

Novel Influenza H1N1 New York City Response



NYC DOH Pandemic Planning

New York City Department of Health and Mental Hygiene

Pandemic Influenza

Preparedness and Response

Plan



- First NYC plan finalized in 2006
- Planned revisions for 2009 almost finalized
- Assumptions:
 - Planning focused on potential for more severe pandemic
 - Pandemic likely to be recognized overseas first prior to arrival in NYC

NYC Timeline

April 21: CDC MMWR on CA/TX H1N1 cases

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- April 24: 1st confirmation that H1N1 in Mexico
Increasing # cases at school outbreak
DOH team sent to obtain NP swabs

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- April 25: NYC PH Lab identifies non-subtypeable flu A
NYC DOH Incident Command System activated
- April 26: CDC confirms novel H1N1
NYC press conference with Mayor and COH

Apr 27, 2009 6:01 am US/Eastern



CONFIRMED: Swine Flu Outbreak At Queens School

Department Of Health Tests Students At St. Francis Prep In Queens, Examine Travel Histories



Reporting
Dave Carlin

QUEENS (CBS) — Mayor Bloomberg announced in a news conference Sunday morning that the Centers for Disease Control confirmed cases of swine flu in a Queens school.

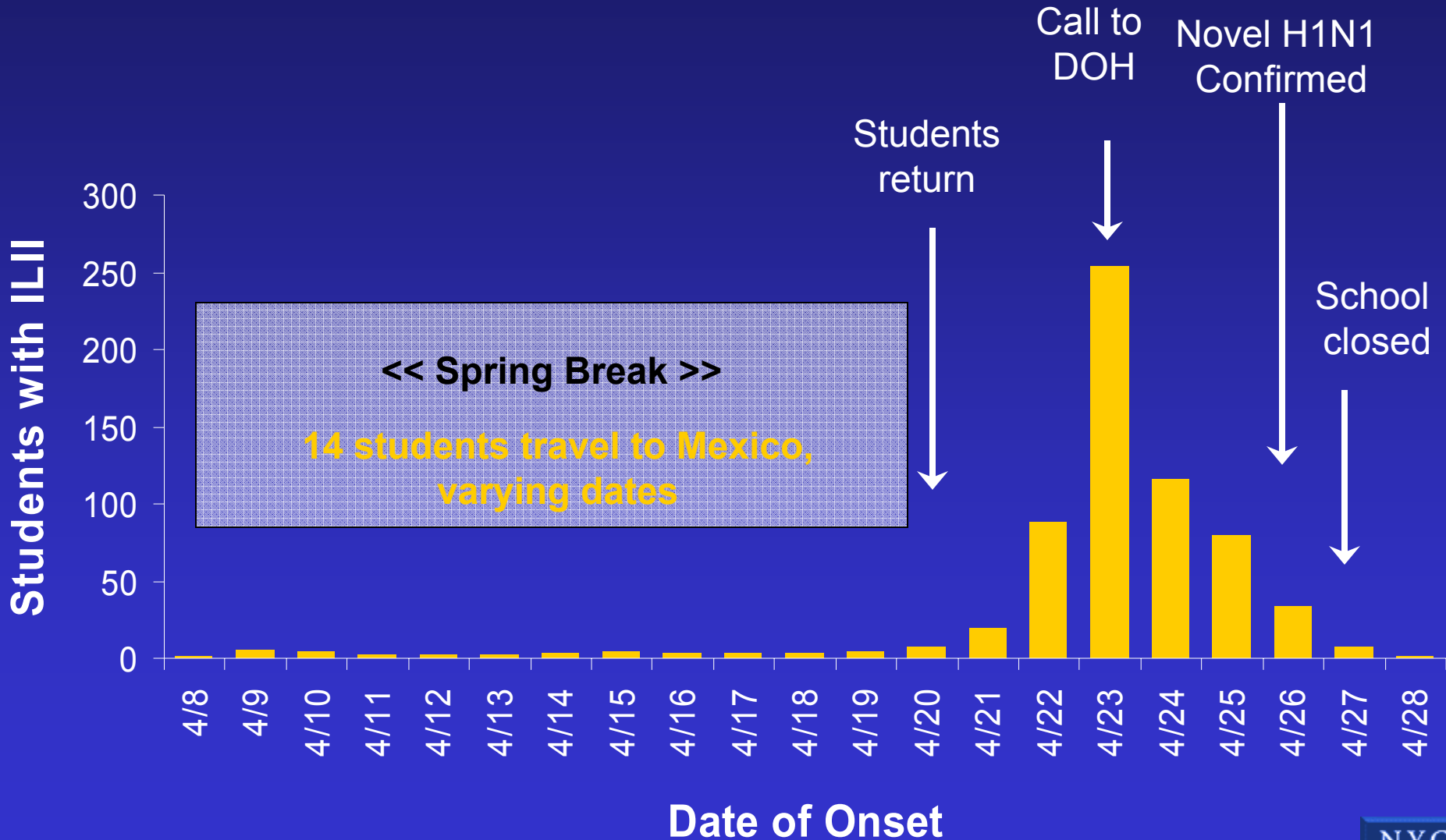
The mayor said St. Francis Preparatory School will be closed on Monday, and asked students, faculty and staff at the school who are feeling flu-like symptoms to stay home for at least 48 hours.



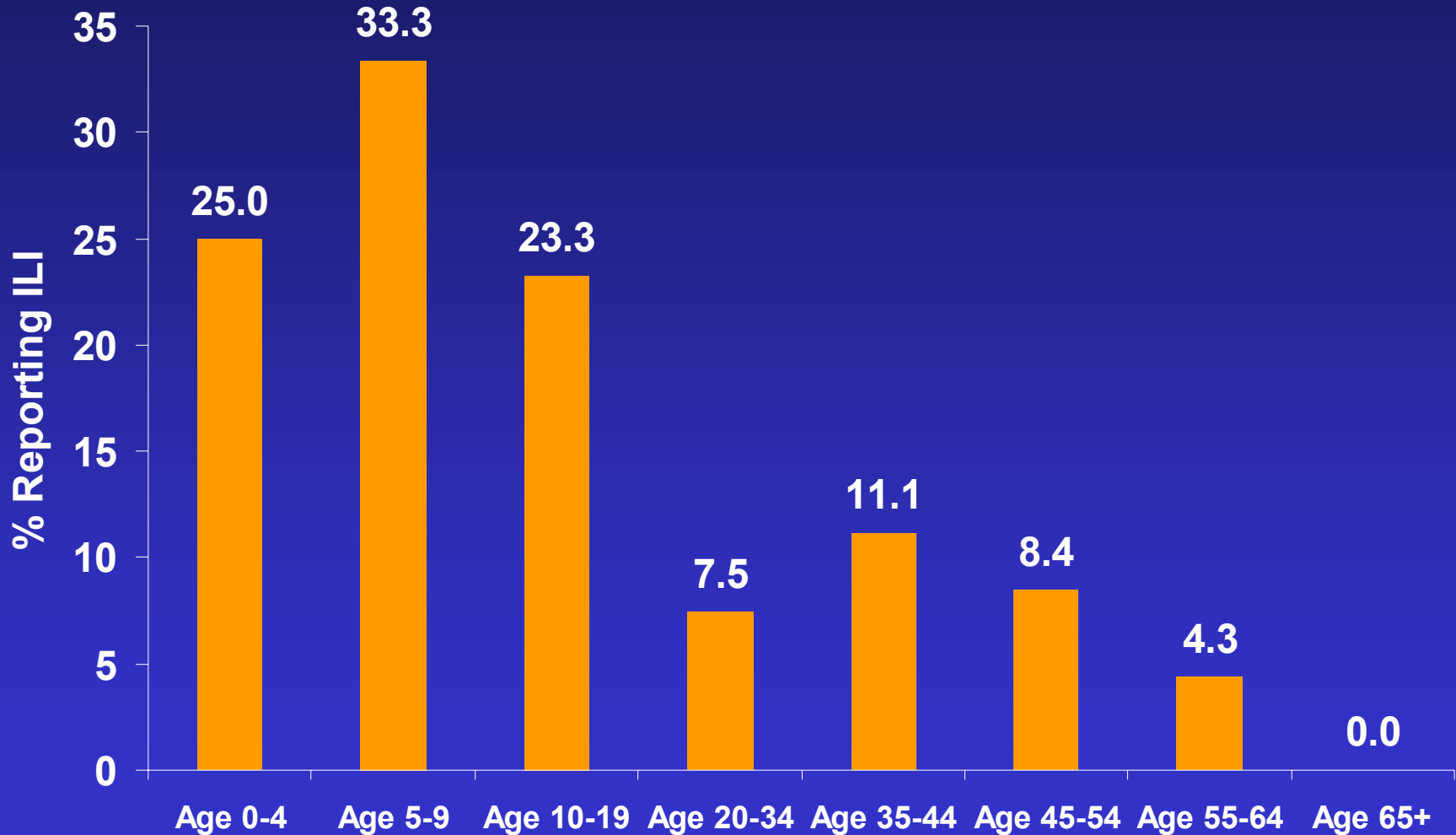
Response at St. Francis Prep

- School closed for one week (April 27 – May 3)
- 14 students/1 staff reported travel to Mexico during spring recess (April 8–19)
 - 5 reported ILI (Onset 4/20-3)
- Novel H1N1 confirmed in 124 students/staff
 - No severe hospitalized or fatal cases
- NYC DOH conducted two on-line surveys
 - Student (N~2700): Attack rate: 35%
 - Faculty/staff (N~300): Attack rate: 10%
- Household transmission : 2^o attack rate of 11.3%

Epidemic Curve



Attack Rates in Household Members by Age St. Francis Prep Outbreak



Initial Key Public Health Questions given Emergence of New Virus

- Transmissibility – how widespread is it?
 - In school(s)
 - In community
 - In healthcare and other congregate settings
- Virulence – how severe is it?
 - By age and risk group (new virus, many without immunity)
 - ? Changing over time

Spring 2009 H1N1 Outbreak NYC Surveillance Goals

- Monitor trajectory of outbreak
 - Trends in mild, severe and fatal H1N1 cases
 - Estimate infection, hospital and case fatality rates
- Describe epidemiology of severe cases
 - Underlying risk conditions
 - Clinical spectrum of severe illness
- Monitor influenza subtypes circulating in city
- Detect nosocomial or institutional clusters

