

# Influenza Surveillance Systems in Texas 101

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# Outline

- Overview of Influenza Surveillance
- Levels of Influenza Surveillance
- Components of Influenza Surveillance
- Supporting Influenza Surveillance

# Key Terms

- Influenza Like Illness (ILI)
  - Fever  $\geq 100^{\circ}\text{F}$ , plus:
    - Cough and/or
    - Sore throat
  - In the absence of another known cause
- Influenza A
  - May include both seasonal and novel strains
- Influenza B
- Pandemic H1N1
  - Also referred to as Swine flu, Pandemic flu and 2009 H1N1

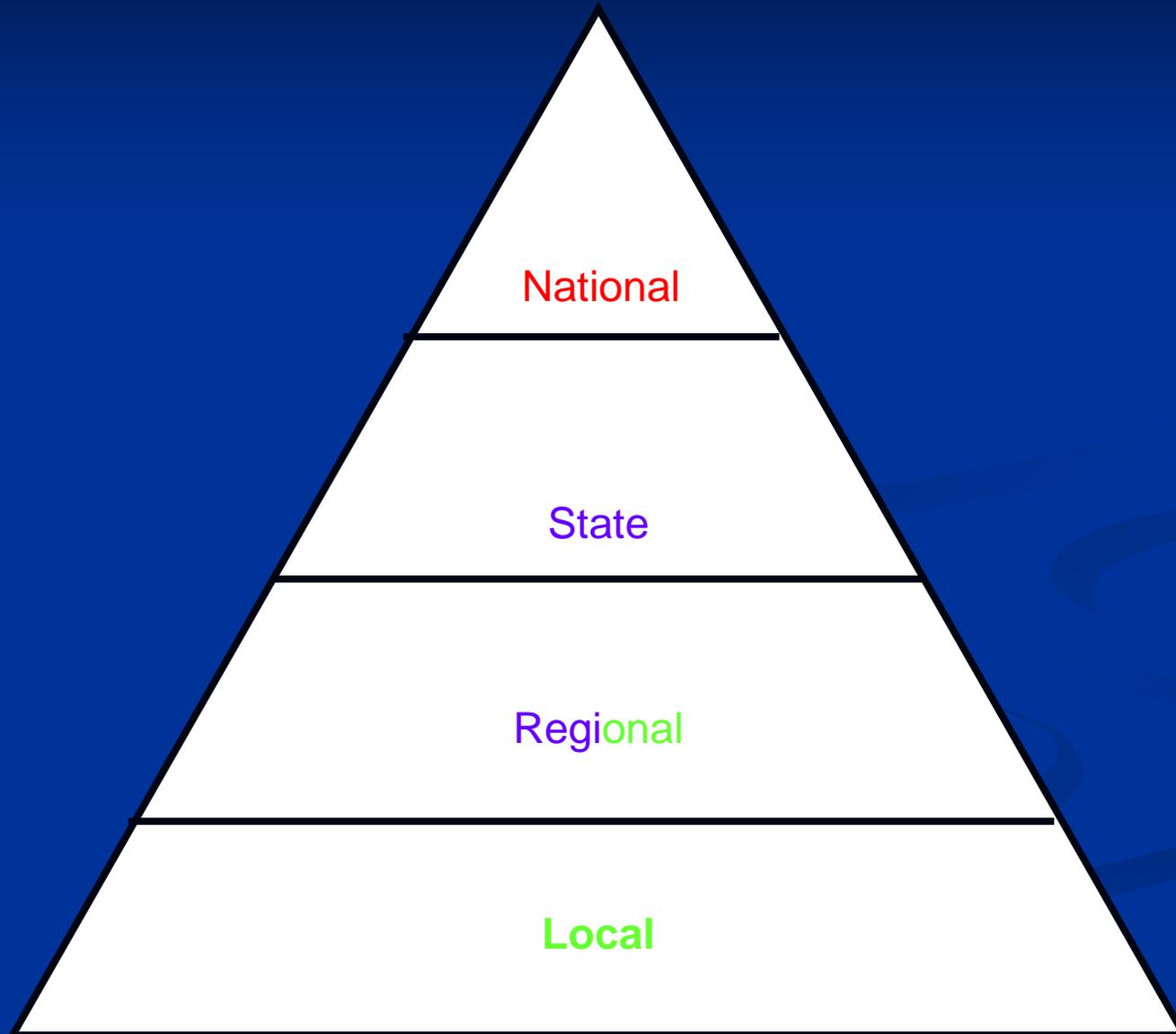
# Influenza Surveillance

- The Influenza Surveillance System is a multi-component surveillance network with local, regional, state and national activities.
- Data collection is based on a reporting week that starts on Sunday and ends on Saturday of each week.
  - Designated as Week 32 or week ending 9/05
  - aka CDC MMWR week
- Reporting is voluntary except where noted

