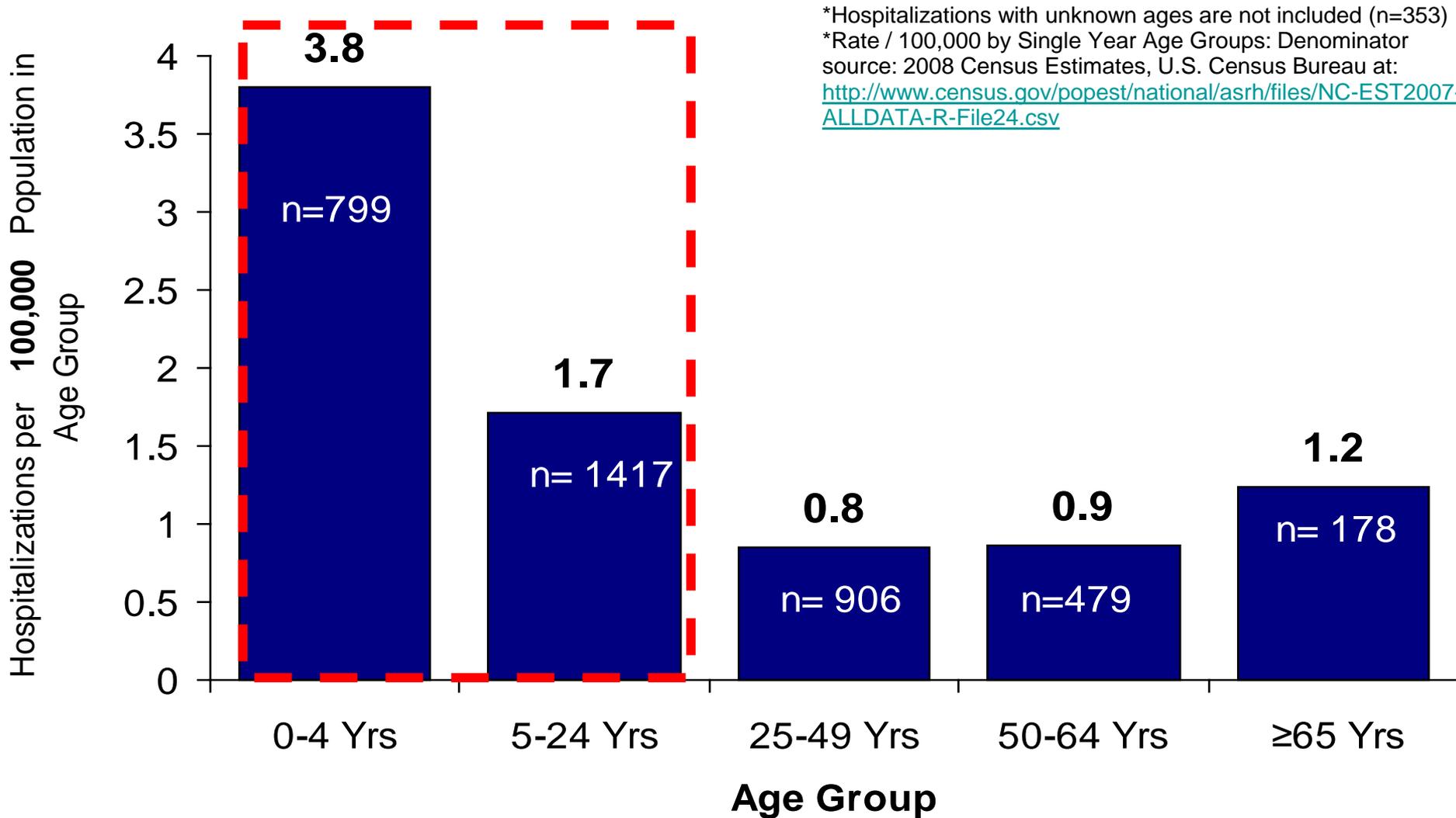


H1N1 **Cases Rate** per 100,000 US Population by Age Group as of 09 JULY 2009 (n=35,860*)

*Excludes 1,386 cases with missing ages.
Rate / 100,000 by Single Year Age Groups: Denominator source:
2008 Census Estimates, U.S. Census Bureau at:
<http://www.census.gov/popest/national/asrh/files/NC-EST2007-ALLDATA-R-File24.csv>



H1N1 Hospitalization Rate per 100,000 US Population by Age Group (n=3,779) as of 09 JULY 2009



*Hospitalizations with unknown ages are not included (n=353)
*Rate / 100,000 by Single Year Age Groups: Denominator source: 2008 Census Estimates, U.S. Census Bureau at: <http://www.census.gov/popest/national/asrh/files/NC-EST2007-ALLDATA-R-File24.csv>

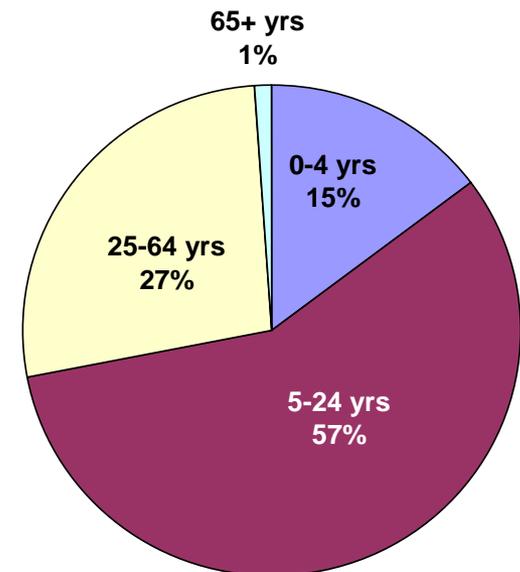
Mass DPH Quick Stat:

In Massachusetts—1,332 confirmed cases with **6 deaths** as of the weekly update on July 17th (source July 17 SitRep)

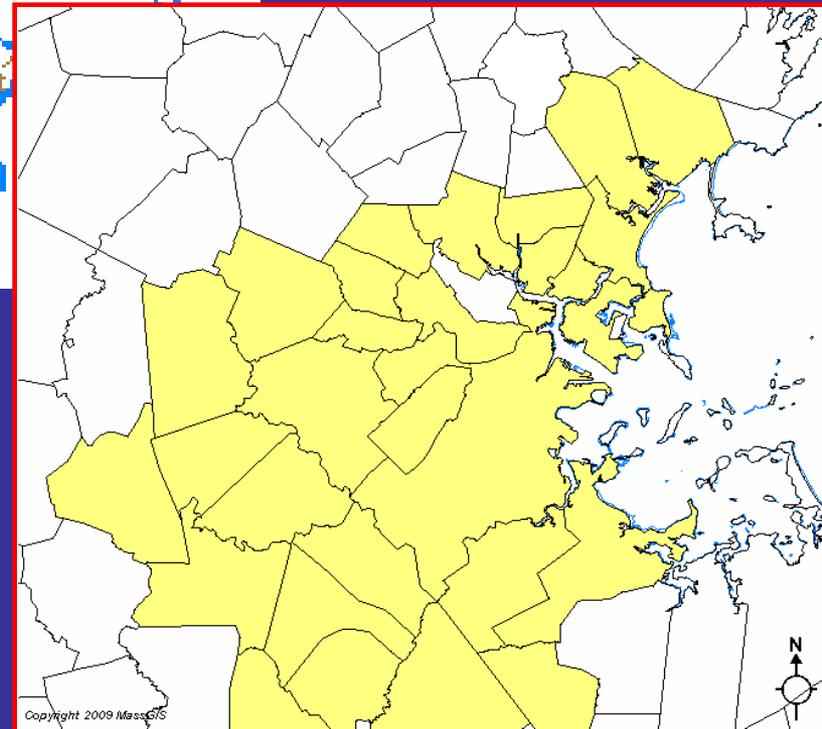
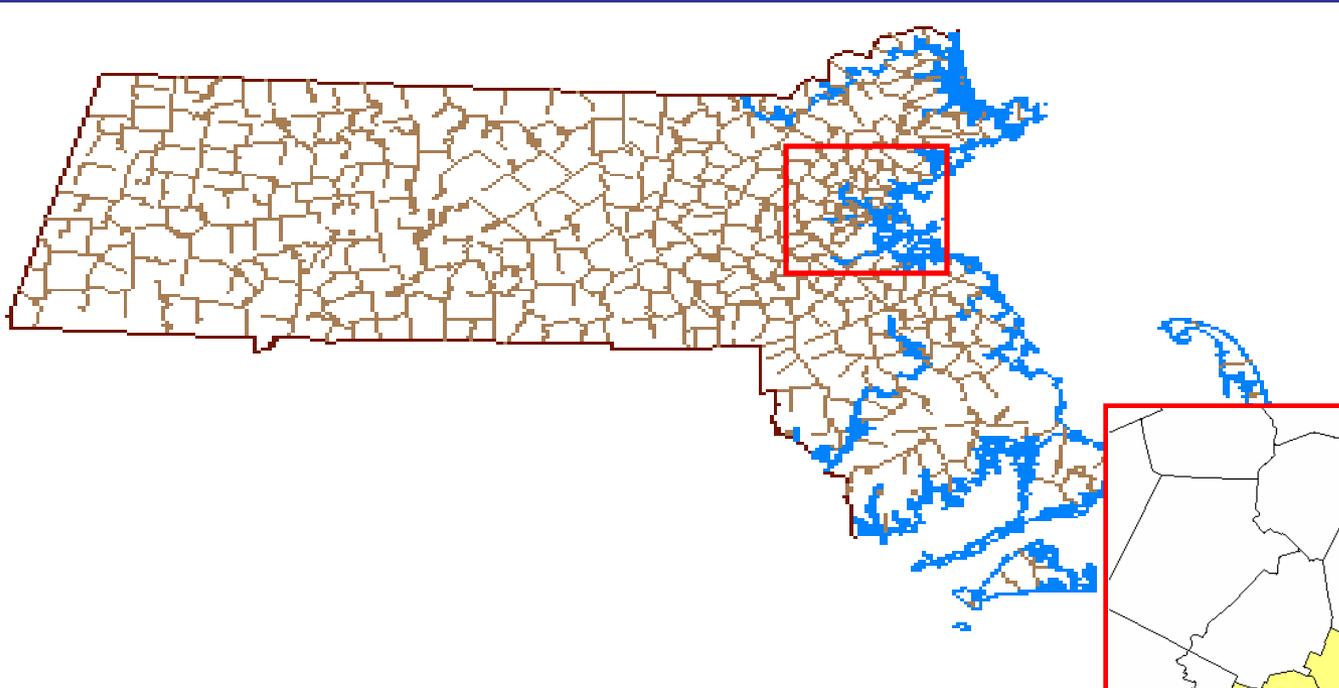
- Case Rate Age Distribution: 0-65 (median:14)

