

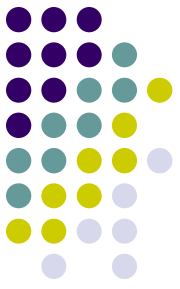
# **INFLUENZA AND RESPIRATORY DISEASE UPDATE**

## **October 12<sup>th</sup>, 2011**

**Thomas Haupt      M.S.**

**608-266-5326**

**Thomas.haupt@wi.gov**

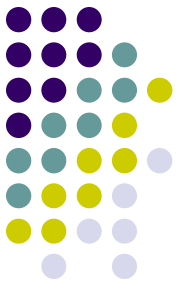


# **INFLUENZA AND RESPIRATORY DISEASE UPDATE**

## **October 12<sup>th</sup>, 2011**

### **Objectives**

- **Influenza Immunization Update**
- **ILINet**
- **State & Territorial Report/ ILI Intensity**
- **Virologic Surveillance**
- **Influenza associated pediatric mortality**
- **WHIE and Syndromic Surveillance**
- **Influenza hospitalizations**



# **INFLUENZA AND RESPIRATORY DISEASE UPDATE**

## **October 12<sup>th</sup>, 2011**

### **The : “Before and After flu.... flu”**

**Protocol for outbreaks**

**Specimen collection**

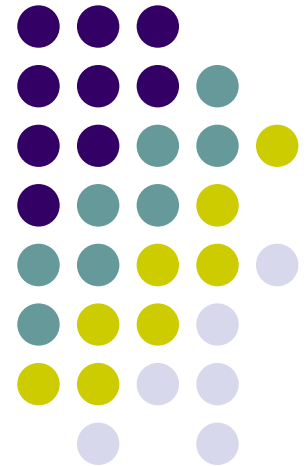
**Tests Provided**

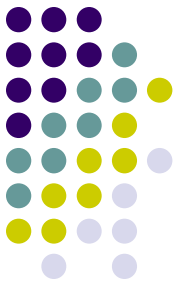
**Analysis (Why this is important)**

# 2011-2012 Influenza Immunization Update

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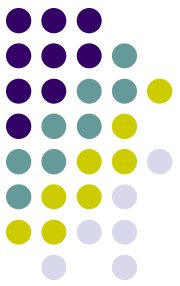
Jennifer Yara, MPH, MCHES  
CDC Public Health Advisor  
Jennifer.Yara@wi.gov





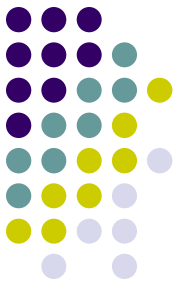
## Purpose

- **2011-2012 Formulation**
- **Types of Vaccine**
- **2011-2012 Influenza Vaccine Recommendations**
- **Egg Allergies**
- **6 months - 8 year olds**
- **Pregnant Women**
- **Vaccine Supply**



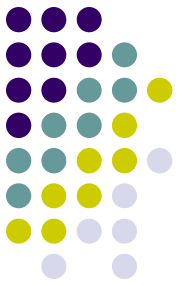
## 2011-2012 Vaccine Formulation

- **Same 3 influenza strains as the 2010 – 2011 seasonal vaccine:**
  - **A/California/7/2009 (H1N1) – like**
  - **A/Perth/16/2009 (H3N2) – like**
  - **B/Brisbane/60/2008 – like**
- **The 3 strains continue to be the predominantly circulating virus.**
- **A person's immune protection from vaccination declines over time and annual vaccination is needed for optimal protection. Annual vaccination is recommended.**



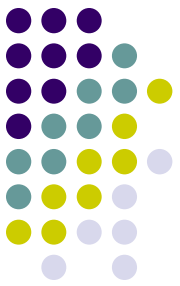
## Two types of influenza vaccine

- **Inactivated vaccine**
  - **Regular Seasonal**
  - **High dose 65 years +**
  - **Intradermal 18 – 65 years**
- **Live Attenuated Influenza Vaccine**
  - **most healthy people 2 through 49 years of age who are not pregnant**



