

# Use of a School Nurse Syndromic Surveillance System during the Novel Influenza A (H1N1) Outbreak in NYC

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## Automated Student Health Record (ASHR)

- NYC has a web-based electronic health record system (ASHR) in public schools
  - In use since 2005-2006 school year
  - Primary purpose is student care
- ~1,000 public schools using ASHR
  - Predominantly Kindergarten - 8<sup>th</sup> Grade
  - 700-800 schools report each day
- 8000 – 9000 school nurse visits per day

## School Nurse Syndromic Surveillance

- School nurses use ASHR to enter complaint information for walk-in visits
    - Pre-defined list of complaints
  - SAS is used to code complaints into disease syndromes
  - Temporal trends are examined by graphs and thresholds are monitored by cumulative sums (CuSum) analyses
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## School Surveillance Timeline

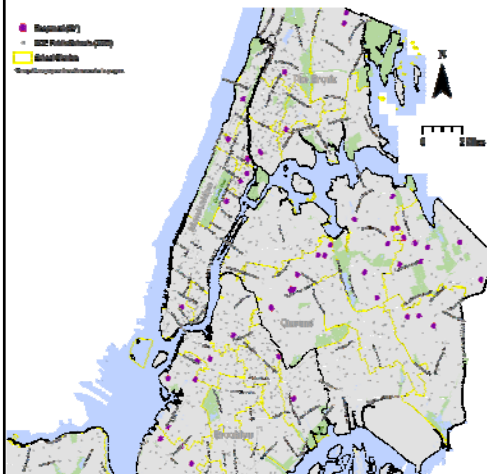
- Prior to April 2009
    - Weekly analysis monitoring citywide trends in asthma/respiratory, fever/flu, diarrhea and vomiting syndromes
    - School nurse syndromic surveillance supplemental to ED system
  - April 2009
    - Large outbreak of H1N1 in a NYC private high school
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## Public Messages



- Urgent need for individual school information
- School closure issues
  - NYC policy and timely notification

## School Closures



- School closures done to prevent transmission to those at high risk *in school community*
- Decisions based on trends in ILI visits to school nurse (sustained or sudden increase), absenteeism and special considerations

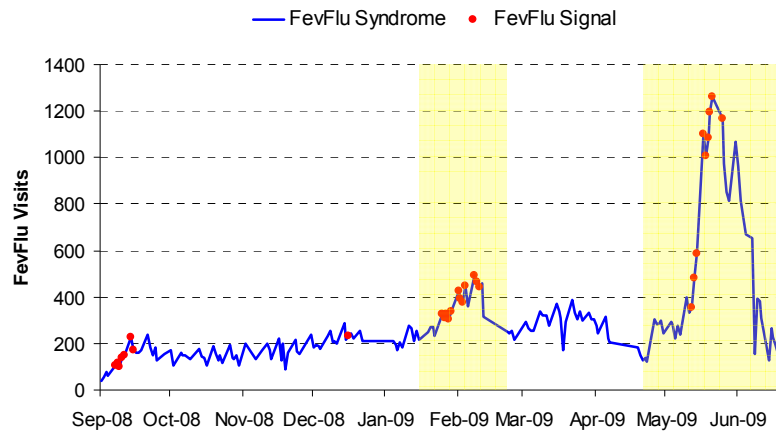
## Enhanced School Surveillance

- DOHMH instituted active surveillance to monitor ILI in NYC schools
    - ILI: temp of  $\geq 100.4^{\circ}$  F and cough or sore throat
    - Schools were requested to report, by telephone, clusters of 5 or more ILI cases
    - Staff reported aggregate number ILI cases and enrollment for schools
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## School Nurse Syndromic Surveillance

- FevFlu syndrome: complaint of fever or aches
  - ILI syndrome: temp of  $\geq 100.4^{\circ}$  F and cough or sore throat
    - Measured temp data available starting mid-May
    - 29.3% of cough or sore throat visits missing temp;
    - 41.4% of fever visits missing temp
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## Number FevFlu Visits to School Nurse, Syndromic Surveillance, 2008-2009