Note: 164 people have been hospitalized since the outbreak began as of July 17, 2009

H1N1 Case Rate in Massachusetts by Age Group as of July 17, 2009

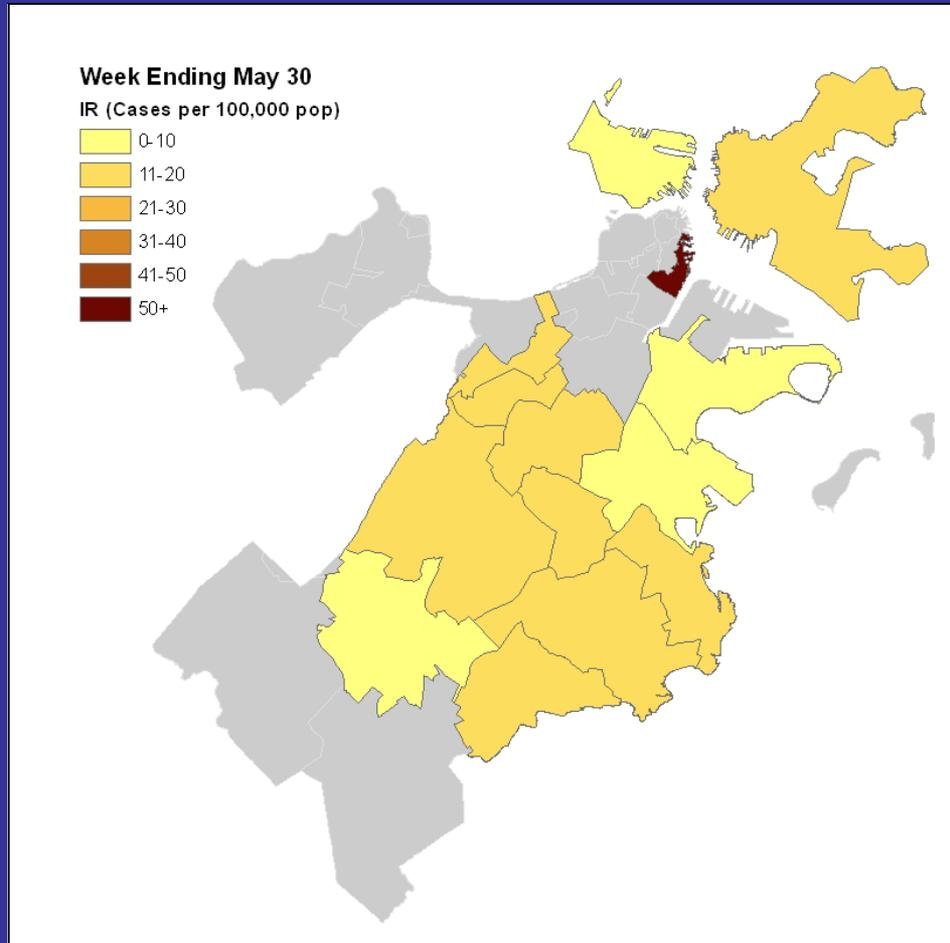


Boston



Pandemic H1N1 Cases in Boston

May 30

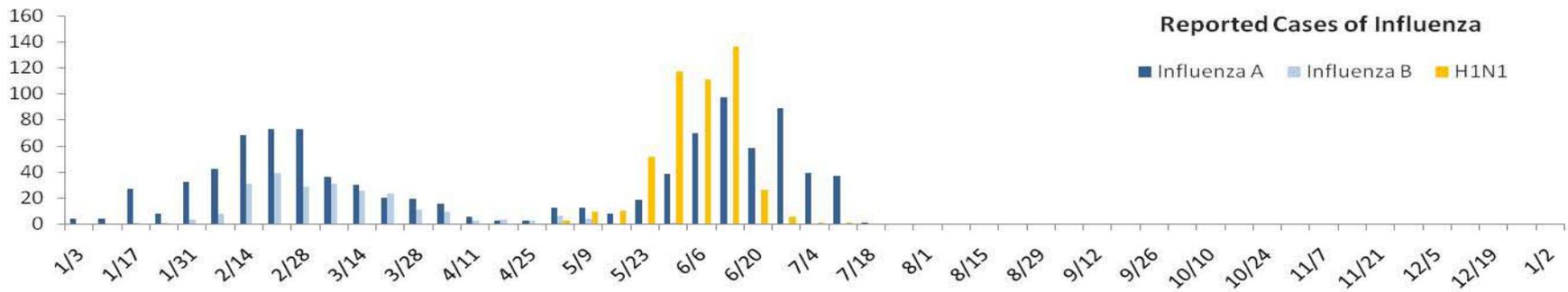


Boston Public Health Commission Quick Stat:

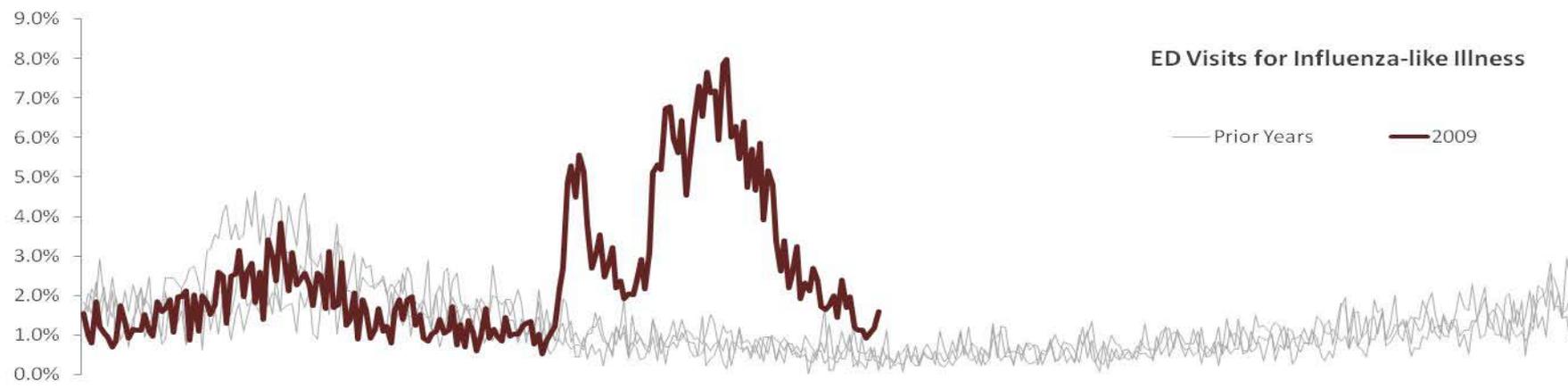
In Boston—Modeling indicates 23,000 suspected cases of H1N1 within City of Boston

- Approximately **11%** of the 5-17 yr age group within City of Boston (source planning update meeting July 18)