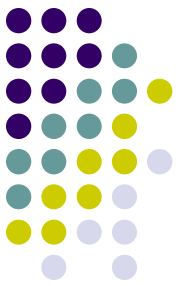
## Influenza Vaccine Recommendations

- **Everyone aged 6 months and older is recommended to get the 2011-12 flu vaccine as soon as it's available, even if they got vaccinated the year before.**
- **Flu vaccine reduces your risk of illness, hospitalization, or even death and can prevent you from spreading the virus to others.**



## Egg Allergies

- **Many person with “egg allergy” can tolerate receipt of Trivalent Influenza Vaccine (TIV) without serious reaction**
- **If they can eat cooked eggs with a reaction vaccinate with TIV without special precautions.**
- **If after eating egg-containing food the person has hives only vaccinate with TIV and observe for at least 30 minutes**
- **If person has previously experienced hives and other symptoms then refer to a physician with expertise in management of allergy.**
- **Live Attenuated Influenza Vaccine (LAIV) should not be administered to persons with an egg allergy.**



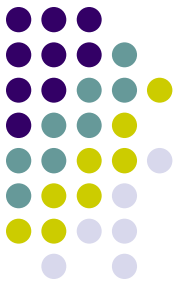
## **Vaccination of children 6 months - 8 year olds**

- **For the 2011-2012 season children aged 6 months through 8 years get two doses of flu vaccine spaced 4 weeks apart if they did not receive at least one dose of the 2010-11 flu vaccine.**
  - **No or unknown status of 2010-2011 vaccine, then give 2 doses**
  - **1 or more doses during the 2010-2011 season, then give 1 dose this year.**



## Pregnant Women

- **Pregnant women should receive TIV to protect both the mother and baby during the first 6 months of life.**
- **LAIV is not licensed for use in pregnant women, but postpartum women can receive LAIV or TIV. Pregnant and postpartum women do not need to avoid contact with persons recently vaccinated with LAIV.**
- **Influenza vaccine is safe for pregnant women!**



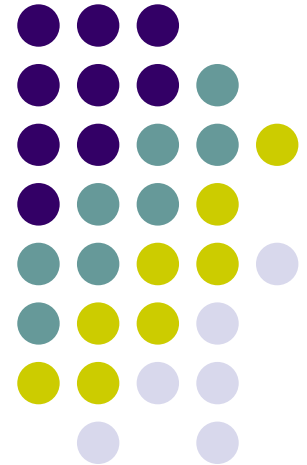
## Vaccine Supply

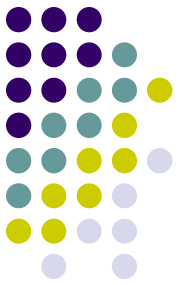
- **166 and 173 million doses of influenza vaccine will be produced for the U.S. market this season.**
- **Manufacturers began shipping flu vaccines for the 2011-2012 season in August**
- **Plenty of Vaccine!**

# Results of the Hospital and Nursing Home Employee Influenza Vaccination Survey

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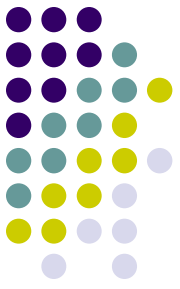
**Emma Gelman, MPH**  
**CDC Prevention Specialist**  
**[Emma.Gelman@wi.gov](mailto:Emma.Gelman@wi.gov)**