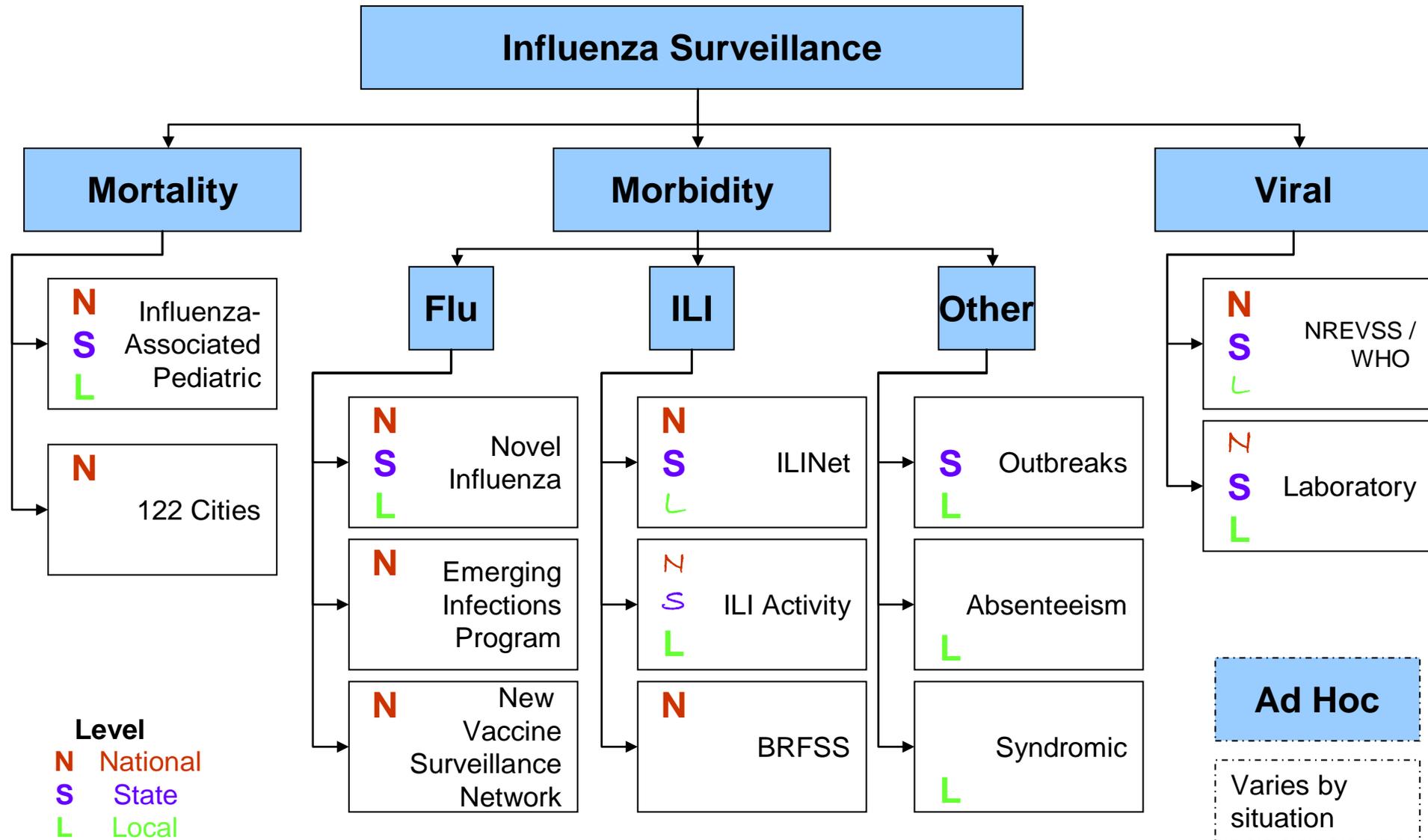
# Goals of Influenza Surveillance

- Find out when and where influenza activity is occurring,
- Determine what type of influenza viruses are circulating,
- Detect changes in the influenza viruses,
- Track influenza-related illness and
- Measure the impact influenza is having on deaths in the United States.