Surveillance for Severe H1N1

April 25 – May 8

- Surveillance for hospitalized/fatal cases
 - Case definition: Hospitalized/fatal case with fever & resp. syndrome (pneumonia, ARDS or respiratory distress)
 - Methods:
 - Active ICU surveillance (57 hospitals)
 - Enhanced passive surveillance outside ICU
 - Medical examiner/death certificate review
- NYC DOH actively triaged all reports, and if met criteria arranged transport of specimens to PH Lab

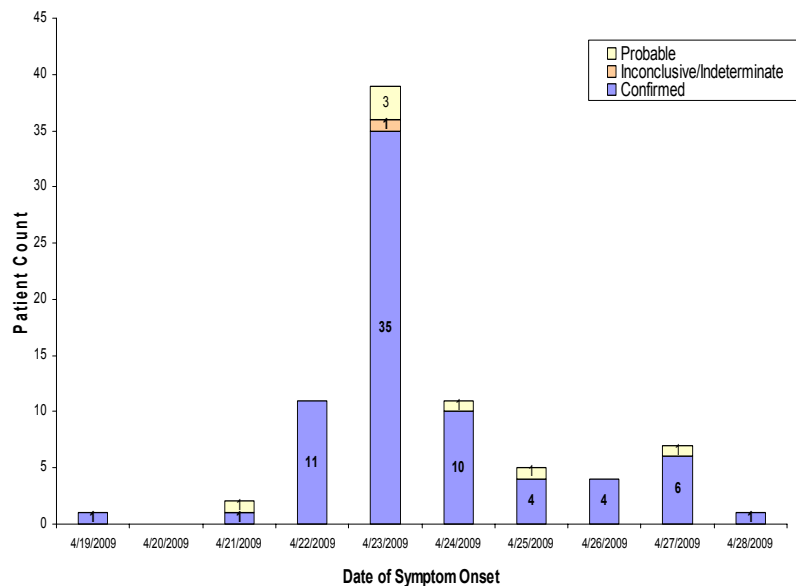
Initial Surveillance Findings

April 24 – May 7

EpiCurve of Swine-Origin Influenza A (H1N1) Virus (S-OIV) Cases

Source: Patient Interview Form; n=81 completed interviews

Prepared 5/5/2009 @3:00pm

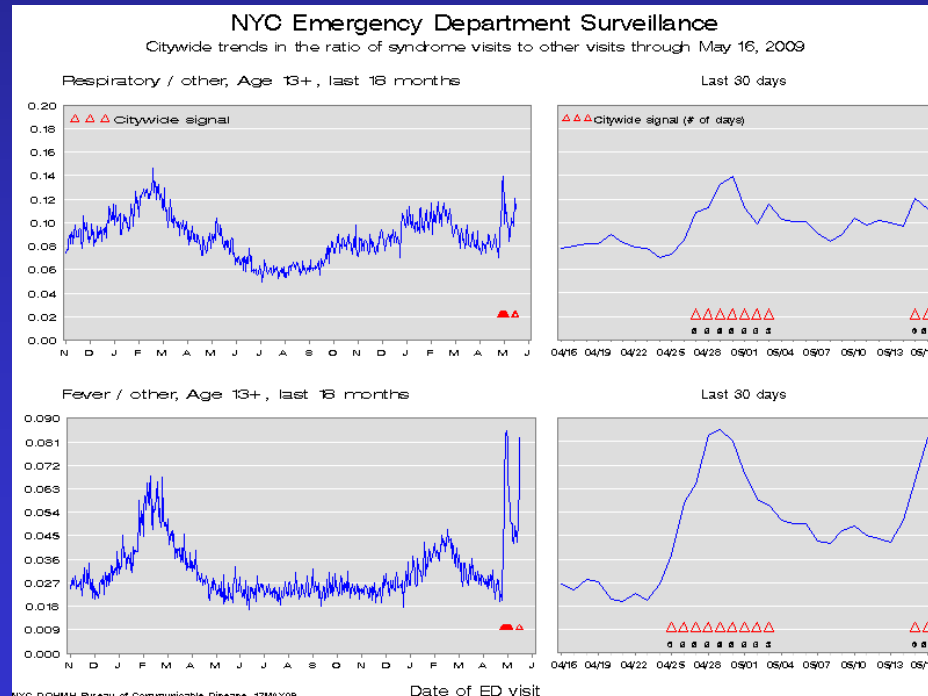


- 161 confirmed/probable cases
- Epi associations
 - St Francis: 135
 - PS 177: 7
 - Mexico: 2
 - **No links: 10**
 - Under investig: 7
- 10 hospitalized (mostly mild) and no deaths

Mid-May 2009

Swine Flu NYC – Part 2 begins

- Syndromic surveillance indicates increasing community wide transmission
- Increasing number of school-based outbreaks
- Cases begin to be identified at Rikers Island



NYC Swine Flu Part 2

Core Elements of DOH Response

- Public health goal: Prevent severe illness from influenza
 - Early Rx for those with underlying risk
 - Prophylaxis of those with underlying risk who have close contact with ILI case
- NOT interruption of community transmission

Modified H1N1 Surveillance Response

May 8 – July 8

- Surveillance for hospitalized/fatal cases
 - Modified Case definition: **Only test non-ICU cases if initial influenza A testing (+) at hospital**
 - Methods: **Stopped active ICU and lab surveillance**
 - Enhanced passive surveillance outside ICU
 - Medical examiner/death certificate review
- Continued to actively triage all reports, and if met criteria arrange transport of specimens to PH Lab

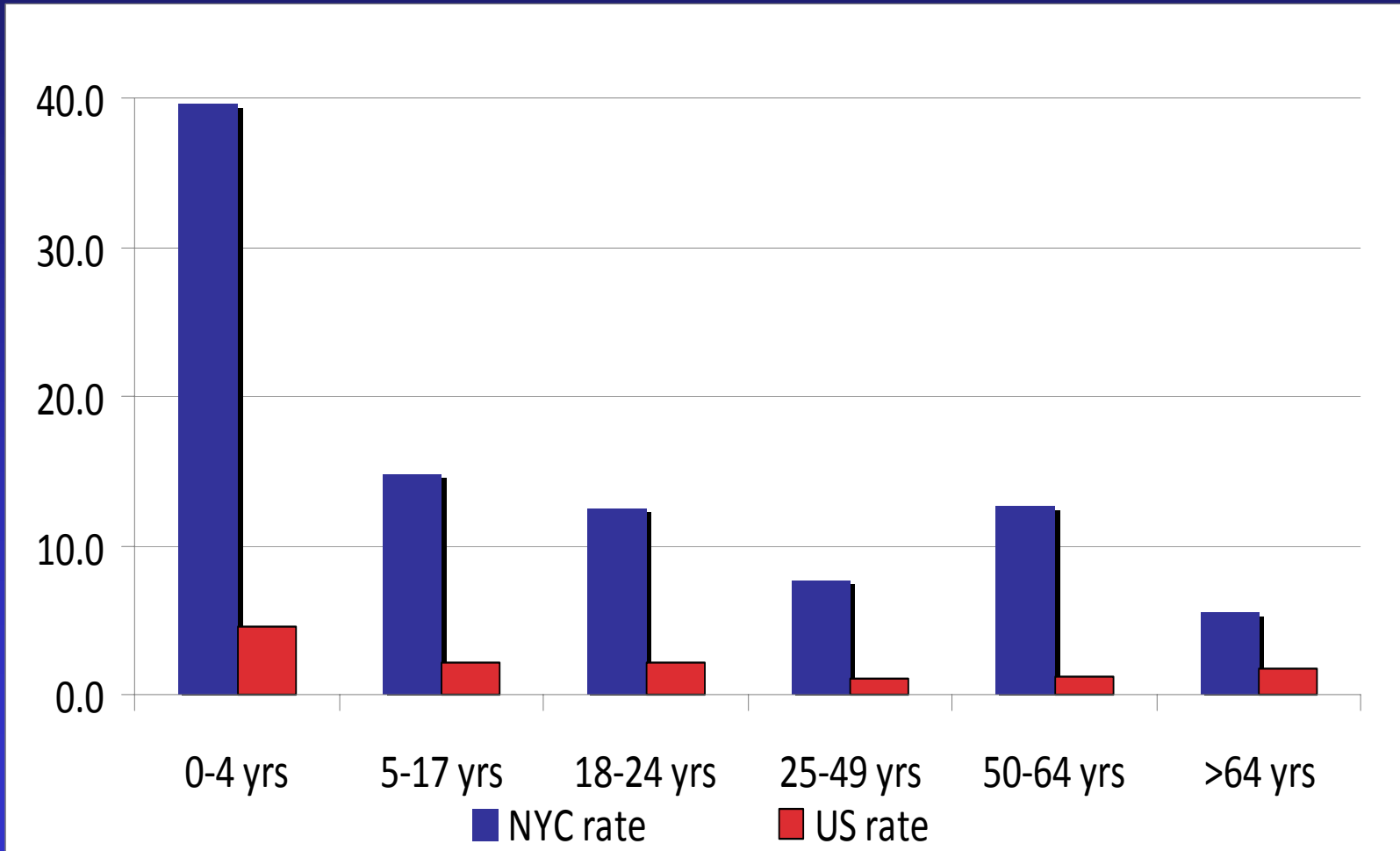
Other NYC H1N1 Surveillance Systems

- Enhanced passive surveillance for any ILI clusters in institutional settings (e.g., healthcare, school, shelter)
- Electronic laboratory surveillance for flu A
- Syndromic surveillance
 - Emergency Department Chief Complaint
 - Primary care visits
 - School health RN visit and absenteeism
 - Pharmacy: Oseltamivir and other antiviral med sales
- Population based surveys to assess citywide ILI prevalence