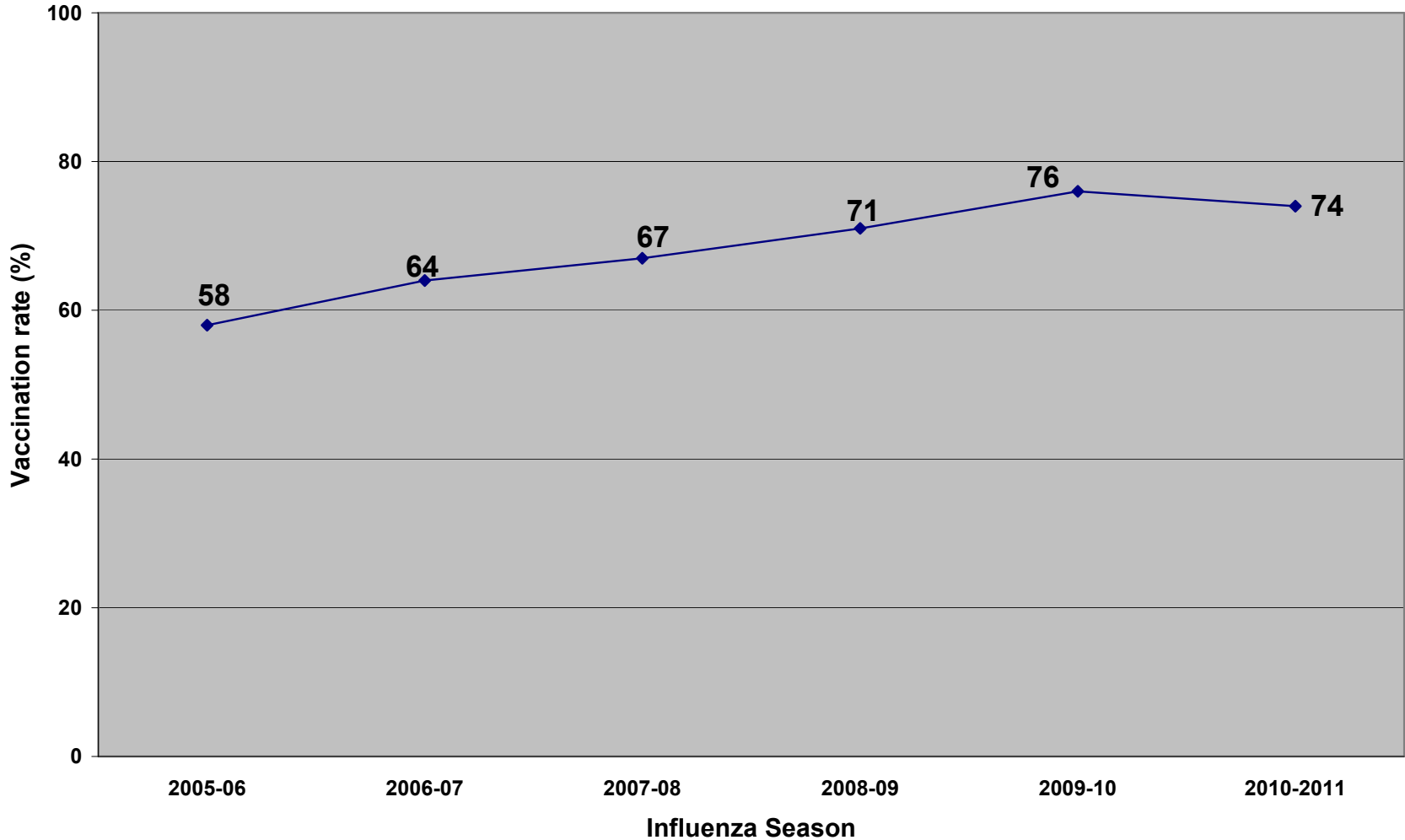
## Hospital Data

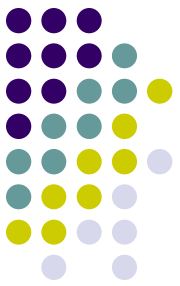
- **124 (95%) of 131 Wisconsin acute care, critical access, and long term acute care hospitals reported employee influenza vaccination rates to the BCDER**
- **The proportion of hospitals using declination forms increased from 82% in 2009-10 to 85% in 2010-11**
- **43 hospitals achieved an employee influenza vaccination rate of at least 80% in 2010-11 compared to 50 hospitals in 2009-10 and 40 hospitals in 2008-09**



# Hospital Employee Influenza Vaccination Rates

Figure 1 Median Hospital Employee Influenza Vaccination Rates  
2005-06 through 2010-11