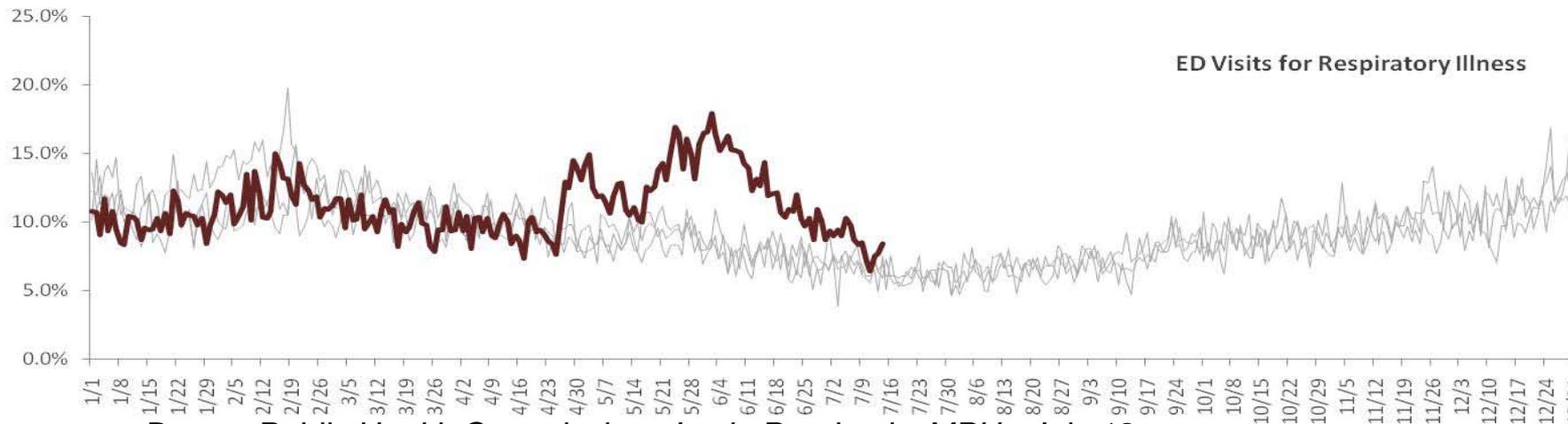
No. of Cases



Narrow ILL / All Visits



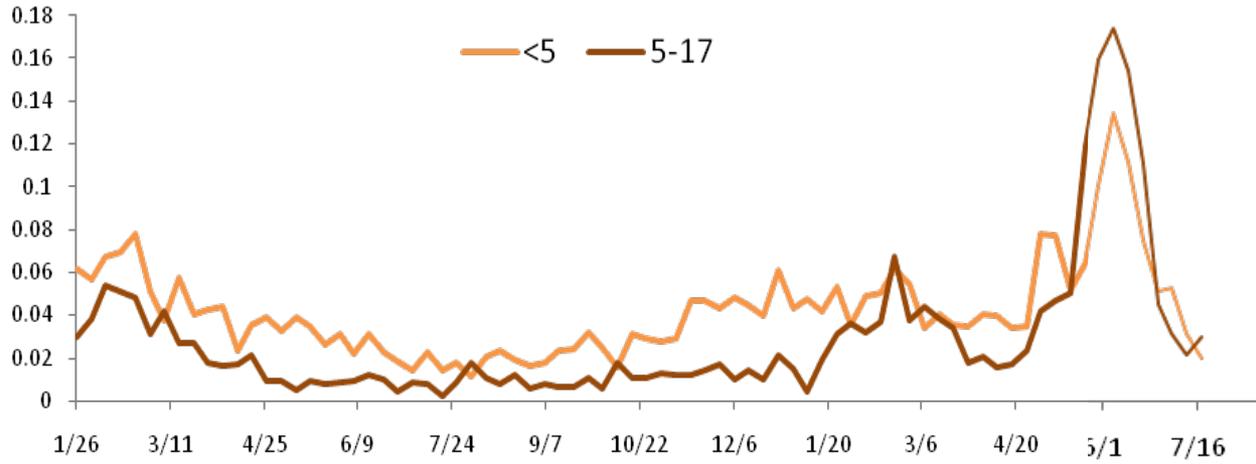
Broad ILL / All Visits



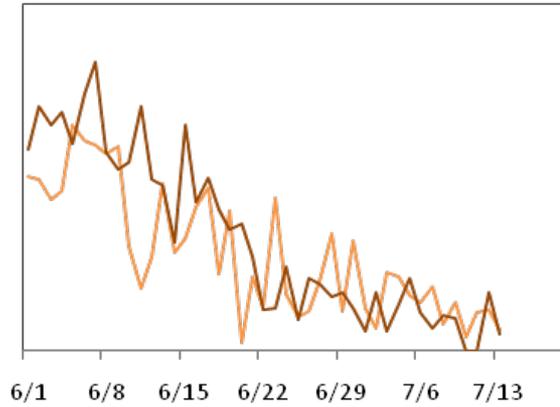
Boston ED Visits for Influenza-like Illness

Data through July 15, 2009

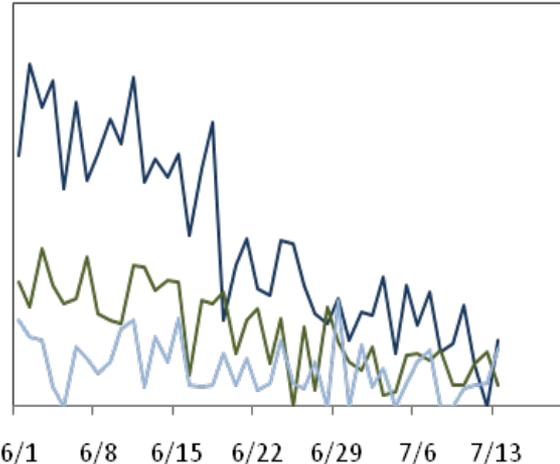
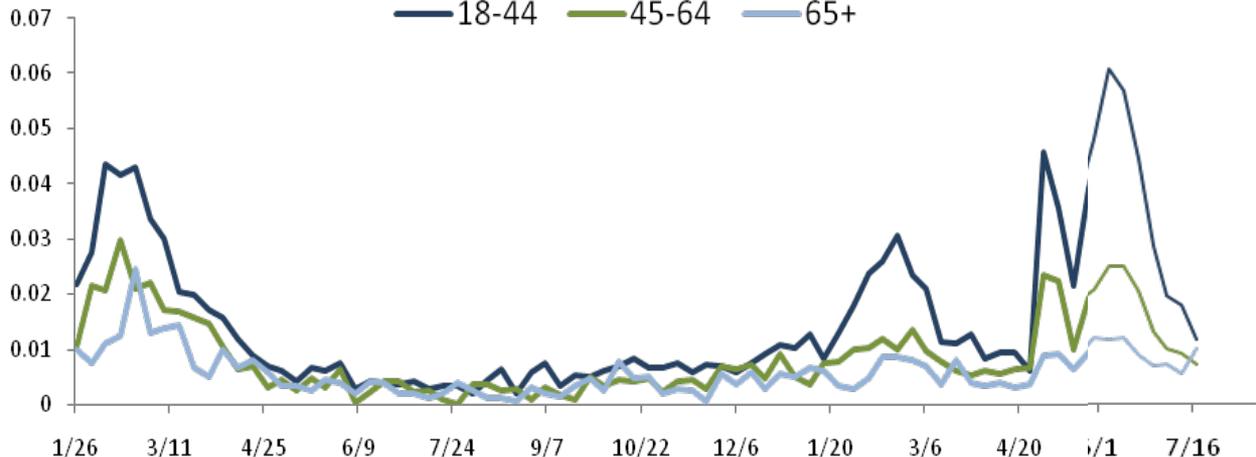
18 months, by week