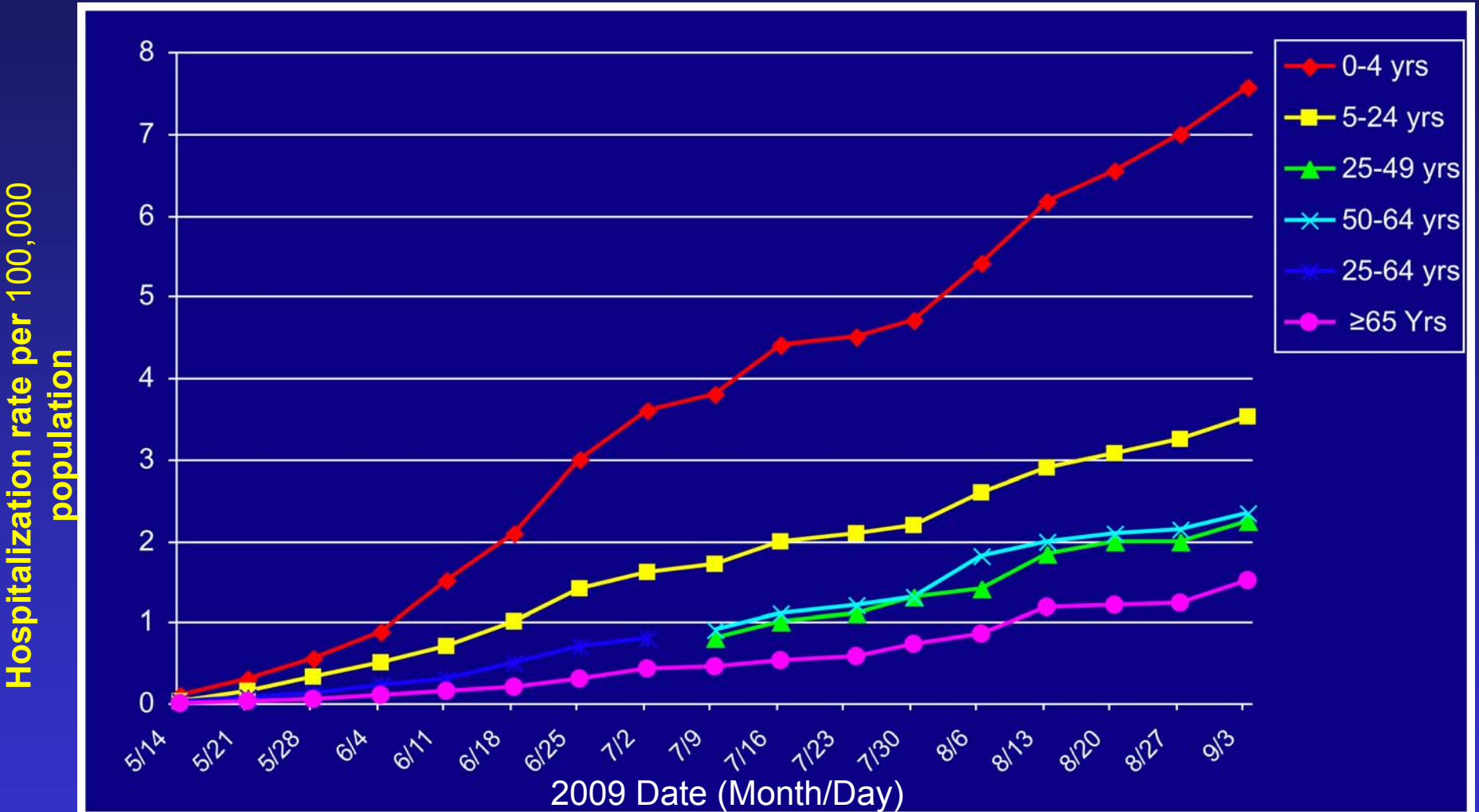
Severe H1N1 Surveillance Findings (April 25 - July 8, 2009)

- Triaged > 2,600 reports – 1,317 total confirmed cases
- 909 confirmed hospitalized cases – Median age 21 yr
 - 0-4 years: 208 (23%)
 - 5-17 yrs: 185 (20%)
 - 18-24 yrs: 93 (10%)
 - 25-64 yrs: 373 (41%)
 - > 65 yrs: 27 (5%)
- Severity by ICU stay (25%),ventilator status (14%) and deaths (n=47)
- 4% of all hospitalized flu A cases tested (+) for seasonal influenza (H3N2)

Rates of Hospitalization for Confirmed or Probable Novel H1N1, NYC Spring, 2009



Cumulative Hospitalization Rates per 100,000 US population from State Aggregate Data



*Hospitalizations with unknown ages are not included

*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>

Severe H1N1 Surveillance

Underlying Risk Conditions

- 76% with at least one established risk condition for more severe flu outcomes
 - Asthma/chronic lung disease 30%
 - Pregnancy (in reproductive age F) 16%
 - Age < 2 years 14%
 - Diabetes 13%
 - Cardiac disease 12%
 - Chronic respiratory disease 11%
 - Immunosuppression (including HIV) 9%

Underlying Medical Conditions, Hospitalized Cases of Confirmed and Probable Novel H1N1 Influenza NYC, Spring 2009

Underlying Condition	Age Group	
	<18 yrs	Adult
Asthma	15%	28%
Chronic Lung Disease	4%	12%
Diabetes	1%	12%
Heart Disease	2%	11%
Immunosuppression/HIV	3%	10%
Neurologic	4%	5
Obesity	3%	9%
None	20%	20%

•Conditions listed above are not mutually exclusive.\

Severity of Illness, Confirmed and Probable Novel H1N1 Influenza, Hospitalized Cases NYC, Spring 2009

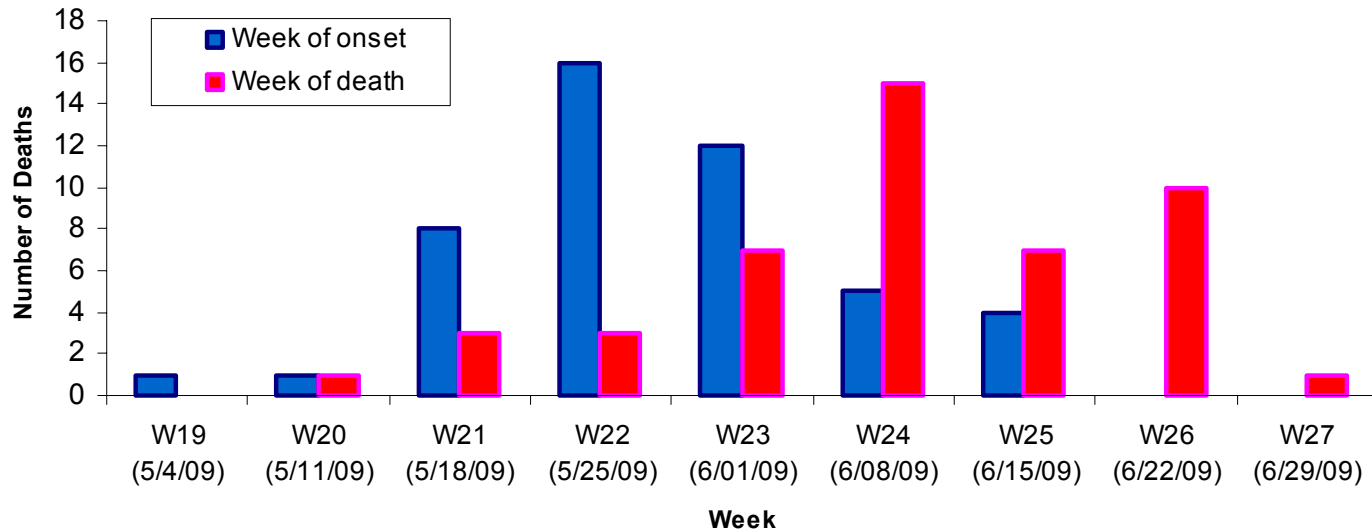
	Age Group			
	0-4 yrs	5-12 yrs	13-17 yrs	>17 yrs
Hospitalized patients	224	135	62	996
ICU admission	38 (13%)	36 (13%)	12 (4%)	237 (24%)
Required mechanical ventilation	14 (5%)	11 (4%)	3 (1%)	131 (13%)

Fatal H1N1 Surveillance As of July 7, 2009 (n=47)

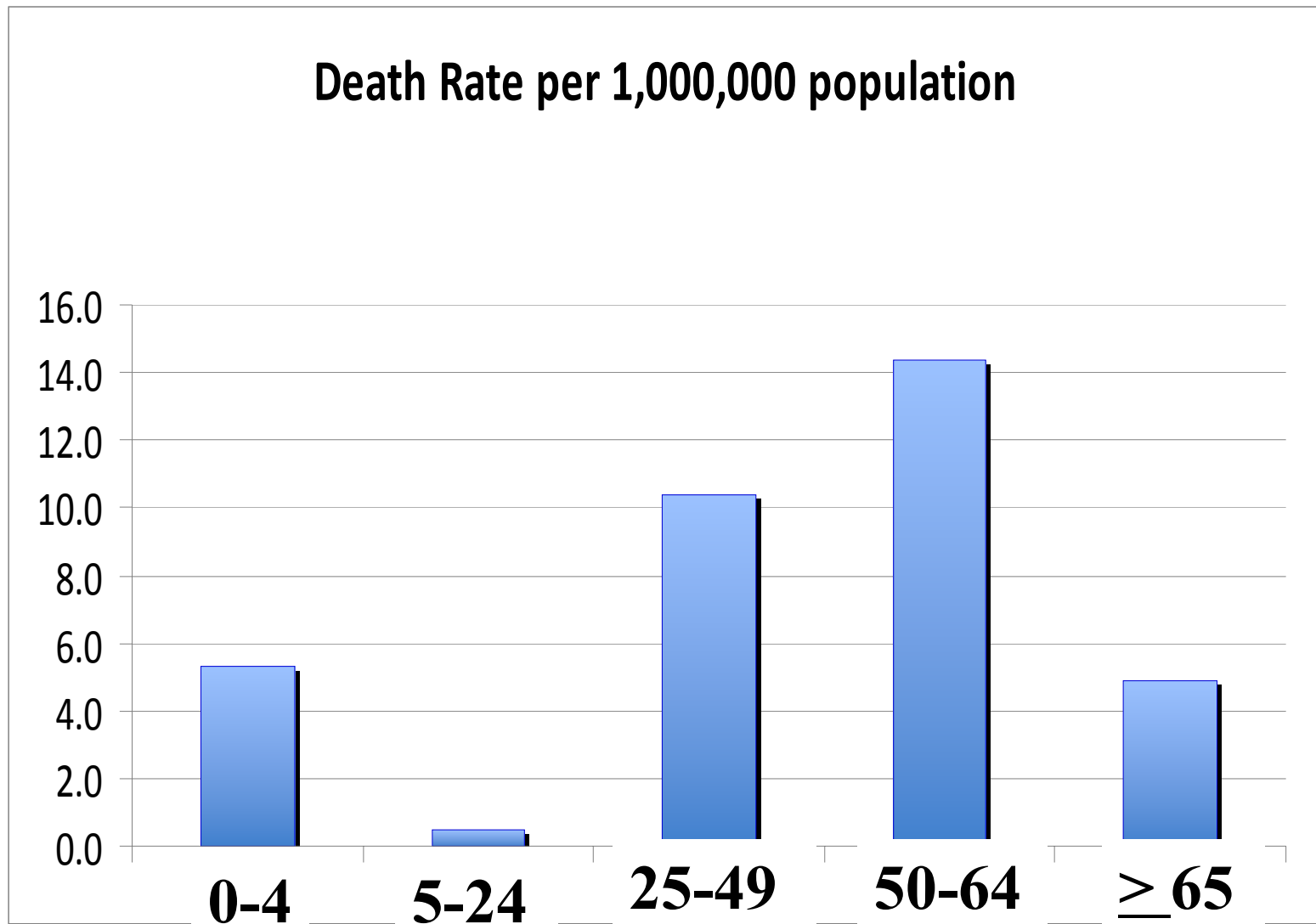
- 45 (96%) fatal cases < 65 years
 - Median age: 43 years
 - Age range: 7 weeks – 82 years
- 89% had underlying risk condition
 - Chronic pulmonary disease 38%
 - Diabetes 32%
 - Immunosuppressive disease 28%

