

Influenza Surveillance Systems in Texas 101

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Objectives

- The participant will be able to list the three main components of influenza surveillance
- The participant will be able to differentiate between national, state and local levels of influenza surveillance

Continuing Education Disclosures

- Requirements for Successful Completion:
 - Complete registration form.
 - Sign in.
 - Attend entire educational activity.
 - Complete evaluation.

Continuing Education Disclosures

- Commercial Support
 - This educational activity received no commercial support.
- Disclosure of Conflict of Interest
 - The speakers and planning committee members have disclosed no conflict of interest.
- Non-Endorsement Statement
 - Accredited status does not imply endorsement by the Department of State Health Services, Continuing Education Services, Texas Medical Association, or American Nurses Credentialing Center of any commercial products displayed in conjunction with an activity.
- Off Label Use
 - If applicable, speakers will clearly delineate any off label use of FDA drugs or devices.

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

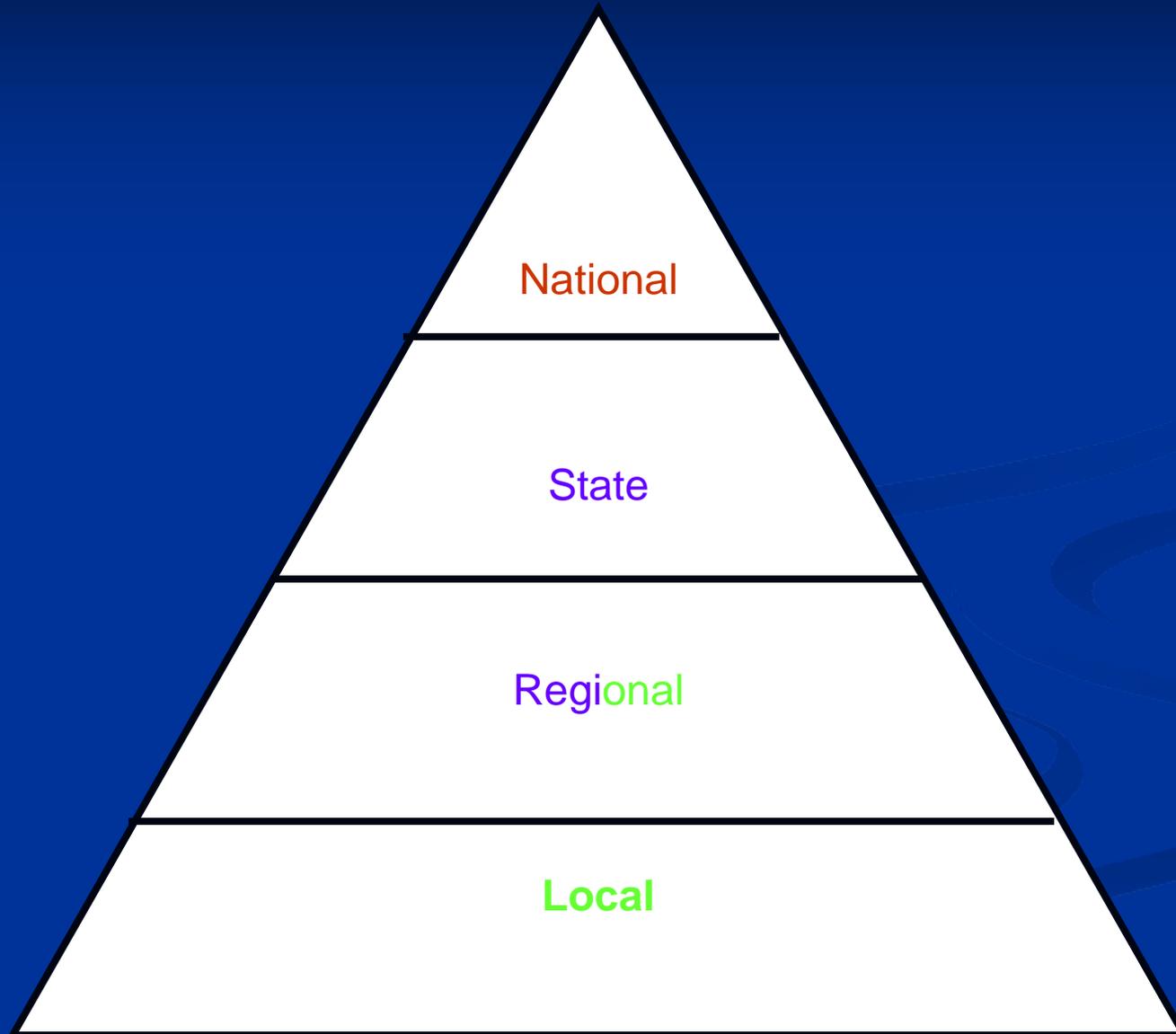
Influenza Surveillance

- 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

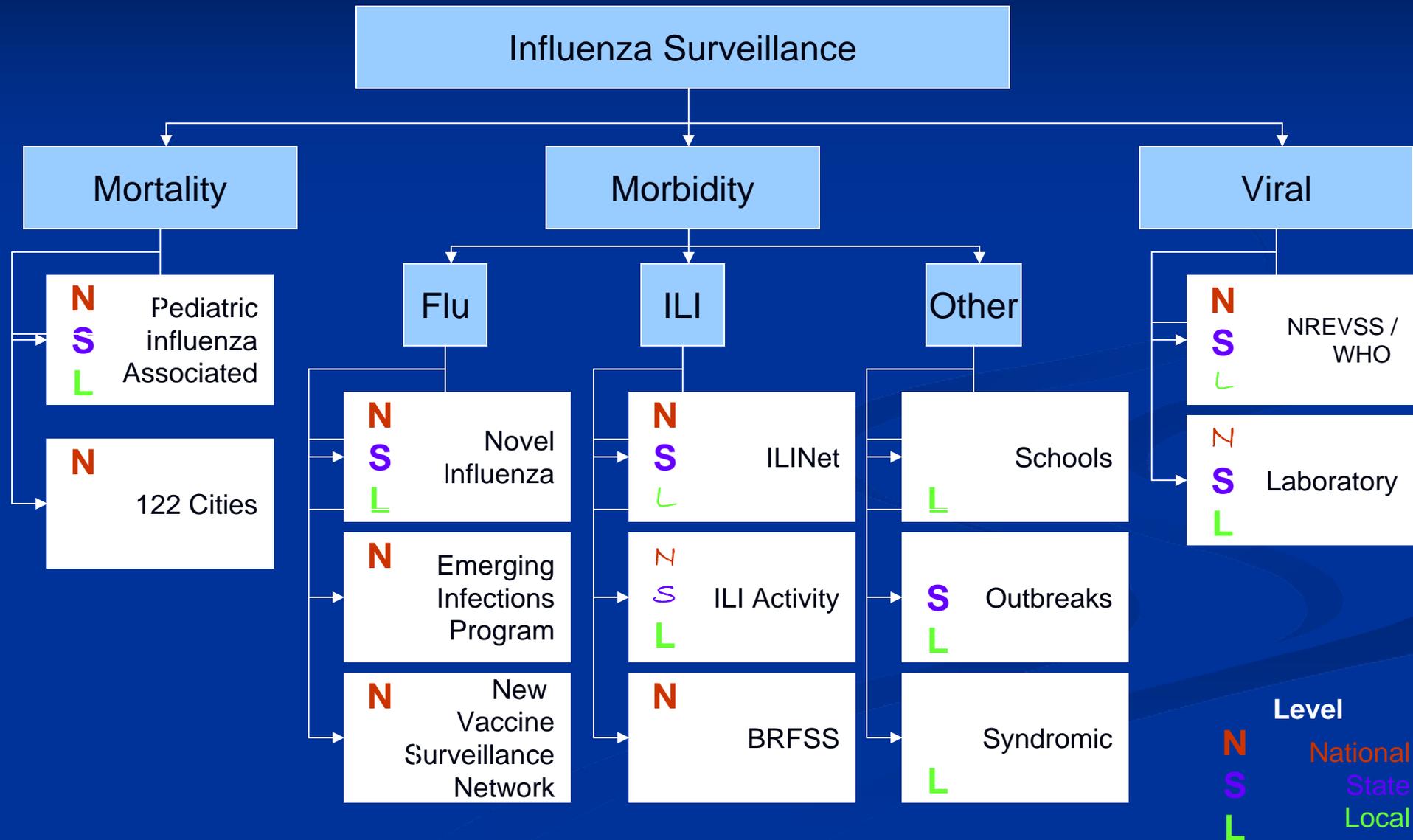
Goals of Influenza Surveillance

- 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 Pediatric
S Influenza
L Associated