# Levels of Influenza Surveillance



# Influenza Surveillance Components



# Mortality

Mortality

**N** Influenza  
**S** Associated  
**L** Pediatric

**N**  
122 Cities

# Influenza Pediatric Mortality

- **Activity:** Influenza-Associated Pediatric Mortality
- **Level:** National (2004); state, regional and local (2007)
- **Who:** As required by law in Texas
- **What:** Individual reports on influenza associated deaths in anyone <18 years old
- **How:** Individual report form faxed to health department within 1 work day

# Influenza-Associated Pediatric Mortality

Report form available on the DSHS website at

<http://www.dshs.state.tx.us/idcu/investigation/forms/PedFlu.pdf>



## Influenza-Associated Pediatric Deaths Case Report Form

Form approved  
OMB No. 0920-0007

STATE USE ONLY – DO NOT SEND INFORMATION IN THIS SECTION TO CDC		
Last Name: _____	First Name: _____	County: _____
Address: _____	City: _____	State, Zip: _____

Patient Demographics			
1. State: _____	2. County: _____	3. State ID: _____	4. CDC ID: _____
5. Age: _____ <input type="radio"/> Days <input type="radio"/> Months <input type="radio"/> Years	6. Date of birth: ____/____/____ MM / DD / YYYY	7. Sex: <input type="radio"/> Male <input type="radio"/> Female <input type="radio"/> Unknown	8. Ethnicity: <input type="radio"/> Hispanic or Latino <input type="radio"/> Not Hispanic or Latino <input type="radio"/> Unknown
9. Race: <input type="checkbox"/> White <input type="checkbox"/> Black <input type="checkbox"/> Asian <input type="checkbox"/> Native Hawaiian or Other Pacific Islander <input type="checkbox"/> American Indian or Alaska Native <input type="checkbox"/> Unknown			

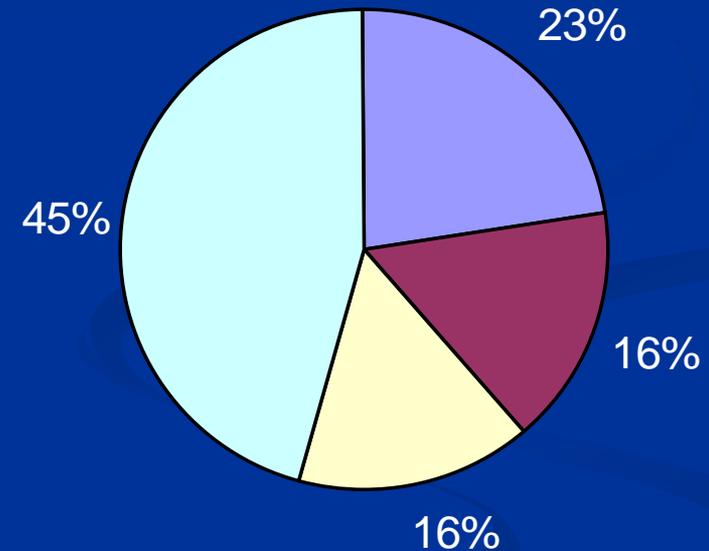
Death Information		
10. Date of illness onset: ____/____/____ MM / DD / YYYY	11. Date of death: ____/____/____ MM / DD / YYYY	12. Was an autopsy performed? <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Unknown
13 a. Did cardiac/respiratory arrest occur outside the hospital? <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Unknown		
13 b. Location of death: <input type="radio"/> Outside the Hospital (e.g. home or in transit to hospital) <input type="radio"/> Emergency Dept (ED) <input type="radio"/> Inpatient ward <input type="radio"/> ICU <input type="radio"/> Other (specify): _____		
13 c. If the death occurred in the hospital, what was the date of admission? ____/____/____ MM / DD / YYYY		

CDC Laboratory Specimens		
14 a. Were pathology specimens sent to CDC's Infectious Diseases Pathology Branch? Please provide the lab ID No. if known _____	<input type="radio"/> Yes	<input type="radio"/> No <input type="radio"/> Unknown
14 b. Were influenza isolates or original clinical material sent to CDC's Influenza Division? Please provide the lab ID No. if known _____	<input type="radio"/> Yes	<input type="radio"/> No <input type="radio"/> Unknown
14 c. Were <i>Staph aureus</i> isolates sent to CDC's Division of Healthcare Quality Promotion? Please provide the lab ID No. if known _____	<input type="radio"/> Yes	<input type="radio"/> No <input type="radio"/> Unknown