Last 45 days, by day



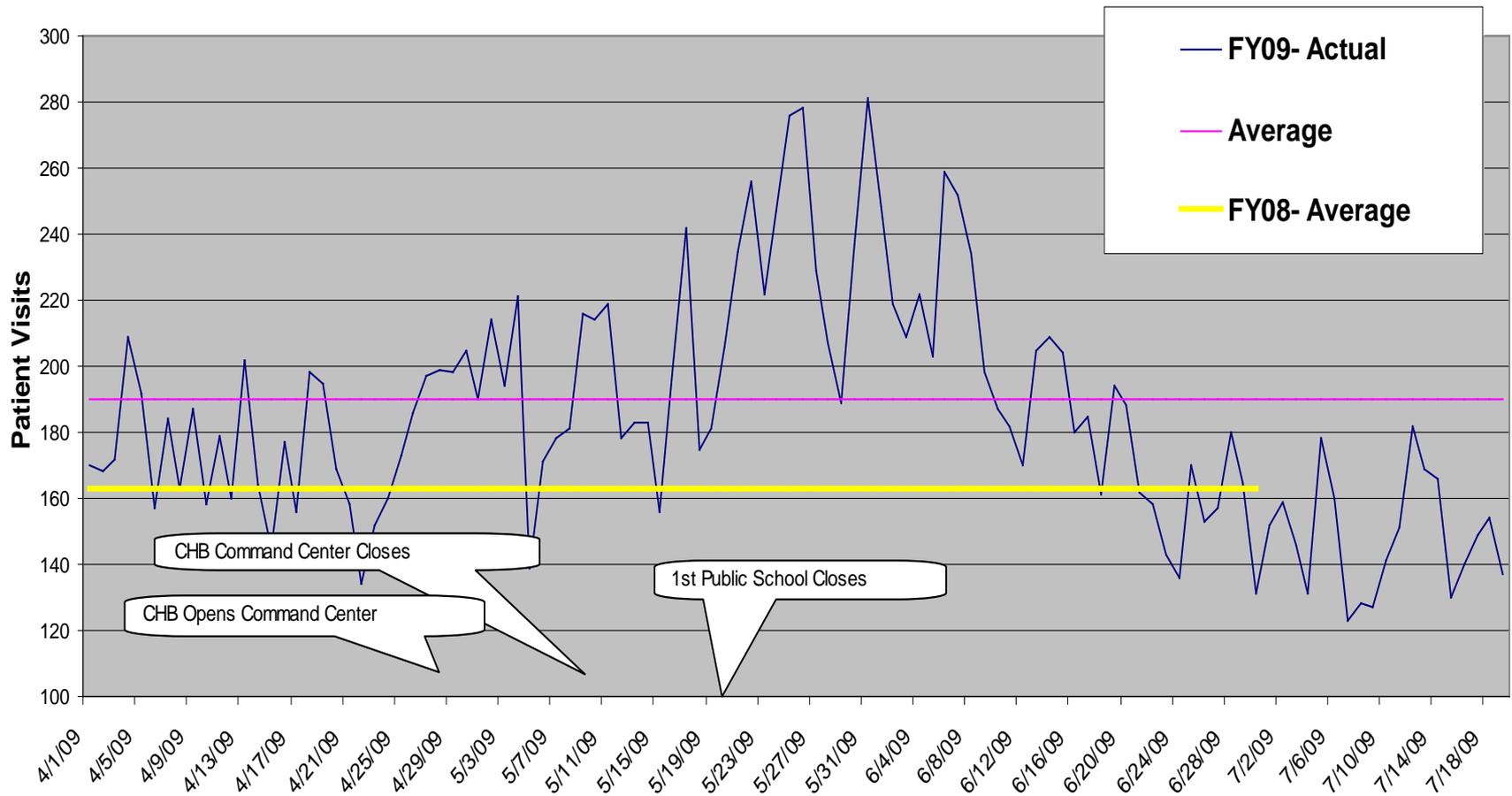
18-44 45-64 65+



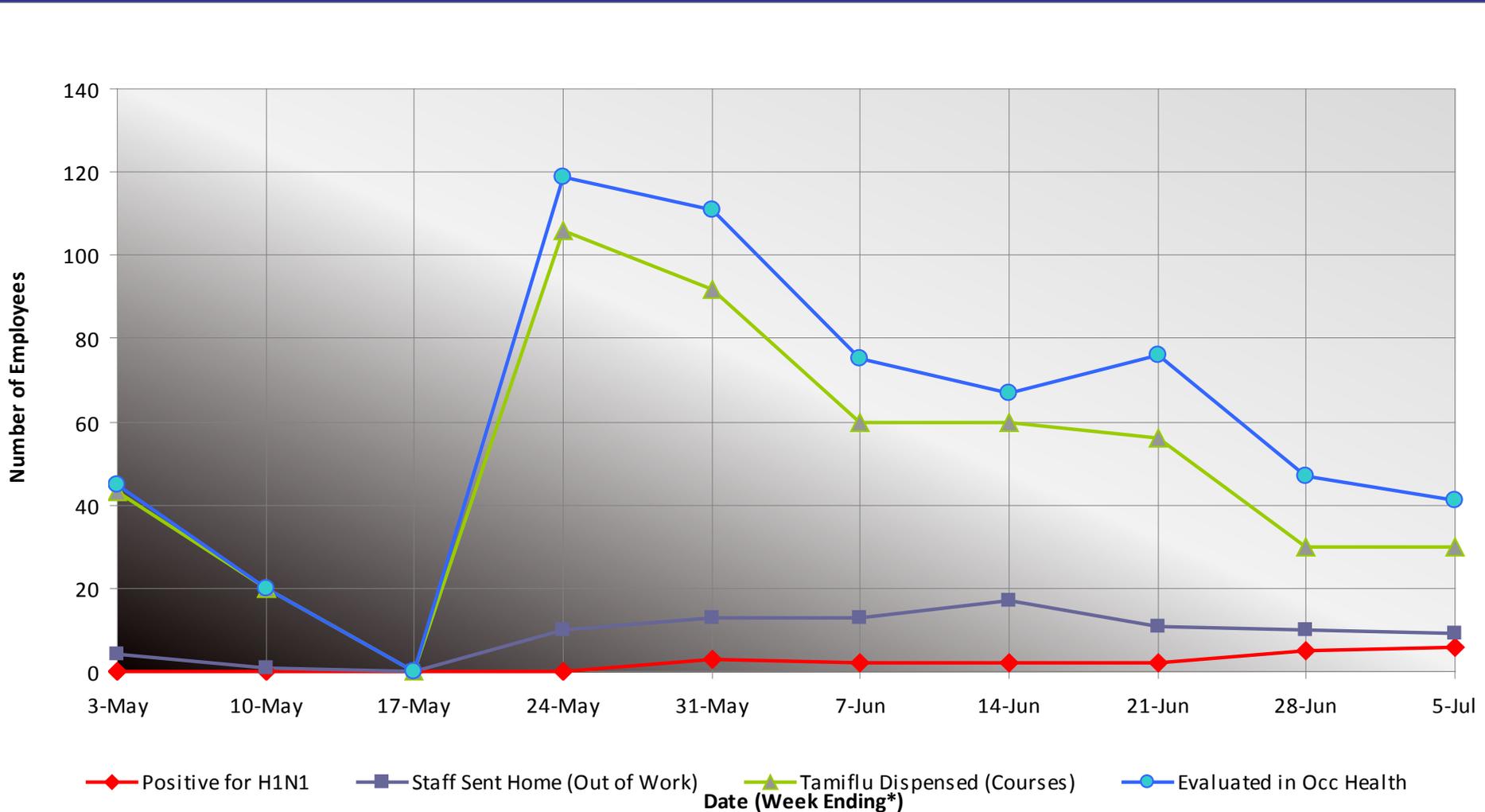
Slide source: Boston Public Health Commission- Justin Pendarvi.