N
122 Cities

Influenza Pediatric Mortality

- **Activity:** Pediatric Influenza Associated 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 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			

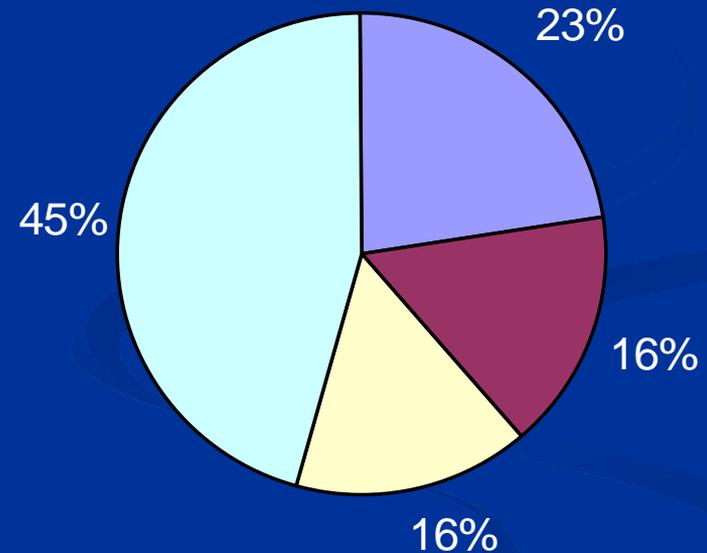
Death Information		
10. Date of illness onset: ____/____/____ MM DD YYYY	11. Date of death: ____/____/____ MM DD YYYY	12. Was an autopsy performed? <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Unknown
13 a. Did cardiac/respiratory arrest occur outside the hospital? <input 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

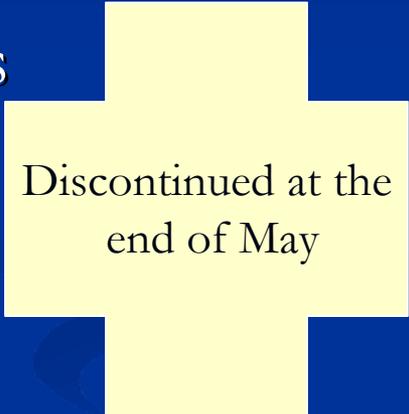
- **Activity :** Exotic disease reporting
- **Level:** State, regional and local
- **Who:** As required by law in Texas; typically laboratories
- **What:** Individual reports of any outbreak, exotic disease, or unusual group expression (Includes novel strains of influenza)
- **How:** Call to local health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

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 ILINet
L

N
S ILI Activity
L

N
BRFSS

ILINet

- **Activity** : US Outpatient Influenza-Like Illness Surveillance Network (formerly Sentinel Provider 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