Week of Onset vs Deaths for Fatal Cases of H1N1

Week of onset and death for fatal pandemic H1N1 influenza cases, New York City, May-July 2009 (n=47)

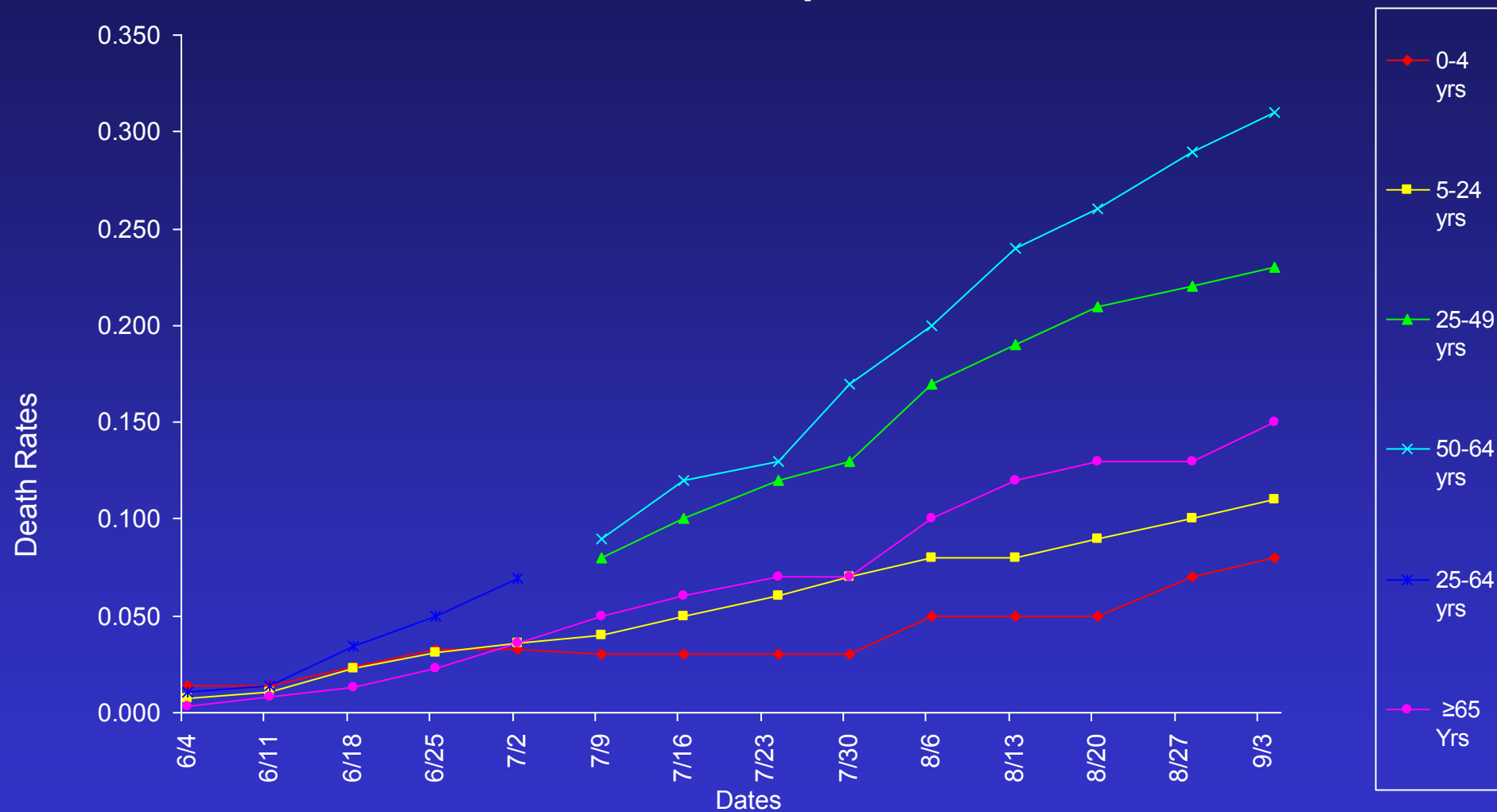


Rates of Death due to Confirmed or Probable Novel H1N1, Spring 2009, NYC



Cumulative Death Rates per 100,000 US population from State Aggregate Data by Age Group

2009-H1N1 – June 4 to September 3, 2009



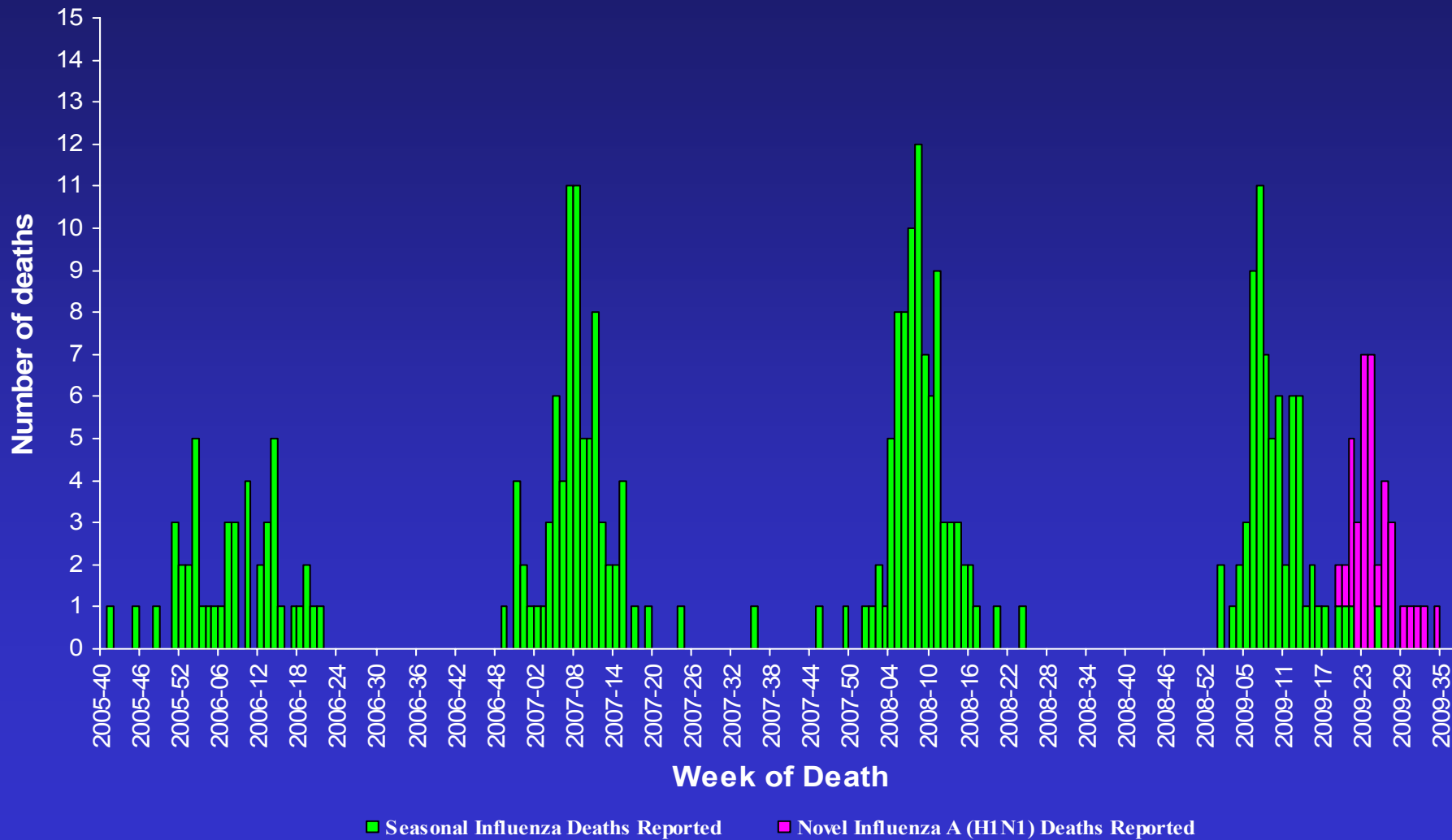
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Influenza Associated Pediatric Mortality in US

Number of Influenza-Associated Pediatric Deaths by Week of Death 2005-06 season to September 4, 2009



Underlying Medical Conditions, Confirmed Deaths Novel H1N1 Influenza Spring 2009

	NYC (all ages, N=47)	US (age < 18 yrs, N=36)
Obesity	58%*	N/A
Asthma, COPD and/or other chronic lung disease	38%	28%
Diabetes	32%	6%
Immunosuppression	28%	6%
Heart disease	15%	8%
Neuromuscular or Cognitive	4-10%	61%
NONE	11%	33%