Children's Hospital ED Volume

Influence of H1N1 Outbreak on ED Volume

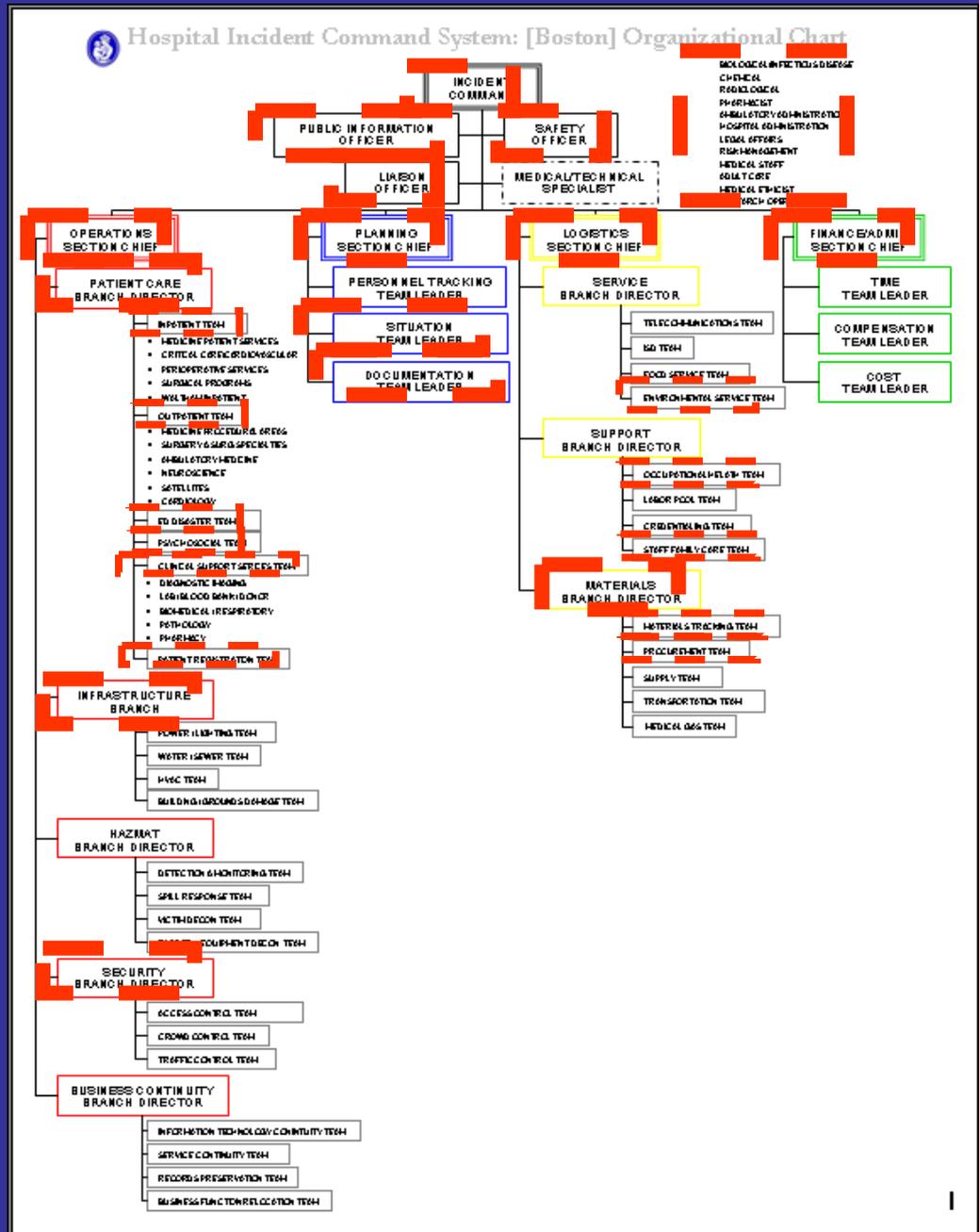


H1N1 Occupational Health Impact



*Successful
Response Strategies
Implemented*

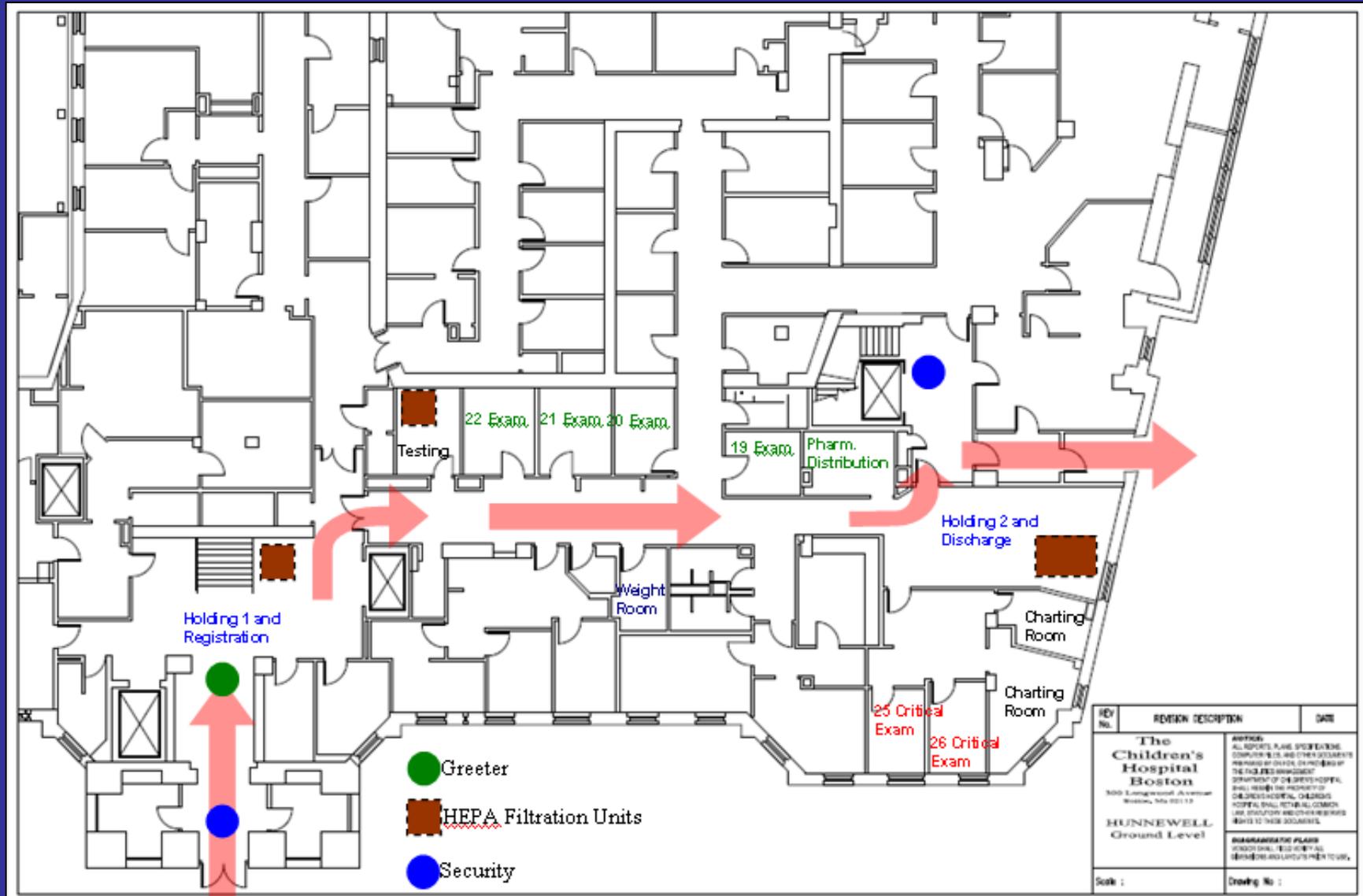
Command and Control



Cohort



Alternate Care Site Plan



The Advantage of Real-Time Data

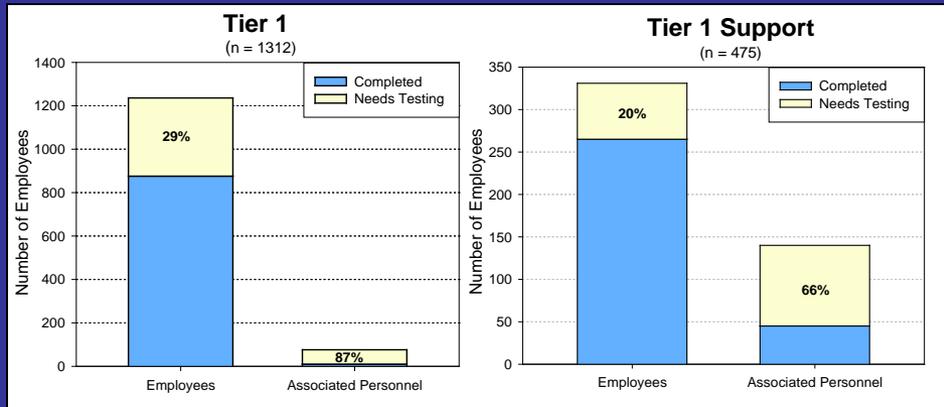
C	D	E	F	G	H	I
223-16-09	ED	N/A	Neg	yes	negative	
200-33-36	PHA	N/A	Neg	yes	negative	
4314088	ed	Neg	Neg	yes	Influenza B	
2311795	ed	N/A	Neg	yes	negative	
1029737	adol	N/A	Neg	yes	negative	
423614	ED	Neg	Neg	yes	negative	
4239344	ed	Neg	Neg	yes	negative	
4336364	ed	Neg	Neg	yes	negative	
1066968	ed	neg	neg	yes	negative	Results received 5/5
4178337	ed	Neg	Neg	yes	negative	
2085859	ed	n/a	POS	yes	Positive	
1020392	ed		neg	yes	negative	
41218176	ed		neg	yes	negative	
4124403	ed		neg	yes	negative	
4325613	ed		neg	yes	negative	
4275733	ed		neg	yes	negative	
2305470	ed		neg	yes	negative	
4034149	ed		neg	yes	negative	