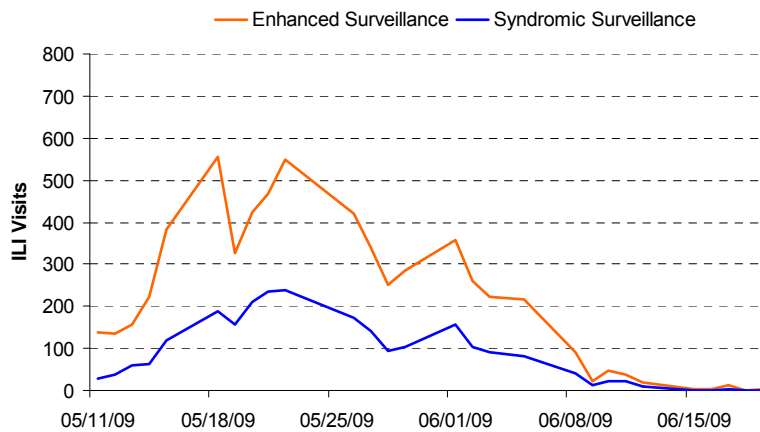
## Demonstrate Utility of School Nurse Syndromic Surveillance

- Retrospectively compare school nurse syndromic data to data obtained during enhanced surveillance
  - Data matched by school and date
  - Percent ILI calculated using enrollment data

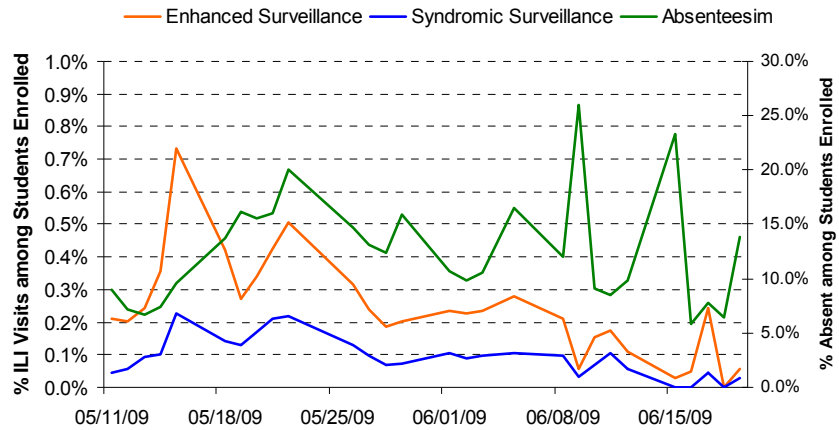
## School Nurse Syndromic Surveillance and Enhanced School Surveillance

	Syndromic	Enhanced
<b>All schools</b>		
Number schools reporting	1,100	434
Number ILI cases	6,411	8,830
<b>Schools reporting to both</b>		
Number schools reporting	313	313
Number ILI cases	2,393	5,943

## Number ILI Visits to School Nurse, Syndromic and Enhanced Surveillance, May-June 2009



## Percent ILI and Absenteeism, Syndromic and Enhanced Surveillance, May-June 2009



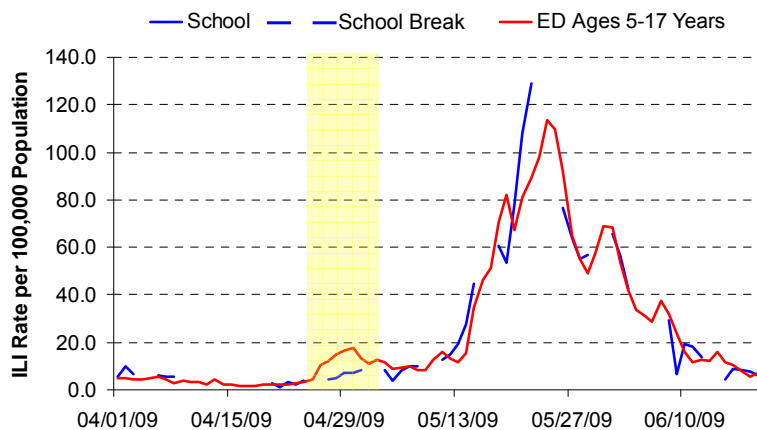
## Student Absenteeism Survey

Reason Absent	Thu, May 21		Wed, May 27	
	Num	(%)	Num	(%)
Sick with ILI	52	(16.1)	264	(31.0)
Sick with something else	36	(11.1)	234	(27.5)
Illness prevention	221	(68.2)	80	(9.4)
Other	15	(4.6)	274	(32.2)