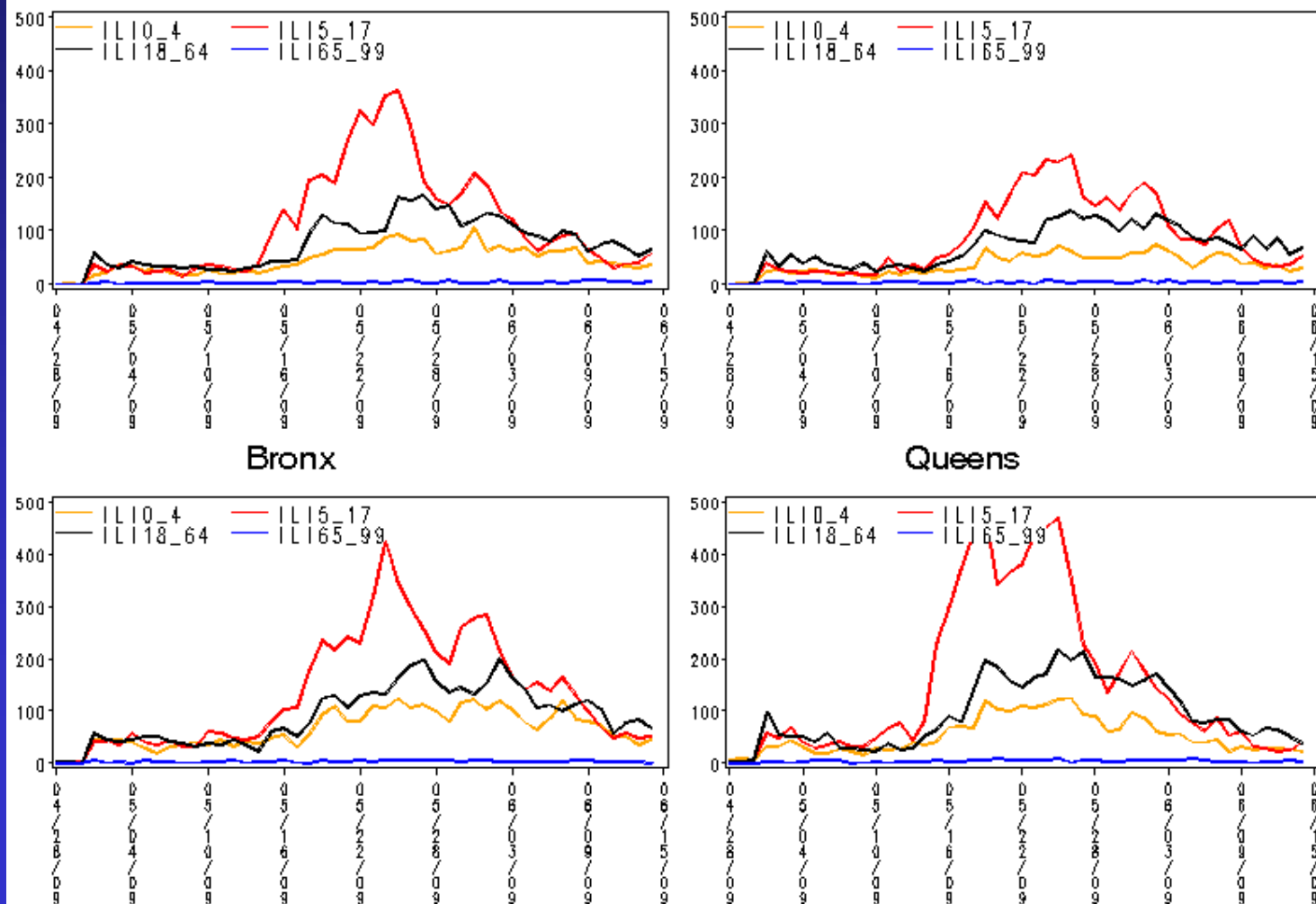
- Among obese, 60% were morbidly obese. An additional 16% were overweight.
- Conditions listed above are not mutually exclusive.
- Data are preliminary, as of 9/10/09

Pediatric Deaths due to H1N1

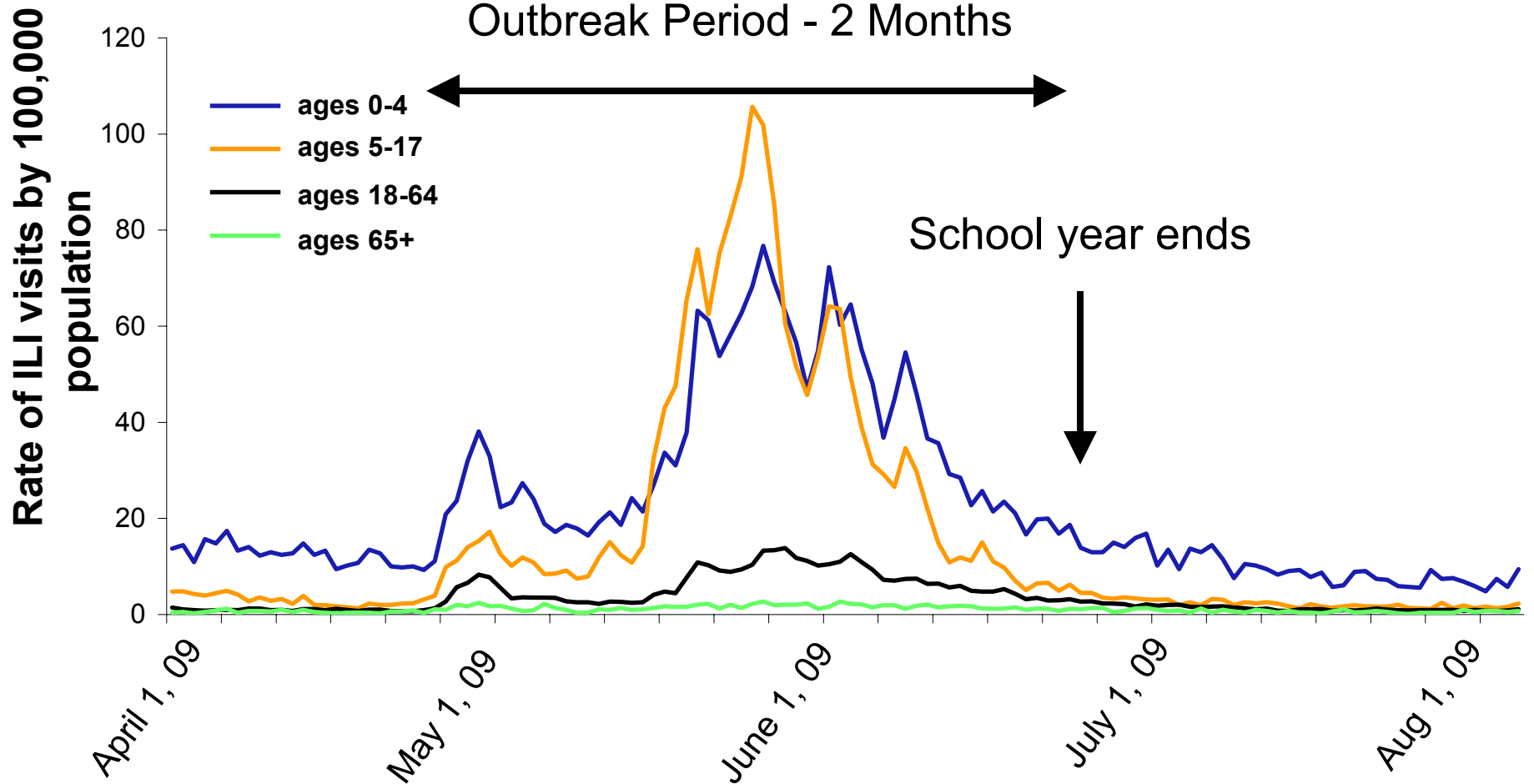
- MMWR – US case series, 36 deaths
 - 10 (19%) < 5 yrs
 - 7 (14%) < 2 yrs
- 43% had bacterial infection
 - More common among children > 5 with no risk factors
 - *S. pneumo*, *S. aureus* (MRSA), GAS
- Only 13% received antivirals within 2 days after admission to the hospital

ED Syndromic Surveillance for ILI (n = 50 hospitals; 95% NYC ED visits)