# Pediatric Flu Data

Season	Year	Count
06_07	2006	NR
	2007	12
07_08	2007	1
	2008	10
08_09	2008	0
	2009	27
09_10	2009	27
	2010	6

Age Group: 2007-2010



■ <1 ■ 1-4 ■ 5-9 ■ 10-17

# 122 Cities

- **Activity** : 122 Cities Mortality Reporting System
- **Level**: National
- **Who**: Vital Statistics offices in 122 US cities (7 cities in Texas)
- **What**: total number of death certificates received by age group and the number citing influenza and/or pneumonia
- **How**: Weekly to CDC

Year Round Reporting

# Other Potential Mechanisms

- Vital Statistics reports directly to health departments / state
- Reports of all influenza associated deaths
- Reports of select influenza associated deaths (pregnancy / post partum)

# Morbidity - Influenza

Morbidity

Flu

**N**  
**S**  
**L** Novel  
Influenza

**N** Emerging  
Infections  
Program

**N** New  
Vaccine  
Surveillance  
Network

# Novel Influenza

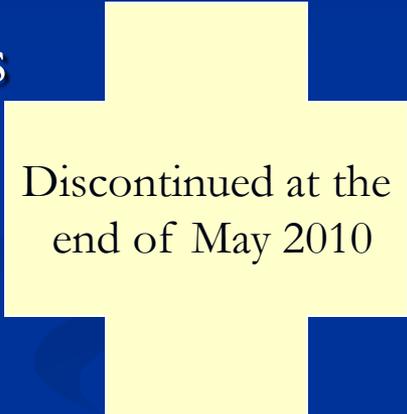
- **Activity :** Exotic disease reporting
- **Level:** State, regional and local
- **Who:** As required by law in Texas; typically laboratories
- **What:** Individual reports of any outbreak, exotic disease, or unusual group expression (Includes novel strains of influenza)
- **How:** Call to local health department

Year Round Reporting

Special Reporting

# Pandemic H1N1

- **Activity** : Enhanced influenza surveillance
- **Level**: State, regional and local
- **Who**: Hospitals and/or healthcare providers
- **What**:
  - Aggregate Reporting of Confirmed Cases
    - Hospitalized by age group and county
  - Individual Reports of Confirmed Cases
    - ICU
    - Deaths
- **How**: Faxed or emailed weekly to health department



Discontinued at the  
end of May 2010

# EIP

- **Activity :** Emerging Infections Program
- **Level:** National
- **Who:** Select hospitals in 12 metropolitan areas in 10 states; no participating sites in Texas
- **What:** lab confirmed influenza in hospitalized people <18 years old
- **How:** Directly to CDC

# NVSN

- **Activity** : New Vaccine Surveillance Network
- **Level**: National
- **Who**: Hospitals in 1 county each in 3 states (OH, TN, NY)
- **What**: lab confirmed influenza hospitalization rates for kids <5
- **How**: Directly to CDC

# Morbidity - ILI

Morbidity

ILI

**N**

**S**

**L**

ILINet

**N**

**S**

**L**

ILI Activity

**N**

BRFSS

# ILINet

- **Activity :** US Outpatient Influenza-Like Illness Surveillance Network
- **Level:** National with a state level coordinator
- **Who:** ~ 2,500 providers were enrolled in this network during the 2007-08 influenza season nationwide; 130 were in Texas
- **What:** Aggregate count all patients seen and of ILI patients by age group
- **How:** Reported weekly through the CDC website