## Demonstrate Utility of School Nurse Syndromic Surveillance

- Retrospectively compare syndromic school ILI data to syndromic ED ILI data
  - Data compared by age-group and date

## ILI Rate per 100,000 Population, School and ED Syndromic Surveillance, April-June 2009



## Key Findings and Discussion

- ILI from school nurse syndromic surveillance and enhanced surveillance were correlated
    - ILI from syndromic surveillance was significantly lower than that collected during enhanced surveillance
  - Absenteeism data, including reason for absence varied greatly over time
  - Similar ILI pattern seen in School and ED syndromic data for ages 5-17
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## Key Findings and Discussion

- Possible decreased reporting through ASHR during H1N1 outbreak
    - Anecdotal reports suggested that nurses were overwhelmed by volume of ill students and not able to enter visits
  - Data quality
    - Measured temp often missing
    - Inconsistent reporting
    - Delayed reporting by school nurses
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## Conclusions

- NYC's school nurse syndromic surveillance system is a useful tool for monitoring ILI
    - Takes advantage of existing data from electronic health records
    - Much less labor intensive than enhanced surveillance
  - Work is ongoing to improve early outbreak detection of ILI in NYC schools
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## Lessons Learned: Rationale for Fall School Policy

- Fall school policy different from Spring
    - Know more about novel H1N1 influenza
    - Likely no worsening in severity of illness
    - More preventive measures in place
    - Vaccine available
    - Many children already immune
  - Special initiative to vaccinate schoolchildren against H1N1
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## Open Schools Policy

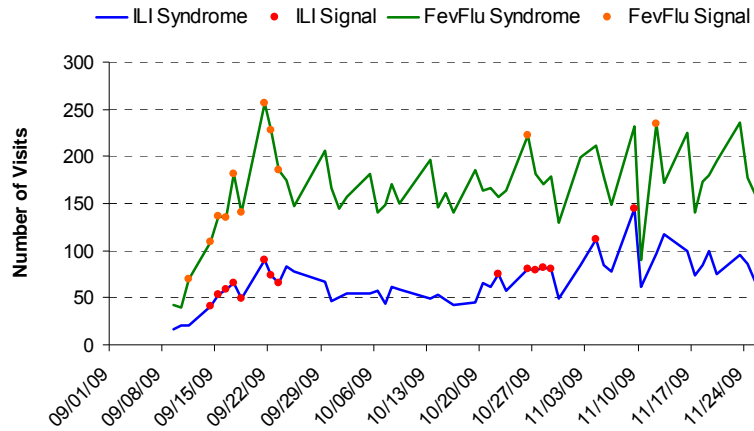
- Dept of Education (DOE) does not plan to close schools with ILI activity
- Emphasis on preventive measures
  - Wash/sanitize hands often
  - Avoid touching mouth and nose
  - Cover coughs and sneezes
- Hand sanitizer will be available in schools
- Parents should keep kids home from school if they have a fever and cough or sore throat
- H1N1 vaccinations available with parental consent

## Daily School Reporting: Information available at [www.nyc.gov/flu](http://www.nyc.gov/flu)

The screenshot shows the NYC Influenza Information website. The main heading is "NYC INFLUENZA INFORMATION" with a sub-heading "Info and resources on H1N1 and Seasonal Flu prevention and control". Below this, there are navigation links for "Residents", "Business", "Visitors", "Government", and "Office of the Mayor". A search bar is visible on the left side of the page. The main content area is titled "Schools" and "Attendance and Influenza-like Illness (ILI)". It states that school nurses use a city-wide database to report the number of students seen for influenza-like illness (ILI) during the school day. The "Daily School Reports - November 30" section shows a citywide average attendance rate for November 30 of 88.9%. A search tool is provided with a dropdown menu for "P.S. 123" and a "search" button. Below the search tool, a table displays the following data:

SCHOOL NAME	Students with ILI	% ILI	Attendance (%)
P.S. 123 Suydam	<5	0.0	92.4
P.S. 123 Mahala Jackson	<5	0.0	88.5
P.S. 123	<5	0.0	93.6

## Number ILI and FevFlu Visits to School Nurse, Syndromic Surveillance, 2009-2010



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