NYC ED ILI Surveillance through 06142009 by Borough

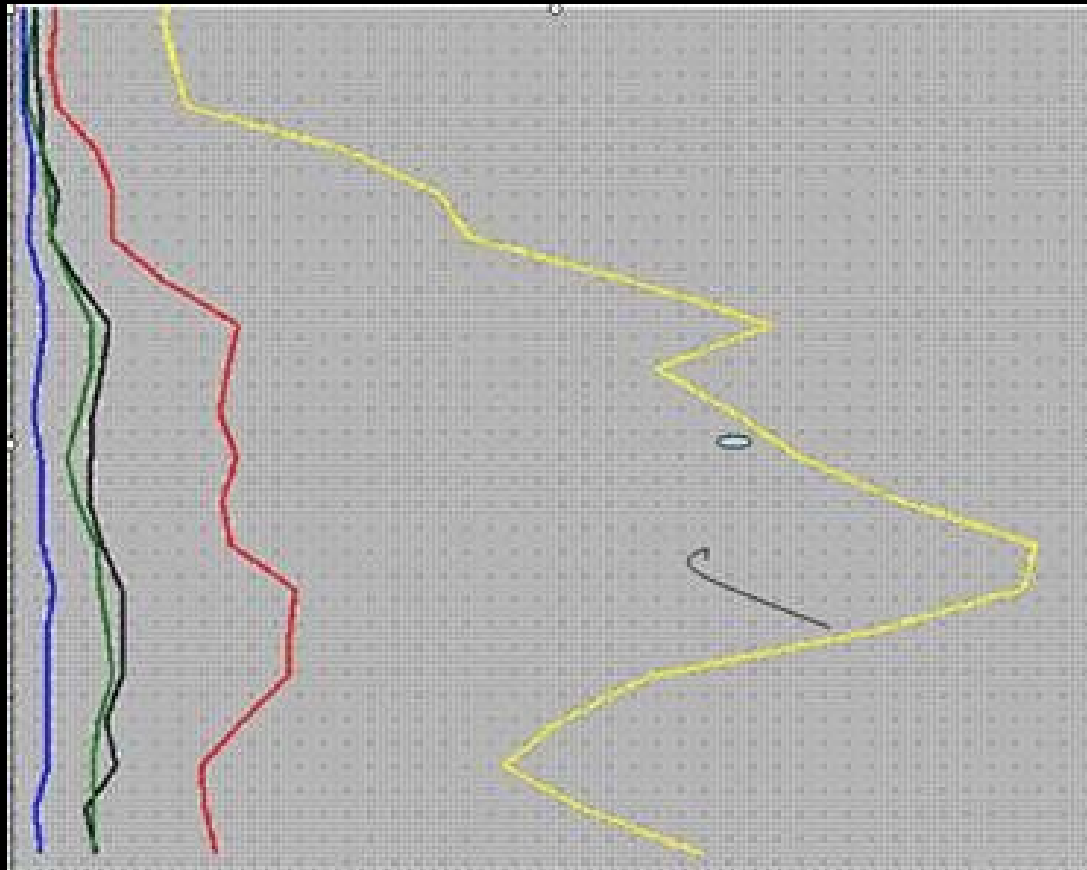


Rates of ILI Visits to NYC Emergency Depts by Agegroup



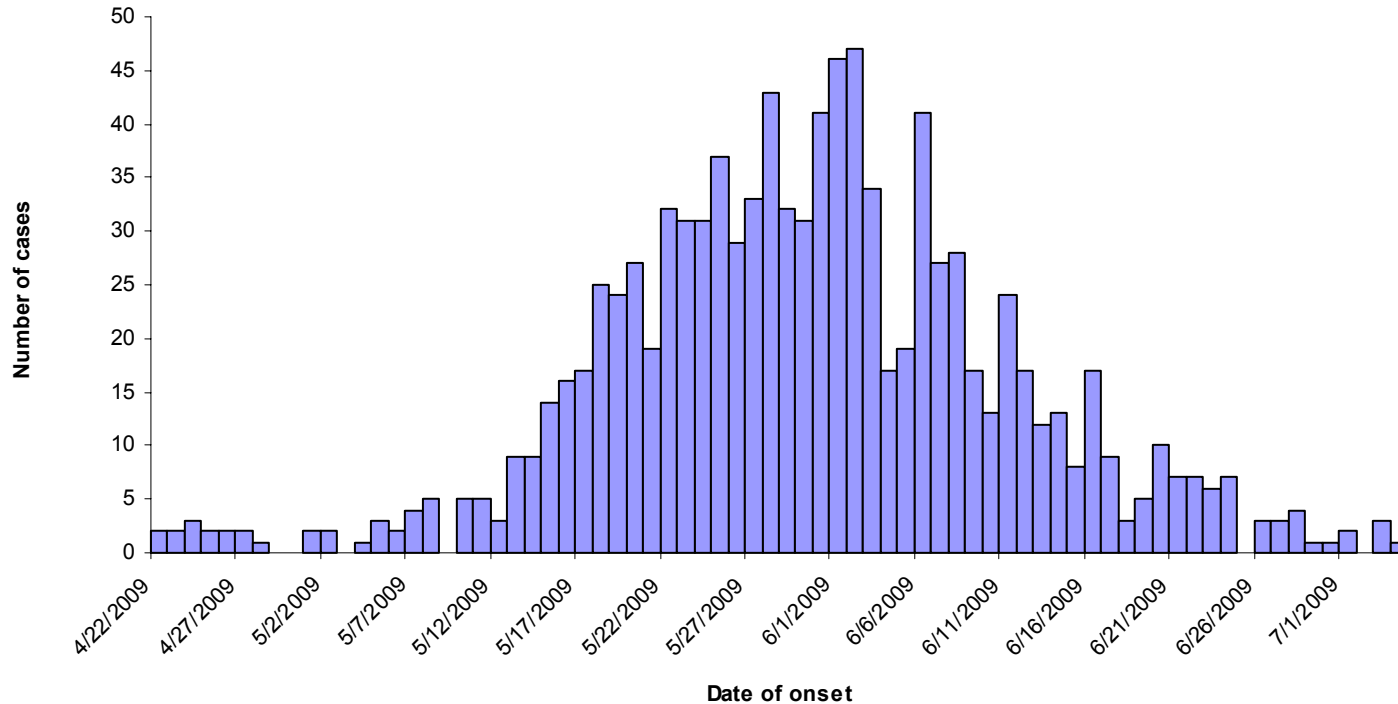
Event Specific Syndromic Analysis

Further analysis utilizing the seldom-invoked
90-degree rotation rule



Epi Curve for Hospitalized Cases

Date of onset among hospitalized patients with confirmed or probable H1N1 influenza A,
New York City, Spring 2009



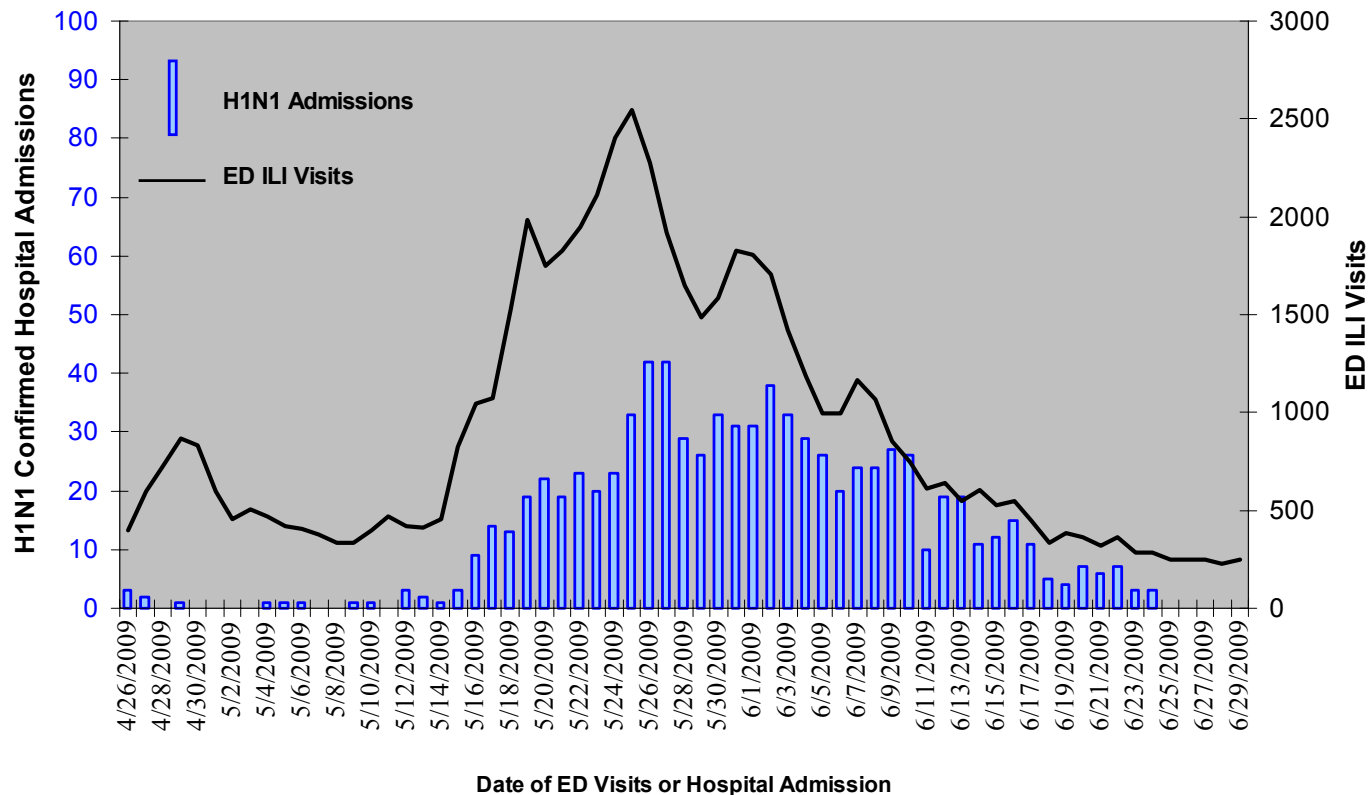
Source: Surveillance data as of August 25th, 2009

98 patients with confirmed H1N1 were missing onset date; 16 patients with probable H1N1 were missing onset date.

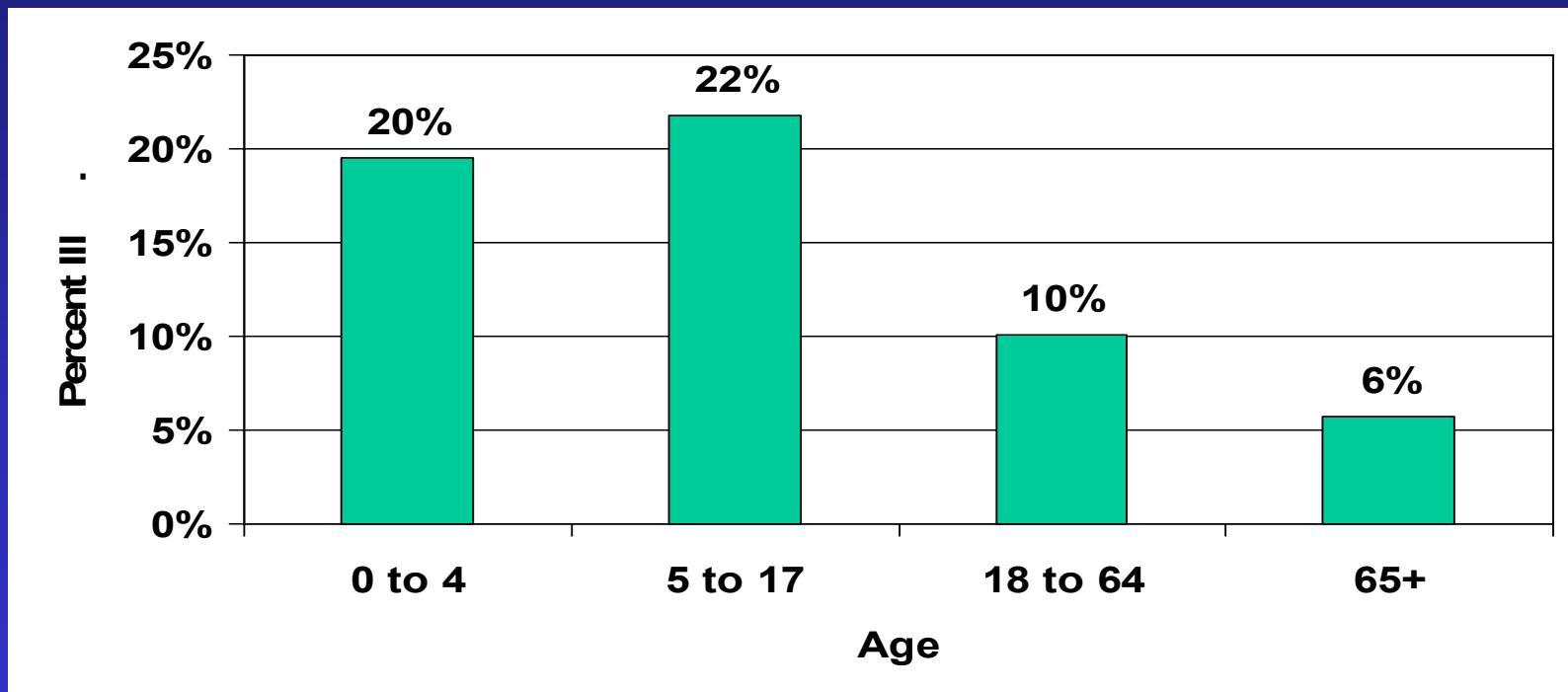
1 person with an onset date prior to April 24, 2009 was omitted from the dataset.