STAT ROOM Supply as of 5/11/09 12:30pm												
Picture	Item	5-May	6-May	7-May	8-May	See Date	Crisis Limit (Ea)	Ideal PAR (Ea)	Order Status/	Comments		
	3M N95 Respirator Size Regular	3,840	3,480	2,260	2,220	2,000	2,000	10,000				
	3M N95 Respirator Size Small	2,160	1,800	1,800	1,800	1,200	1,000	7,000				
	3M N95 Substitute (last resort only)	4,020	4,020	4,020	4,020	1,920	500	3,000				
	Kimberly Clark N95 Substitute (last resort only) Small	1,050										
	Kimberly Clark N95 Substitute (last resort only) Duck-bill	1,050										
	Kimberly Clark N95 Substitute (last resort only) Lg	40										
	PAPR Hood Large	11	11	11	10		50	300				
	PAPR Hood Small			6	3		30	200				
	Complete PAPR Units (ready for deployment)	17	17	17	17	42	45	65				
	Ear Loop Mask (Teddy Bear)	4,100	3,450	3,750	3,800	3,500	1,000	15,000				
	Ear Loop Mask (child size)		2,150	2,550	1,950	1,500	500	5,000				
	Ear Loop Mask With Eye Shield	100	1,250	1,075	1,475	1,213	500	5,000				
	Yellow Gowns (non-disposable)	2,600	2,600	2,600	2,600	2,600	400	5,000				
	Yellow Gowns (disposable)	1,400	1,500	1,400	1,100	1,400	500	500				
	Eye Shield Only		25	800	864	720	200	1,000				
	Goggles	15	17	10		500	150	500				
	Purell hand soap	85	82	75	36	68	200	500				
	Wall supply Purell					203	100	200				no back order
	Gloves					1297	500	1000				no back order
Laboratory Supply as of 5/11/09 11:00am												
Picture	Item	5-May	6-May	7-May	8-May	See Date	Crisis Limit (Ea)	Ideal PAR (Ea)	Order Status/	Comments		
	Binax Now Rapid A & B Kit	221	200	400	387	369	45	500				
	Viral Collection Kit	182	115	105	99	83	45	500				
	Influenza DFA Kit	200	200	650	650	600	45	500				
Pharmacy Supply as of 5/11/09 11:00am												
Picture	Item	5-May	6-May	7-May	8-May	See Date	Crisis Limit (Courses)	Ideal PAR (Courses)	Order Status/	Comments		
	Tamiflu capsules 75 mg	1,390	1,390	3,072	3,072	3,000	500	5000				
	Tamiflu capsules 45 mg	144	144	144	144	144						
	Tamiflu capsules 30 mg	384	384	384	384	384						
	Tamiflu Solution Oral Suspension	102	102	109	109	86	100	250				
	Relenza	404	404	404	404	404	200	1500				

Patient Flowchart

Emergency Department Report

Date	Total ED visits in the last 24 hours	# of patients tested for H1N1	# of patients tested positive for Influenza A	# of patients admitted
Apr 30	205	2	0	-
May 1	189	7	0	-
May 2	212	22	6	-
May 3	196	14	2	0
May 4	227	15	3	1
May 5	129	9	2	1
May 6	179	5	1	2



Essential Supplies



Communication

Home > Intranet Home > Home > Swine Flu Updates > Personal Protective Equipment



Children's Hospital Boston

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Swine flu info for providers

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GUIDANCE ON DIAGNOSTIC TESTING AND ANTIVIRAL TREATMENT FOR INFLUENZA H1N1 UPDATED MAY 7

Children's Hospital Boston has received a supply of antiviral medications from the Strategic National Stockpile, specifically to be used for swine flu. **Public health authorities have expectations that we will evaluate patients and administer these drugs according to the recommendations they have established, which indications are highlighted in yellow.** Patient supply of medications from Children's Hospital Boston prescription.

MDPH/CDC RECOMMENDATIONS

Individuals with mild illness should be tested. They do NOT need to be tested or treated if criteria listed below.

TESTING: Do not perform rapid flu diagnostic testing. Testing should be restricted to the following process:

- Those with flu-like febrile respiratory illness requiring hospitalization
- Those at high risk of complication
 - Children less than 2 years old
 - Persons aged 65 years or older
 - Adults and children who have immunosuppression caused by chemotherapy, radiation, or other immunosuppressive agents
 - Adults and children who have hematological, neurologic, neuromuscular, or other chronic disease
 - Pregnant women;
 - Children and adolescents (less than 18 years old) who are on aspirin therapy who might be at risk for influenza virus infection;

TREATMENT: Treatment should be reserved for testing, or for probable and confirmed cases.

- How can we safely use antiviral medications?
- How do we use antiviral medications?
- What about hand hygiene?
- What do I need to know about influenza?
- What do I need to know about swine flu?

Children's Hospital Boston Laboratory Testing

Updated May 5, 2009

This message contains current recommendations for healthcare providers at Children's Hospital Boston regarding laboratory testing for suspected or confirmed cases of swine flu.

Which patients should you test for swine flu?

Group 1: Patients with acute febrile respiratory illness and one of the following criteria should be tested with Influenza rapid testing (BinaxNow) and Influenza DFA testing:
(1) Severe flu-like illness requiring hospital admission
(2) Immunocompromised
(3) Significant underlying pulmonary illness (does not include asthma)
(4) Significant congenital heart disease

Group 2: Patients who meet the following criteria should be tested with Influenza rapid testing (BinaxNow) and Influenza DFA testing:
(1) Temperature $\geq 101^\circ\text{F}$ ($\geq 38.5^\circ\text{C}$)
(2) AND cough
(3) AND one other symptom suggestive of influenza such as sore throat, or myalgias
(4) AND age < 2 years OR any child with other chronic conditions such as hematological, neurologic, neuromuscular, metabolic, or cardiovascular disease

Laboratory Testing for Suspected Swine Flu

The Virology Laboratory at Children's Hospital Boston can test specimens for suspected swine influenza A (H1N1) virus infection for influenza A. It can not specifically identify the swine influenza A (H1N1) virus. Specimens to be sent to the State Laboratory Institute for suspected testing of swine flu.

The sensitivity of laboratory tests performed at Children's Hospital Boston for influenza A (H1N1) virus is not known. A negative result for influenza A does not rule out influenza A (H1N1) infection. All specimens which are positive for influenza A (H1N1) virus by either the State Laboratory Institute or Children's Hospital Boston will be sent to the State Laboratory Institute to be tested for swine flu.

Results of the rapid influenza test will be called to the ordering provider and reported in PowerChart within an hour of arrival of the specimen in the lab. They will appear with microbiology results in PowerChart. Specimens which are negative for influenza A in the rapid test will be retested within 24 hours by direct immunofluorescence.

If a specimen is to be collected for swine flu testing on a suspected or confirmed case, the procedure should be performed in an airborne isolation (negative pressure) room and the healthcare provider should wear a fit-tested N95 respirator or a powered air-purifying respirator (PAPR) during the procedure. If an airborne isolation (negative pressure) room is not available, use a regular single room with the door closed at all times.

In addition, all patients who have suspected or confirmed swine flu infection must be managed using contact and airborne precautions at all times (staff must wear a fit-tested N95 respirator or equivalent).

[Click here for just where to get a PAPR](#)

[Customer Service](#)
[Teen Advisory Committee](#)

Children's Hospital Boston Infection Control

Updated Monday, May 11, 2009 – updates highlighted in yellow.

This message contains new recommendations for healthcare providers at Children's Hospital Boston regarding infection control measures for suspected or confirmed cases of H1N1 influenza A. Public health authorities in Massachusetts have advised that it is now reasonable to use the same infection control measures for swine-origin H1N1 influenza (swine flu) as we do for seasonal influenza.

Table of Contents

- [What infection control steps should you take if a patient has confirmed or suspected influenza?](#)
- [How long must isolation precautions be continued for a suspected or confirmed case?](#)
- [What about hand hygiene?](#)
- [What about cleaning and disinfection of equipment and the patient care environment?](#)
- [To which floors or units can patients with suspected or confirmed cases be admitted?](#)

What infection control steps should you take if a patient has confirmed or suspected influenza?

- Immediately place the patient in a **single room with the door closed**. A regular room is appropriate and **special airflow is not required**.
- Institute **droplet precautions** and place the appropriate sign on the door of the room. **Staff members who enter the room must wear a surgical mask.**
- If an aerosol-generating procedure (including collecting a specimen for flu testing, suctioning, bronchoscopy, endotracheal intubation, nebulizer treatment, or resuscitation involving CPR) is to be performed** on a suspected or confirmed case, **eye protection should be worn during the aerosol-generating procedure**, in addition to the surgical mask as described above.
- If the patient needs to leave the room for medically necessary testing or procedures that cannot be performed in the room, a surgical mask should be placed on the patient.
- For suspected cases, families should be advised to limit the number of visitors as much as possible. Anyone visiting should remain in the room and should not visit common areas (such as activity rooms, kitchens, Center for Families, etc.). Call infection control at beeper # 2058 with any questions.

As always, if a patient presents with an acute respiratory illness and a specific etiology has not yet been established, both contact and droplet precautions should be implemented.

How long must isolation precautions be continued for a suspected or confirmed case?

Droplet precautions must be continued for 7 days after onset of symptoms. If the patient is still symptomatic on day 7, then precautions should be continued until 24 hours after resolution of symptoms. **IMPORTANT NOTE: a negative DFA for influenza in our virology lab does not rule out the diagnosis and should not be used to discontinue precautions.**

Given the number of confirmed cases in Massachusetts, it is particularly important that families and visitors who are experiencing flu-like symptoms not visit Children's. If your child or you have a fever, respiratory symptoms (cough, sore throat, or runny nose/nasal discharge), or other symptoms, please contact your primary care provider for guidance before coming to the hospital for an appointment.

Children's Hospital Boston Infection Control Program are in close contact with the Massachusetts Department of Public Health and the Centers for Disease Control. The MDPH and CDC websites have a lot of useful information and recommendations regarding swine flu. We will update the Children's website if there are other changes to our operations.