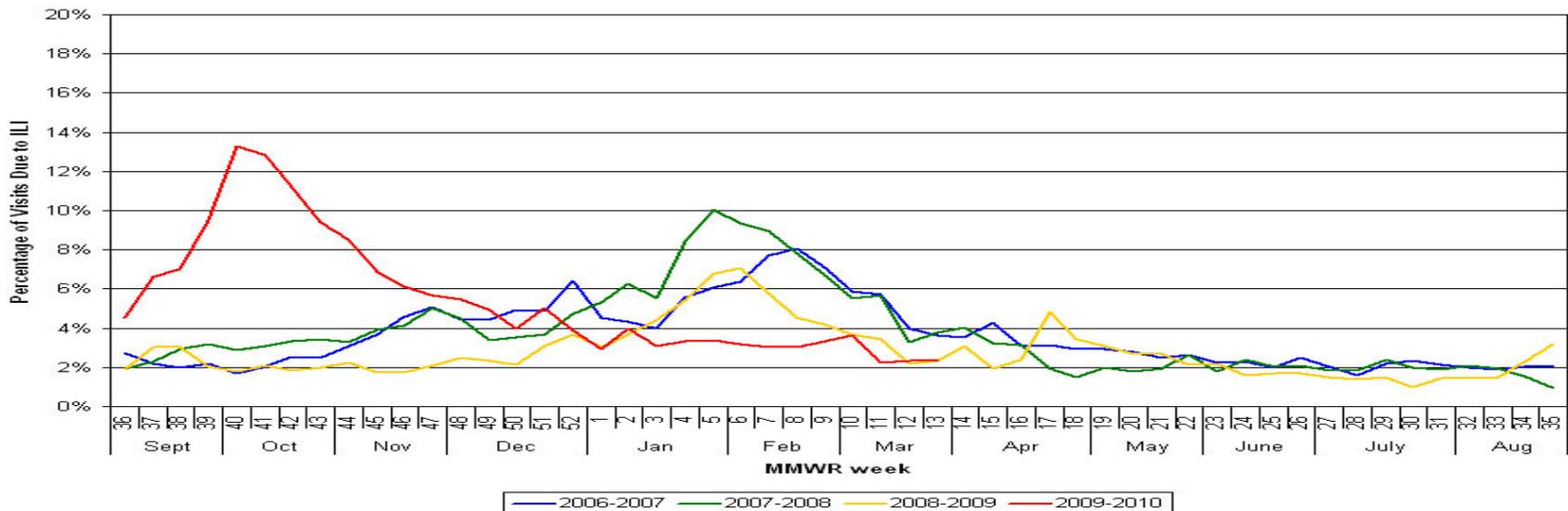
Year Round Reporting

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 >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