Emergency Department ILI Visits vs Hospital Admissions

Laboratory Confirmed H1N1 Hospital Admissions and Emergency Department (ED) Visits for Influenza-like Illness (ILI) in NYC
April 26 - June 29, 2009



12% of New Yorkers Reported Flu-Like Illness in May - June 2009



Illness by self report in telephone survey of 961 households, conducted June 15-20, 2009

Medical Community Outreach

- Frequent Health Alerts (n=12)
- Guidance documents (e.g., antiviral use, infection control, home care, algorithms for ED/clinics)
- Conference calls with hospitals, private providers, community health clinics, & mental health agencies
- Provider Access Line (PAL) open 7 days/week
- Surveys of healthcare capacity, needs and antiviral supplies

Medical Community Outreach



THE CITY OF NEW YORK

DEPARTMENT OF HEALTH AND MENTAL HYGIENE

Michael R. Bloomberg
Mayor

Thomas R. Frieden, M.D., M.P.H.
Commissioner

nyc.gov/health

2009 New York City Department of Health and Mental Hygiene Health Alert #20: Novel H1N1 Influenza Update May 24, 2009

Please distribute to staff in the Departments of Critical Care, Emergency Medicine, Family Practice, Geriatrics, Internal Medicine, Infectious Disease, Infection Control, Pediatrics, Pharmacy, Neonatal Units, Obstetrics and Gynecology, Pulmonary Medicine and Laboratory Medicine

Novel H1N1 influenza is now widespread in New York City. As expected, since there are more persons infected, hospitalized and critically ill cases are also increasing. Patients presenting with influenza-like illness in New York City health care facilities at this time can be presumed to have novel H1N1 infection, as we are seeing very little seasonal influenza A H3N2. Because it is not possible to prevent community transmission of influenza and mild illness at this time, the Health Department is focusing its efforts on reducing and preventing severe outcomes due to infection with novel H1N1 influenza.

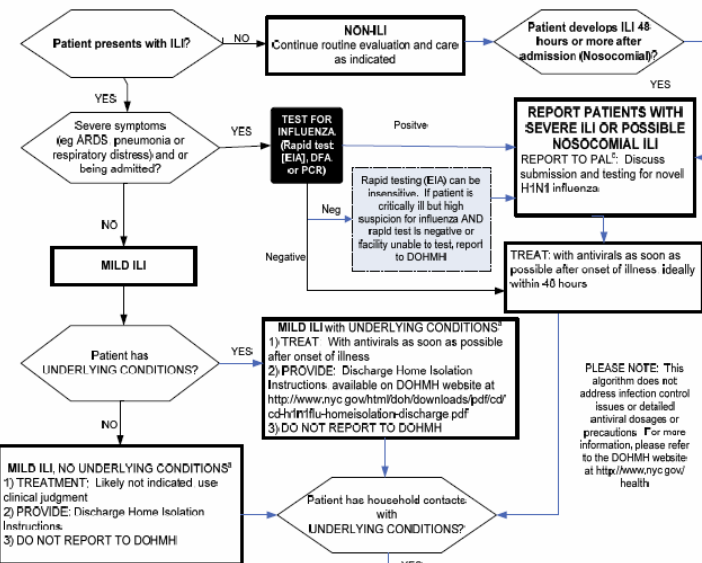
Dear Colleague,

In the context of the novel H1N1 influenza outbreak in New York City, the Health Department has developed the attached one page algorithms to assist providers in emergency department and outpatient settings with managing patients with influenza-like illness or severe acute febrile respiratory illness. We hope they are useful for you. Please see our website at www.nyc.gov/health for detailed and frequently updated information on the epidemiology of the outbreak, as well as guidance on reporting, testing, infection control and clinical management of suspected cases of novel H1N1 influenza, including treatment

Health Alerts (n=12)

Clinical Algorithms

Influenza-like Illness (ILI) = Fever (> 100.4°F or 38°C) AND cough or sore throat



***ANTIVIRAL PROPHYLAXIS DECISIONS:**
Antiviral prophylaxis should be considered for:
1) HOUSEHOLD OR OTHER CLOSE CONTACTS with underlying conditions OR;
2) HEALTH CARE WORKERS WITH BREACH OF PPE OR HOUSEHOLD OR OTHER CLOSE CONTACT to person with ILI during their infectious period should refer to their facility for guidance

***UNDERLYING CONDITIONS INCREASING RISK FOR COMPLICATIONS FROM INFLUENZA**
Age > 65 years
Age < 2 years
Chronic pulmonary disease, such as asthma and COPD
Chronic cardiovascular, renal, and hepatic disease
Hematologic disease, such as sickle cell anemia
Metabolic disorders, such as diabetes
Immunosuppression, including HIV-related or caused by medication
Compromised respiratory function, and conditions which increase risk for complications

Healthcare Issues

- Some ED/clinics saw ~ 200% increase in # patients
 - Many needed to implement their mass screening and isolation protocols (“Flu Clinics”)
 - Set up telephone triage systems
- Challenges in decompressing ED visits
 - Inability to see primary care providers
 - Access to care or ability to afford antivirals
 - Misperceptions re need for testing or MD note to return to school or work
- Antiviral supply issues

Public Messaging



- Main communication messages
 - Early Rx/proph. for those at highest risk (“saving lives”)
 - Stay at home if mildly ill (Call MD for Rx)
 - Respiratory and hand hygiene
- Challenges
 - Little initial data on H1N1 severity/transmission factors
 - Discouraging ED visits for mild illness
 - School closure issues (City policy and timely notification)
 - Balancing message re “mild virus” but extraordinary public health recommendations

CDC Weekly Influenza Activity Report

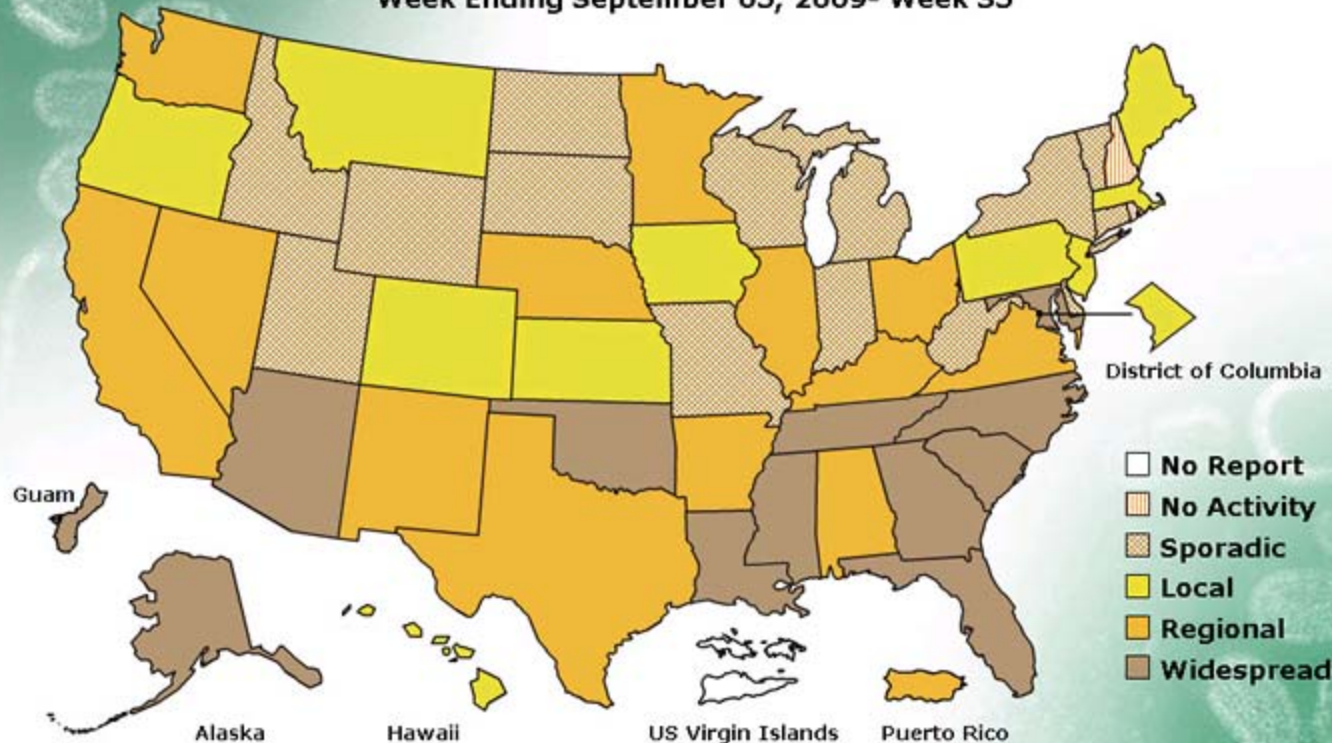
Sept 5, 2009

FLUVIEW



A Weekly Influenza Surveillance Report Prepared by the Influenza Division
Weekly Influenza Activity Estimates Reported by State and Territorial Epidemiologists*

Week Ending September 05, 2009- Week 35



*This map indicates geographic spread and does not measure the severity of influenza activity.