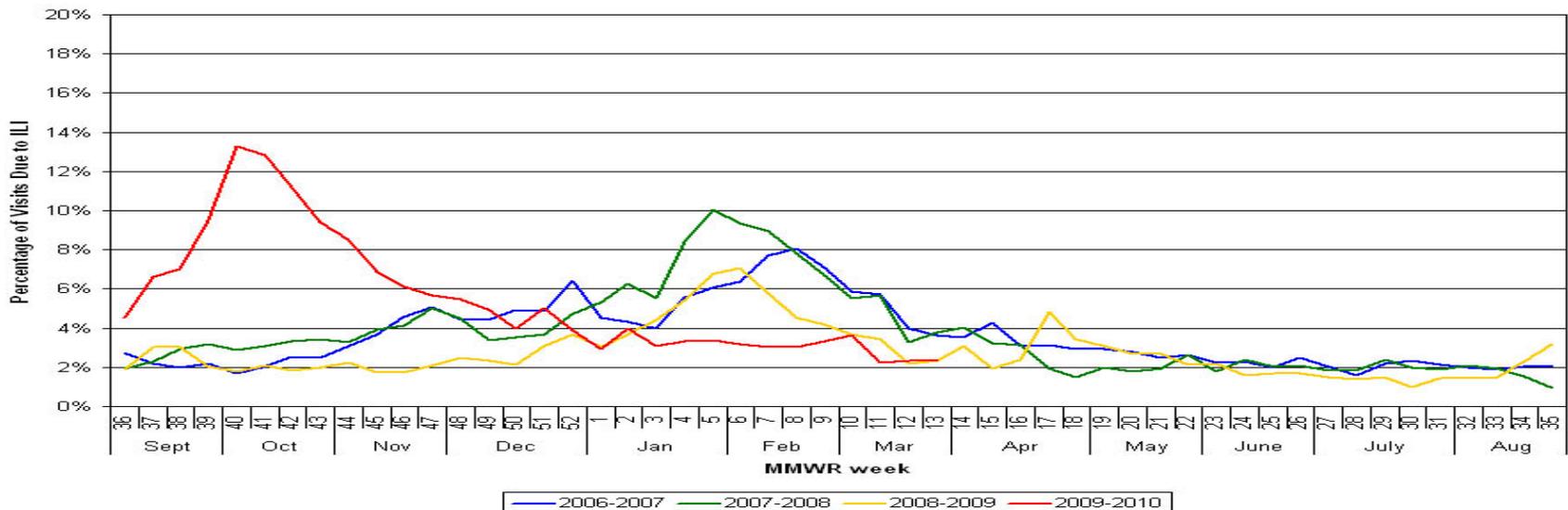
Year Round Reporting

# ILINet

Percentage of Visits for Influenza-like Illness reported by the US Outpatient Influenza-like Illness Surveillance Network (ILINet) in the Texas State (9/18/2009 11:11:36 AM)

<u>Week</u>	<u># of Reporters</u>	<u>Age 0-4</u>	<u>Age 5-24</u>	<u>Age 25-64</u>	<u>Age &gt;64</u>	<u>Total ILI</u>	<u>Total Patients</u>	<u>% ILI</u>
200930	54	25	41	23	11	100	9861	1.01
200931	57	55	91	83	9	238	17480	1.36
200932	53	54	108	76	9	247	17183	1.44
200933	50	46	107	124	13	290	18628	1.56

Percentage of Visits Due to Influenza-Like Illness Reported by Texas Participants in ILINet, 2006-2010 Seasons