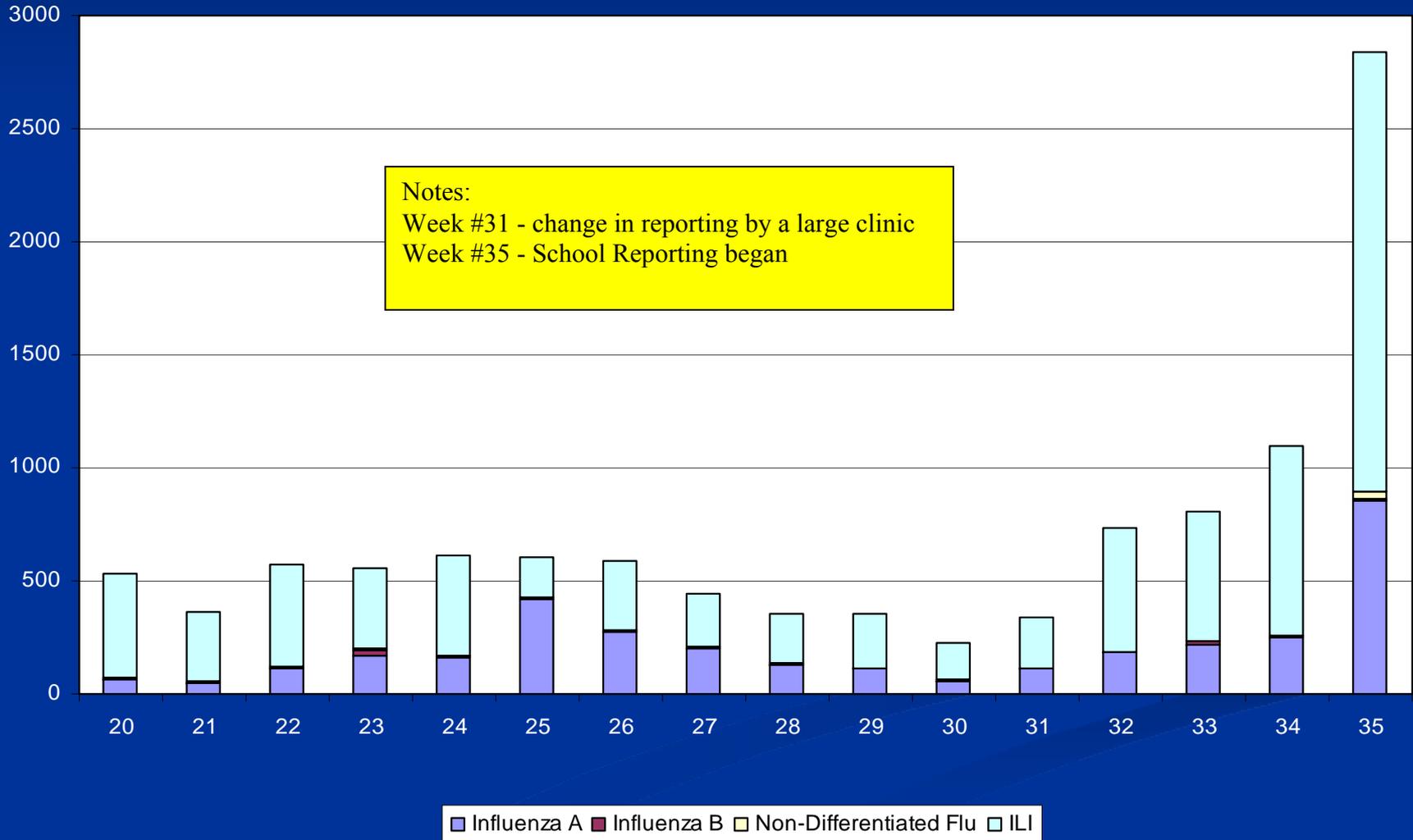


ILI Activity

- **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

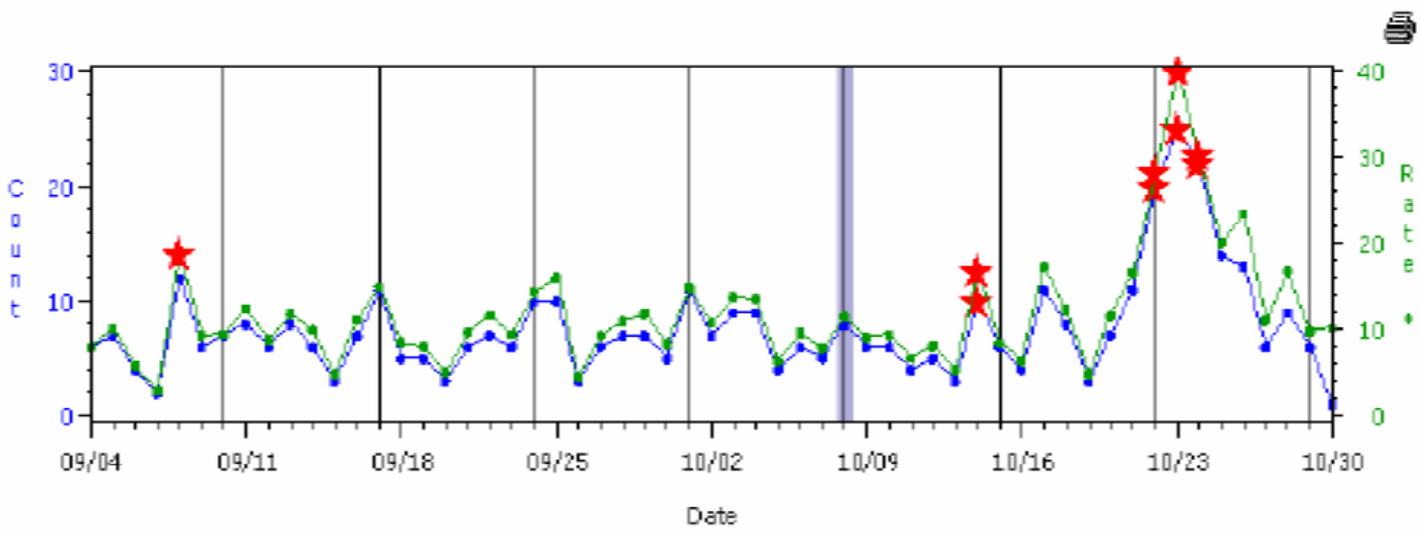
Time Series

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	map / patient list	
10/29	Mon	6	9.9	609	map / patient list	
10/28	Sun	9	16.9	533	map / patient list	
10/27	Sat	6	11.1	540	map / patient list	
10/26	Fri	13	23.5	553	map / patient list	
10/25	Thur	14	20.1	698	map / patient list	
10/24	Wed	22	30.3	726	map / patient list	
10/23	Tues	25	40.0	625	map / patient list	
10/22	Mon	20	28.2	700	map / patient list	