Children's Hospital Boston

THANK YOU

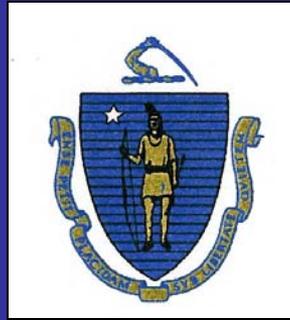
if you
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Public/Private Partnership

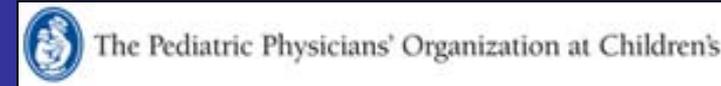
Federal



State



Local



What We Must Work On...

Enhanced Awareness of Our Environments

Internal

- Improved Financial Tracking & Emergency Procurement
- Improved coordination with Children's Private Physician Group

External

- Surveillance of Community Pharmaceuticals & Critical Supplies
- Real-time comparison with other Children's Hospitals (CHCA)

Reviewing Stockless Inventory Practices

Picture	Item #	Item Description	(Initial estimate)		STAT Room Stock Level								
			Ideal PAR (Ea)	Critical PAR (Ea)	5/22/2009	5/29/2009	6/5/2009	6/12/2009	6/19/2009	6/26/2009	7/3/2009	7/10/2009	7/17/2009
	1477	3M N95 Respirator Size Regular	12,000	3,600	2,520	3,720	3,720	3,720	3,240	5,760	5,520	5,520	5,520
	1476	3M N95 Respirator Size Small	8,000	2,400	960	2,040	2,040	2,040	1,680	2,400	2,280	2,280	2,280
	1451	PAPR Hood Large	300	90	0	100	218	218	118	218	218	618	618
	1450	PAPR Hood Small	200	60	300	399	375	375	375	375	375	375	375
		Complete PAPR Units (ready for deployment)	100	30	27	27	27	27	27	27	27	27	27
	1423	Ear Loop Mask (Teddy Bear)	15,000	4,500	3,500	14,000	14,000	4,500	16,500	12,505	11,000	4,500	15,500
	1413	Ear Loop Mask With Eye Shield	500	150	800	800	700	700	1,400	700	500	400	700
		Yellow Gowns (non-disposable)	5,000	1,500	7900 (daily par)	7900 (daily par)	7900 (daily par)	7900 (daily par)	7900 (daily par)	7900 (daily par)	7900 (daily par)	7900 (daily par)	7900 (daily par)
	6460	Yellow Gowns (disposable)	500	150	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,300	1,300
	9480	Eye Shield Only	1,000	300	720			1,300	1,012	1,300	1,300	1,300	1,300
	5450	Goggles	500	150	600	510	510	510	510	510	510	510	510
	2739	Purell hand soap	500	150	105	516	516	516	492	516	516	516	516
	9150	Ear loop mask – pediatric size		0	1,200	5,250	4,500	4,500	11,000	4,500	4,500	3,000	3,000

Infection Control "Just In Time" Training

PAPR Just-in-Time Training

Step 1 PAPR Check

Before putting on the PAPR unit (Donning), one must ensure the PAPR unit is working. Turn on the unit to ensure the unit is flowing air then follow the testing instructions on the back. If the unit isn't flowing properly please return it and get a new unit.



Step 2 Donning the PAPR Unit

After ensuring the unit is in working condition. Place the PAPR unit around the waist with the main unit on the small of the back and secure it with the fastening clips. Tighten the slack on the waist strap to allow a comfortable fit around waist.

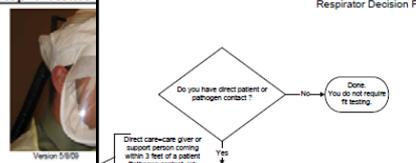


Step 3 Donning the Hood

After the unit has been placed around the waist. Ensure the hose runs around the back and place the hood onto the head. Secure the elastic on one's head and pull down to cover face.



Step 4 Removal



Respirator Decision F

The colored stickers on the back of the Children's Hospital ID badge indicate the size and type of the respirator the individual was fit tested for.



Green sticker = Small 3M respirator



Red sticker = Regular 3M respirator



Yellow sticker = PAPR (given if regular and small 3M respirators do not fit or if the individual has facial hair)

Wear It Right 3M® Respirators

3M® 1860/1860S Health Care N95 Particulate Respirator and Surgical Mask

APPLICATION:

- 1 Cup the respirator in one hand with the suspension or under your chin with the suspension up.
- 2 Position the respirator under your chin with the suspension up.
- 3 While holding the respirator in place, pull the top strap over your head and position it around your head, behind your ears. Loosen the straps. Position the respirator low on your nose.
- 4 When attempting to hold the respirator firmly in place, pull the bottom strap over your head and position it around your neck, behind your ears. Loosen the straps. Position the respirator low on your nose.
- 5 Using both hands, hold the suspension in the shape of your face by pulling forward while securing your fingertips along both sides of the suspension. **Always use the hands when securing suspension.** The suspension should rest over the bridge of your nose and the head straps should fit snugly over the ears to ensure a proper fit.

POSITIVE PRESSURE FIT CHECK:

6 The respirator must be used in a positive pressure fit check. Place your hands completely over the respirator, being careful not to obstruct the suspension, and inhale sharply. If air leaks around your face, adjust the suspension as described in step 1. If no leaks are present, adjust the suspension until you feel the respirator snug against your face. Perform fit check again. Do not adjust in order of fit. Do not adjust a person's fit, use your respirator. Do not use any respirator.

REMOVAL:

- 1 Without touching the respirator, grasp the bottom strap from around your neck or pull over your head.
- 2 Lift off the top strap. Do not touch the respirator.
- 3 Shake or discard according to your facility's infection control policy.

WARNING:

This respirator filter protect against certain particulate contaminants. It does not protect against vapors or gases, or protection against infectious agents. Do not use in situations of death. The purpose of this respirator is to protect you from exposure to the 3M Contaminated Media and Contaminated Media Through-Filter Service at 1-800-333-3333.

3M Respirator Care:
3M Respirator Care
3M Center, Building 275, 4th Fl.
St. Paul, MN 55144-0009
U.S.A.
1-800-233-9037
www.3m.com/ResBioCare

3M Contact:
Paul O'Brien, Sales 3337
Lansing, Michigan 48221
U.S.A.
1-800-543-3933
Outside of U.S.A., please contact your 3M Representative

Filter Facts:
Model: U.S.A.
G: 0.3 μm
M: 0.3 μm
N: 0.3 μm
N95: 0.3 μm

> [Intranet Home](#) > [Home](#) > [Swine Flu Updates](#) > [Personal Protective Equipment](#)

Personal Protective Equipment

Respiratory Protection

How do I get fit tested?

Call Occupational Health Services 857-218-3046 during normal work hours or page Safety-on-Call (7233) during off hours.
[Fit-testing Decision Tree](#)



How can I tell what size respirator I am by the sticker on my ID?

The colored stickers on the back of the Children's Hospital ID badge indicates the size and type of the respirator the individual was fit tested for.

[Click here for respirator guidance](#)

NOTE: COMMUNITY SUPPLIES HAVE BEEN IMPACTED

We are making every effort to maximize necessary supplies (i.e. surgical masks, N95 respirators, eye protection, gowns and gloves). Avoid stockpiling of supplies and use when clinically indicated.

Methods for prolonging effective use of an N95 respirator

[Click here for more information](#)

How to Don and Doff (3M)

PLEASE NOTE: Some of the instructions might reference 3M 8612F. This is the public version of 1860 but it is the same product with the same instructions.