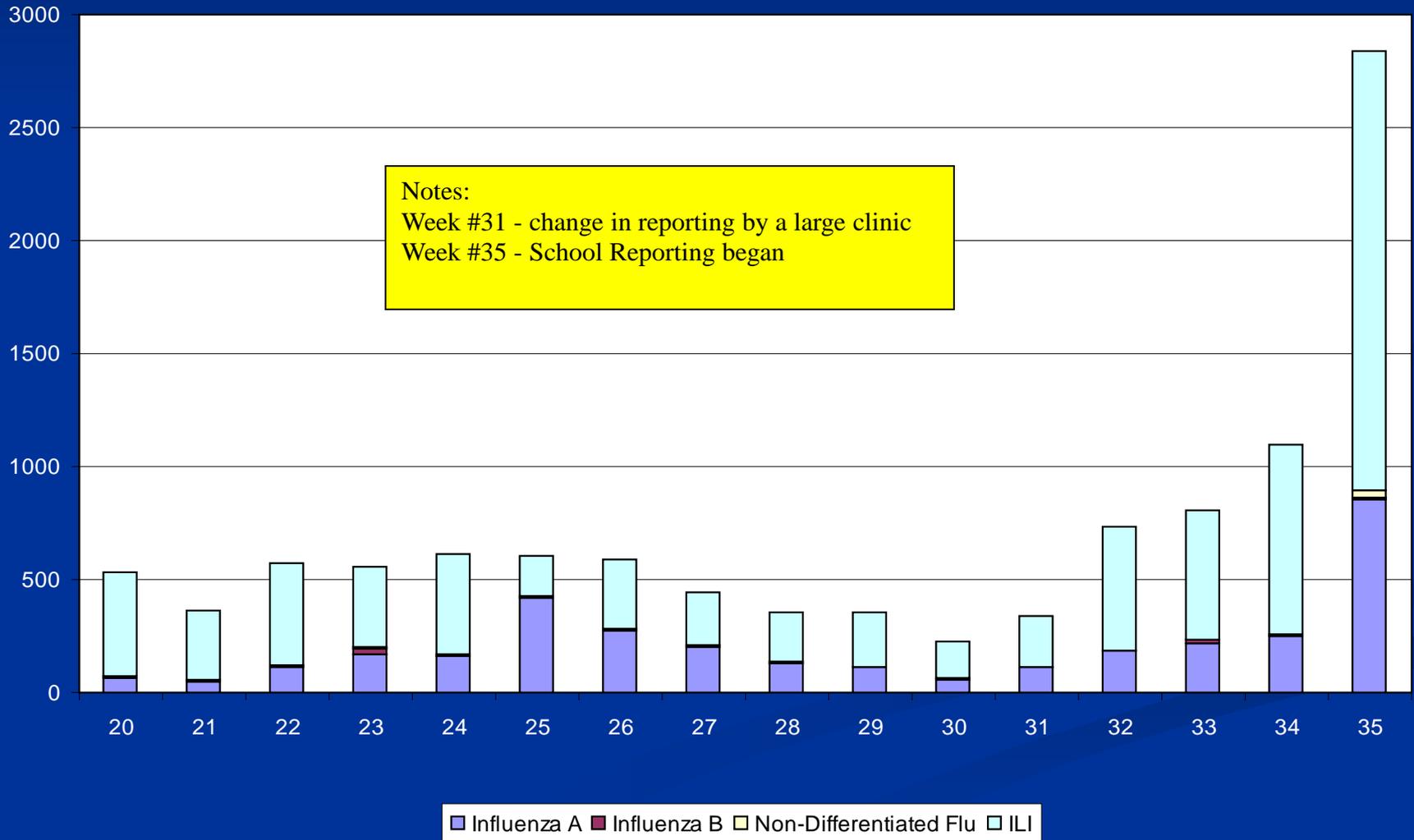
# ILI Activity

- **Activity :** Health Department Seasonal Influenza Surveillance
- **Level:** Regional and local
- **Who:** private providers, clinics, hospitals and others
- **What:** Aggregate count of ILI and Flu (rapid tests: Flu A, Flu B and Undifferentiated Flu) by county
- **How:** Faxed or emailed weekly to health department



# ILI Surveillance

Surveillance of Influenza Activity  
Texas Department of State Health Service Region 7



# BRFSS

- **Activity** : Behavioral Risk Factor Surveillance System
- **Level**: National
- **Who**: General public
- **What**: Recent ILI
- **How**: ILI assessment questions added to the BRFSS survey. Survey conducted through random digit dialing.

# Morbidity - Other

Morbidity

Other

Schools

L

Outbreaks

S  
L

Syndromic

L

# School Surveillance

- **Activity :** *Varies*
- **Level:** Regional and local
- **Who:** School nurses and/or attendance clerks
- **What:** number of students sent home with ILI and/or who called in sick with ILI or in general
- **How:** Faxed or emailed weekly to health department; some electronic systems are available

# Outbreaks

- **Activity :** Outbreak reporting
- **Level:** Local, regional, state
- **Who:** As required by law
- **What:** Report of suspected outbreak or cluster of illness
- **How:** Call to health department ; Surveillance data analysis

# Syndromic Surveillance

- **Activity** : Syndromic programs: ESSENCE, RODS, BioSense etc
- **Level**: Regional and local
- **Who**: Hospitals with emergency rooms
- **What**: emergency room visits categorized by syndrome, age, zip code, date (de-identified)
- **How**: Electronic data automatically sent from hospital to syndromic servers. Frequency of reports may occur hourly, daily or weekly.