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

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NREVSS /
WHO

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L

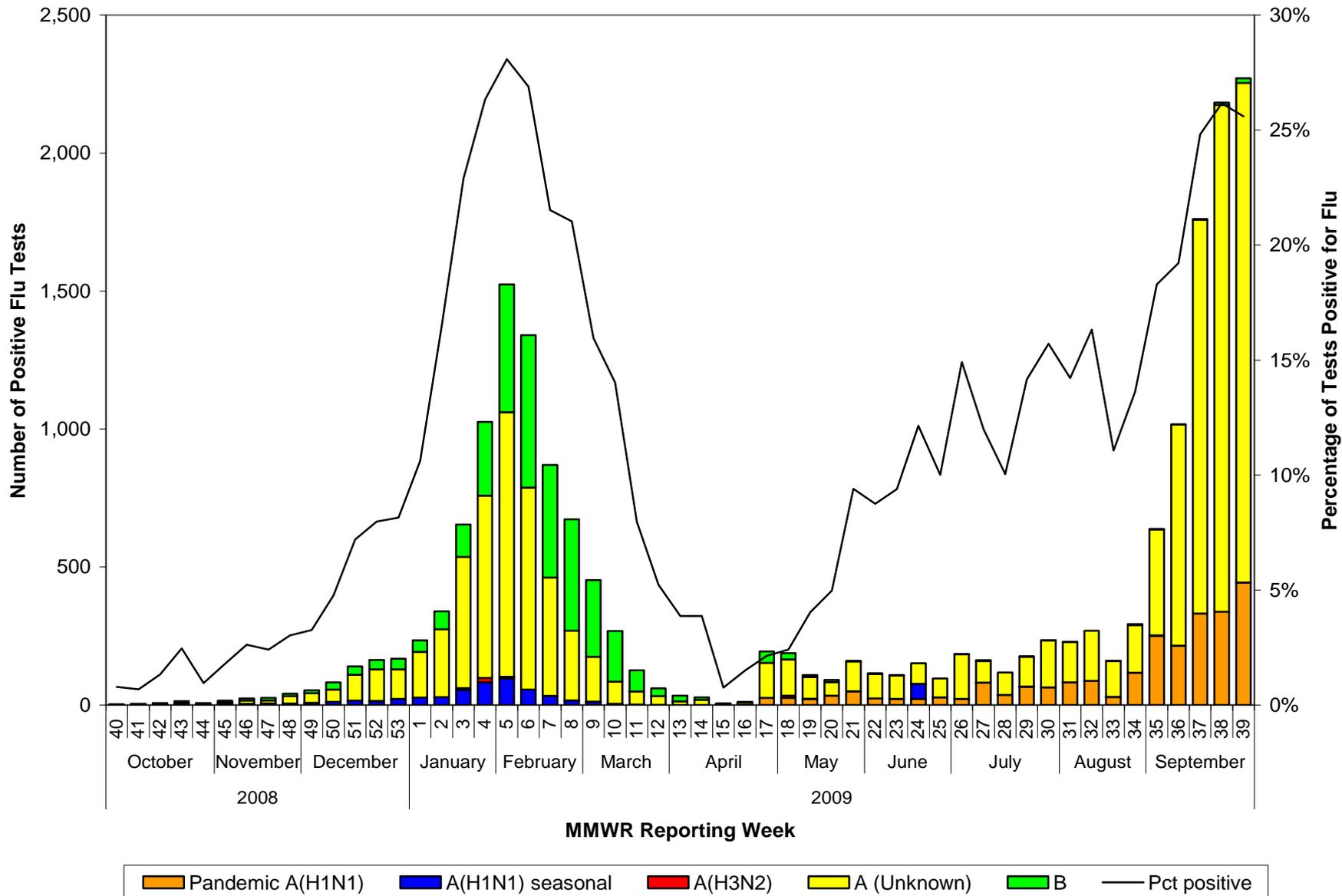
Laboratory

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)
- **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

Supporting Surveillance

DSHS Laboratory Testing

- Not for clinical testing – Send to a commercial lab
- To support public health surveillance and response
- Testing criteria (as of 02/08/10)
 - As designated by public health (culture surveillance; investigations)
 - ILI patients who died with no other known cause of death (must be collected ante mortem)
 - Hospitalized with ILI for at least 48 hours plus one or more of the following:
 - Severe illness such as lower respiratory tract infections or pneumonia
 - Unusual presentation in children, adults >64 or immuno-compromised individuals

Reporting

- New email for DSHS flu team
 - flutexas@dshs.state.tx.us
- Flu reports
 - DSHS flu reports and information: www.TexasFlu.org
 - CDC FluView: www.cdc.gov/flu/weekly/