- [Particulate Respirator 3M 1860, Wear it Right info \(English\)](#)
- [Particulate Respirator 3M 1860, Wear it Right info \(Spanish\)](#)
- [Video-How to wear the 3M? Particulate Respirator 8612F \(Same as 1860\)](#)

How to tell the difference between Wilson and 3M

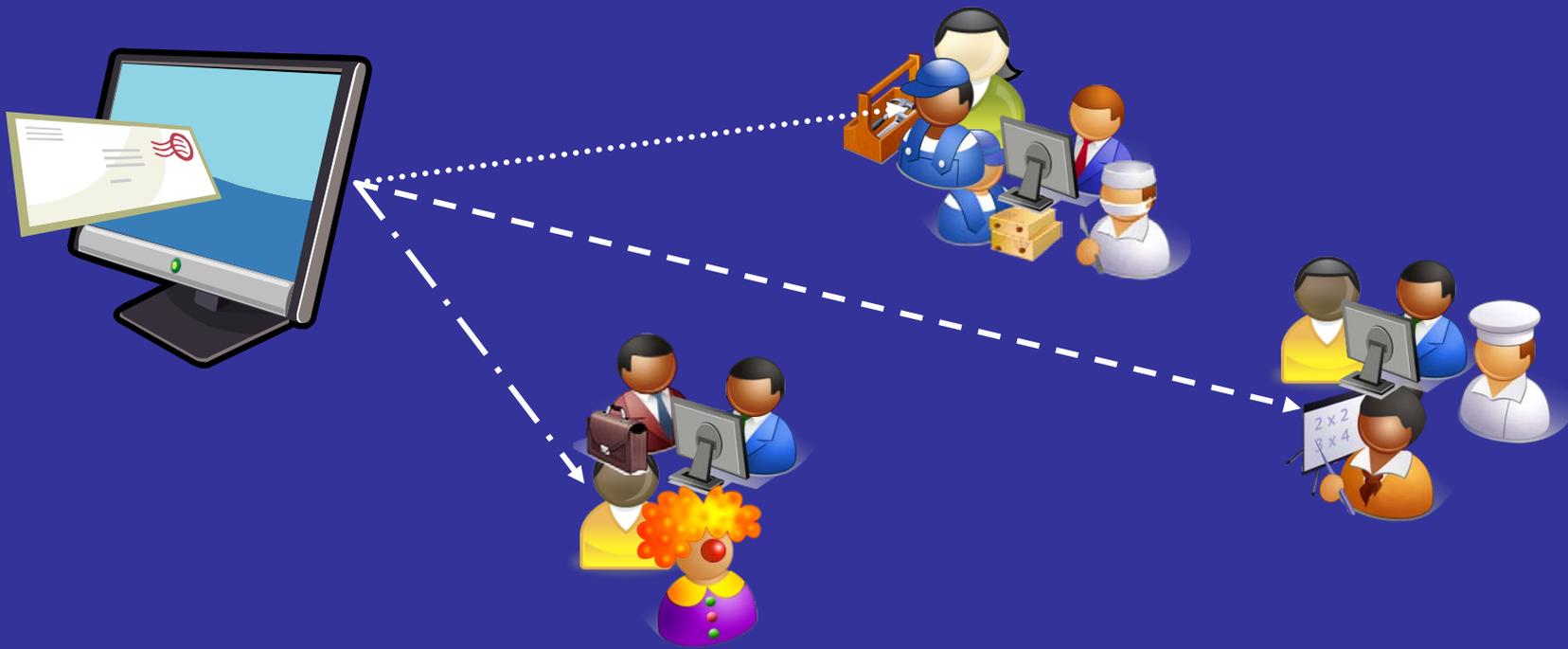
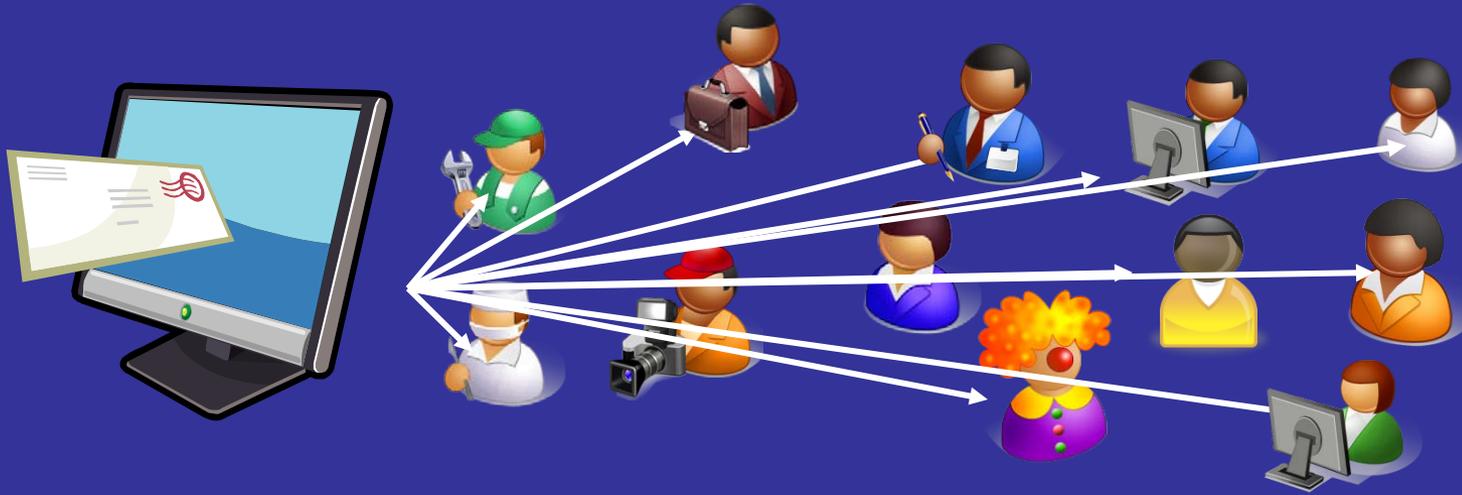


Information regarding Positive Air Purifying Respirator (PAPR)

NOTE: WE ARE LOW ON PAPR HOODS! Infection Control advises that you can clean the face shields between patients and between users.

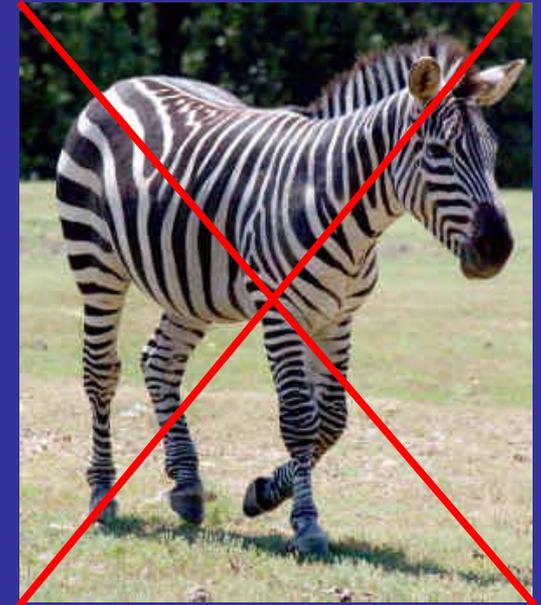
- [PAPR FAQs](#)
- [PAPR Just-in-time Training](#)

Communication Channels

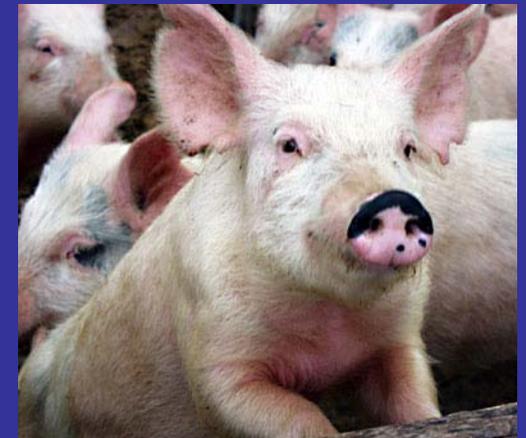
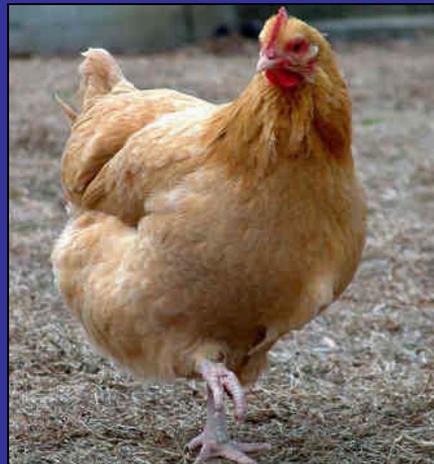
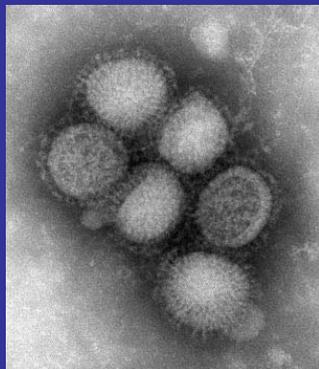


Fall Planning...

If you see hoof prints, think horses not zebras



When H1N1 emerged...



Need for a Phased Response

State level phased response provides:

- Greater coordination among school districts
- Coordinates availability of resources (i.e. state lab) more effectively
- Creates accelerator/break system to stiffen or relax reporting requirements
- State emergency declarations could be used as a common reference point for SNS deployment, activation of internal responses, etc.

Emphasis on Creation of Internal Phases

As Local/State Public Health creates clearer response levels:

- Our alertness is connected to external phases
- Our response based on:
 - personal experience (summarized in internal dashboards)
 - comparison with other impacted children's hospitals
 - on-hand resources
 - local agency recommendations

Emphasis on Creative Staffing Models

Creation of a mini- DMAT team

Creation of new flu job documents

Emphasis on New HICS Roles

Creation of Flow Coordinator specialist

Creation of a Disaster Staff Education specialist



Thank You

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