Data current as of: 10/30/2007 01:50 PM EDT

Refresh Data

Custom Settings

Select Data

Select Options

# Time Series

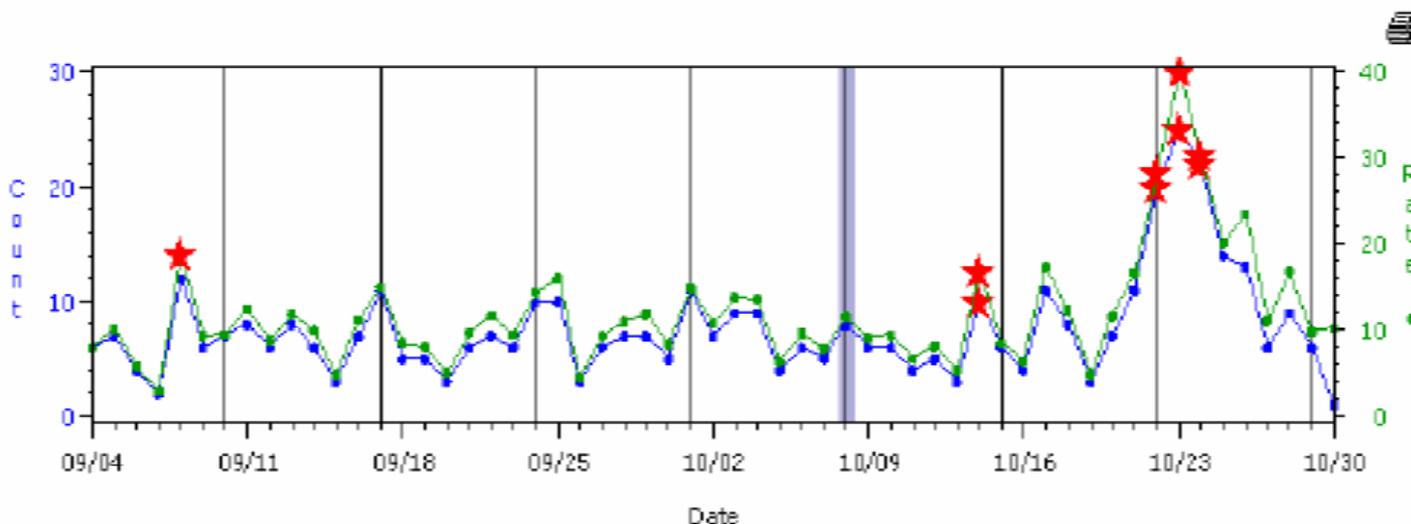
## Asthma Sub-Syndrome, Emergency, Chief Complaint Data.

Hospital Data, All Facilities,

from 09/04/2007 to 10/30/2007.

Analysis: W2, 100 Days Recurrence Interval Threshold.

Number of Visits = 432



- Count
- Rate \*
- ★ Statistically Significant Result
- ▲ Data Change
- Holiday
- Monday

\* Rate per 1000 visits

Date	Day	Count	Rate per 1,000 Visits	All Visits	Links	Comments
10/30	Tues	1	10.2	98	<a href="#">map</a> / <a href="#">patient list</a>	
10/29	Mon	6	9.9	609	<a href="#">map</a> / <a href="#">patient list</a>	
10/28	Sun	9	16.9	533	<a href="#">map</a> / <a href="#">patient list</a>	
10/27	Sat	6	11.1	540	<a href="#">map</a> / <a href="#">patient list</a>	
10/26	Fri	13	23.5	553	<a href="#">map</a> / <a href="#">patient list</a>	
10/25	Thur	14	20.1	698	<a href="#">map</a> / <a href="#">patient list</a>	
10/24	Wed	22	30.3	726	<a href="#">map</a> / <a href="#">patient list</a>	
10/23	Tues	25	40.0	625	<a href="#">map</a> / <a href="#">patient list</a>	
10/22	Mon	20	28.2	700	<a href="#">map</a> / <a href="#">patient list</a>	

# Other Possible Morbidity Mechanisms

- Absenteeism / ILI surveillance with large businesses
- Absenteeism / ILI surveillance with first responders
- Pharmacy based surveillance
- Nurse call center surveillance
- Poison Control cough/cold medication overdose calls