H1N1 Fall Pan Flu Policy Workgroup

(Focused on High-Level Policy with COH Oversight and OEM representation)

Isaac Weisfuse, MD
Task Force Leader

Joint DOHMH/OEM Project Management
Group

Internal DOHMH Goals

DOHMH Incident Command
(staff tracking, policy review)

Surveillance and Laboratory policies/methods
(fall sustainable surveillance strategy, lab surge capacity)

DOHMH COOP and Administrative Support
(leave policies, resource management)

Antiviral Access
(supply chain breakdown/spot shortage planning, address inability to pay)

DOHMH-led Citywide Workgroups Coordinated Jointly w/ OEM

Healthcare surge capability
(medical surge capacity, ESF-8 planning cell, healthcare access)

H1N1 Vaccination Efforts
(distribution to priority groups, school-based efforts, PODs, safety/effectiveness)

Educational Issues
(school closure policy and logistical implications, school surveillance, daycare settings)
**NOTE: Many of these deliverables are due prior to the beginning of the school year. **

Infection control guidance
(risk classification, infection/exposure control guidance for occupational, community and other settings)

Congregate Settings Guidance (e.g. jails, shelters, group homes)
(medical protocols, worker protection, PPE distribution)

Public information flow, community outreach and interagency communication.
(media advisories, message development, joint information center, outreach protocols)

OEM-Led Projects with DOHMH SME Support

Workplace Sick Leave Policies
(incident-specific policies)

Agency Continuity of Operations
(supplementary PI COOP survey, essential services support)

Critical Infrastructure/
Private Sector Outreach and Communication
(strengthen existing program to engage CI sectors on targeted planning)

Critical Resources
(unified logistics centers, identify needed resources, coordinate purchasing and staging)

Disaster Assistance and Human Services Support
(Disaster Assistance Center, Advanced Warning System membership, targeted information)

Joint Structure

Planning for fall and beyond

- Sustainable surveillance strategies to address main data needs to guide public health response
- Addressing healthcare access challenges
- Ensure availability of antivirals to those who need them
- Vaccination campaigns (H1N1/seasonal)
- Re-assess approach to school closures
- Monitoring for changes in virulence and resistance
- Public and provider communications

Influenza Assumptions

Fall/Winter 2009 – 2010

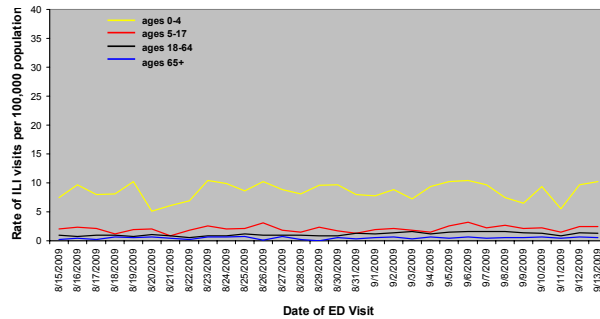
- Both seasonal influenza and H1N1 will circulate, may overlap
- H1N1 unlikely to cause high rates of severe illness
 - Virus has not changed since spring
- Number of people ill cannot be predicted
- Date of first cases cannot be predicted – but likely to be early in season
- Other viruses likely to circulate and cause ILI (esp. RSV)

Surveillance Plans for 2009–10

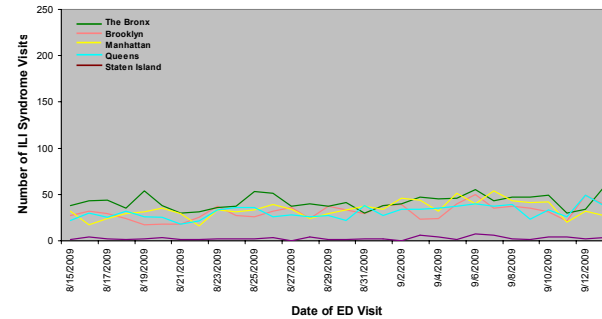
- Objectives
 - Track citywide trends in mild & severe influenza illness
 - Laboratory surveillance to monitor circulating strains
 - Monitor for changes in clinical or epi characteristics
- Methods
 - Emergency department visits and primary-care visits for influenza-like illness (“syndromic surveillance”)
 - Monthly phone surveys to gauge ILI in community
 - Sentinel hospitals and primary care networks to monitor circulating strains and epi characteristics
 - Mortality surveillance via Vital Records and OCME
- Post weekly updates on www.nyc.gov/flu

Weekly Surveillance Updates at www.nyc.gov/flu

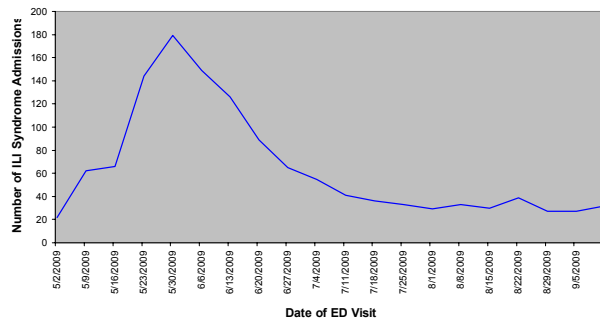
Rate of Influenza-like Illness (ILI) Syndrome Visits to NYC Emergency Departments, by Age Group
August 14, 2009 - September 13, 2009



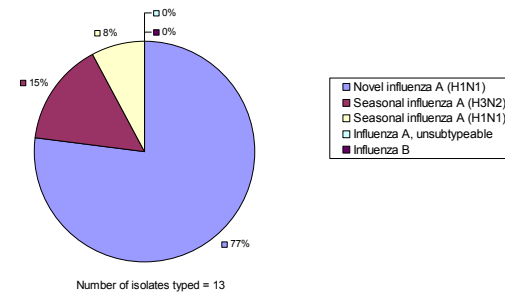
Daily Number of Visits for Influenza-like Illness (ILI) syndrome to NYC Emergency Departments by Borough
August 14, 2009 - September 13, 2009



Weekly Number of Influenza-Like Illness Hospital Admissions at NYC Emergency Departments, All Ages
May 2009 - September 2009



Current Influenza Viral Subtypes Identified by the NYC Public Health Laboratory
August 12 to September 8, 2009



Limiting Health Care Surge

- Public messages
 - Medical visits not needed for mildly ill, doctor notes
 - Health Bulletin, subway ads, radio spots
- Planning for “medical call center” with nurse advice line
- Alternate treatment sites
 - Community health centers
 - HHC flu centers
- Hospital surge plans
 - ED expansion plans -- designated space for patients with influenza
 - Designated hospital outpatient clinics
 - Signs outside emergency departments directing patients

Where Can People Go?

- DOHMH Flu Information at www.nyc.gov/flu
- Search will be available for:
 - Sites offering seasonal vaccine
 - Sites offering H1N1 vaccine
 - Locations of antivirals in the event of shortage in commercial supply
- Searchable by borough and zip code

Clinical Features of Novel H1N1

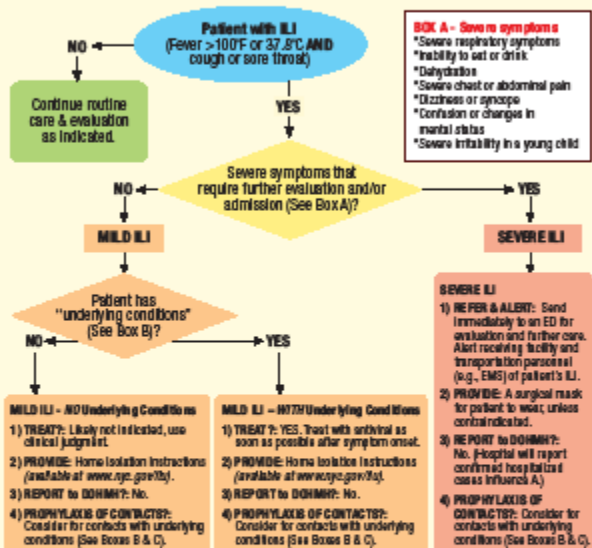
- Mild Illness
 - Symptoms similar to seasonal influenza
 - Slightly more GI symptoms
 - Fever may be absent
- Severe illness
 - Primary viral pneumonitis
 - ARDS
 - Superinfection with *S. pneumo*, MRSA, GAS
- Pathology – lower airway involvement

Management of ILI

Influenza-Like Illness (ILI) Treatment and Prophylaxis Algorithm in Ambulatory Care*

*Applies only during an influenza outbreak

For the most recent updates on ILI activity in New York City, visit www.nyc.gov/flu or register with the Health Alert Network (HAN) at www.nyc.gov/healthnycmed



See reverse side for website resource list to obtain additional information.

- Mild ILI with no underlying risk should be managed at home
 - Stay home for at least 24 hours after fever resolves
 - No need to test or treat
- Mild ILI with underlying risk should get EARLY antivirals
 - Stay home
- Severe ILI should be sent to hospital ED
- Rapid influenza tests can not be relied on to help discriminate flu A cases

Summary

- High attack rate in children
 - Though most with mild illness
- Hospitalization rate highest in 0-4 but also elevated in school age children
- Relatively few severe cases among children (few deaths comparable to seasonal influenza)
- Lung disease and neurodevelopmental disease important risk factors for severe outcome

SWINE FLU PANIC TIMELINE

LAST WEEK

AHHHHHH!!!



THIS WEEK

EH...



The Swine Flew



Public Health is a Partnership

- Website portal: www.nyc.gov/flu
- Provider Access Line 1-866-NYC DOH1
- Register for our NYC Health Alert Network at www.nyc.gov/health/nycmed
- To become eligible to receive H1N1 vaccine register with the Citywide Immunization Registry (CIR) at:
 - www.nyc.gov/html/doh/html/cir/a03c.html
 - Or by calling 212-676-2323
 -