# Viral Surveillance

Viral

**N**  
**S**  
**L**

NREVSS /  
WHO

**N**  
**S**  
**L**

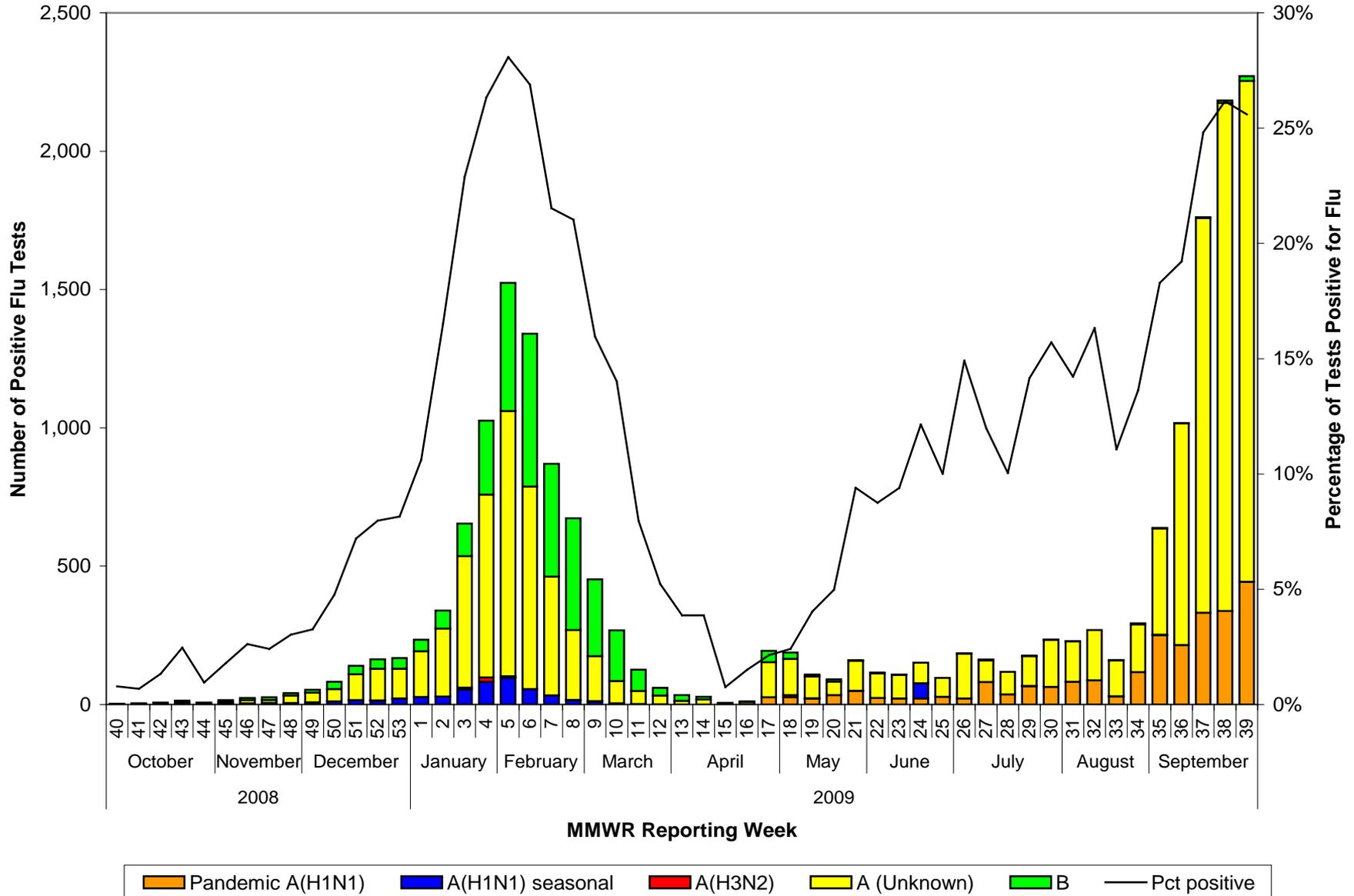
Laboratory

# NREVSS / WHO

- **Activity** : National Respiratory and Enteric Virus Surveillance System and WHO Collaborating Labs
- **Level**: National coordination
- **Who**: Volunteer public health and hospital laboratories
- **What**: Total number of respiratory specimens tested and number of positives
- **How**: Reported weekly to CDC
- **Note**: Tracks multiple respiratory pathogens. Not all labs report all pathogens.

Year Round Reporting

# Texas NREVSS Data 2008-2009 Season



# Laboratory Surveillance

- **Activity** : Influenza Laboratory Surveillance (Culture/PCR )
- **Level**: State, regional, and local coordination
- **Who**: Selected providers
  - Identified by health departments
  - May include ILINet providers
- **What**: Specimens from patients suspected of having influenza
- **How**: Specimens sent to the DSHS lab or LRNs
- **Note**: Subset of submitted specimens sent every two weeks to CDC for further testing

Year Round Reporting

# Reporting

- Email for DSHS flu team
  - [flutexas@dshs.state.tx.us](mailto:flutexas@dshs.state.tx.us)
- Flu reports
  - DSHS flu reports and information:
    - [www.TexasFlu.org](http://www.TexasFlu.org)
    - <http://www.dshs.state.tx.us/idcu/disease/influenza/>
  - CDC FluView: [www.cdc.gov/flu/weekly/](http://www.cdc.gov/flu/weekly/)