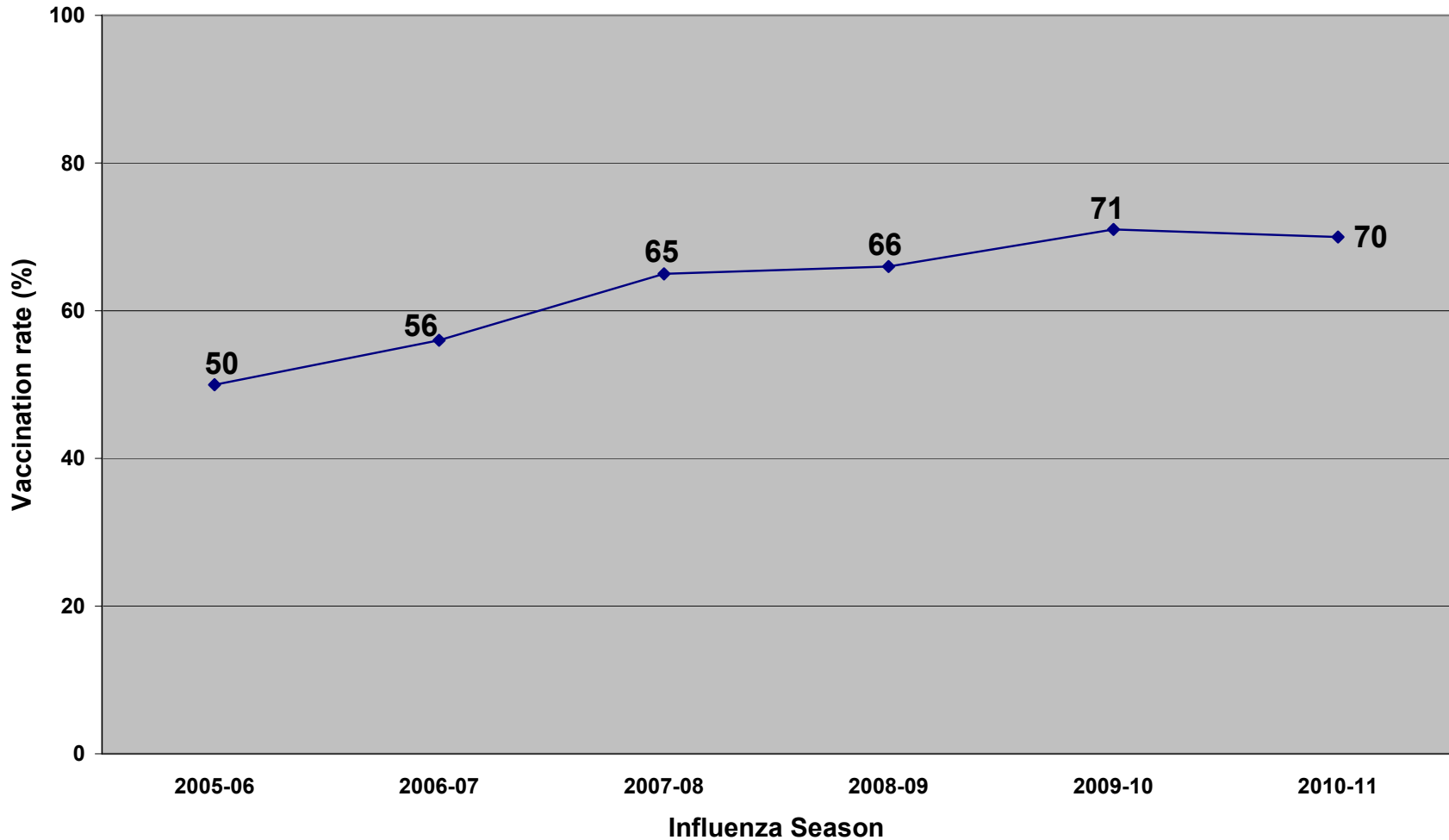
## Nursing Home Data

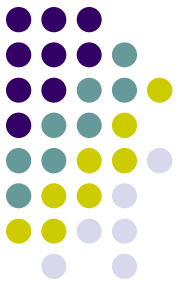
- **323 (81%) of 397 Wisconsin nursing homes reported employee influenza vaccination rates to the BCDER**
- **The proportion of nursing homes using declination forms increased from 80% in 2009-10 to 85% in 2010-11**
- **118 nursing homes achieved an employee influenza vaccination rate of at least 80% in 2010-11 compared to 117 in 2009-10 and 113 in 2008-09**

# Nursing Home Employee Influenza Vaccination Rates



Figure 2 Median Nursing Home Employee Influenza Vaccination Rates  
2005-06 through 2010-11

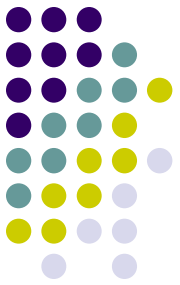




## **Current Influenza Surveillance Systems**

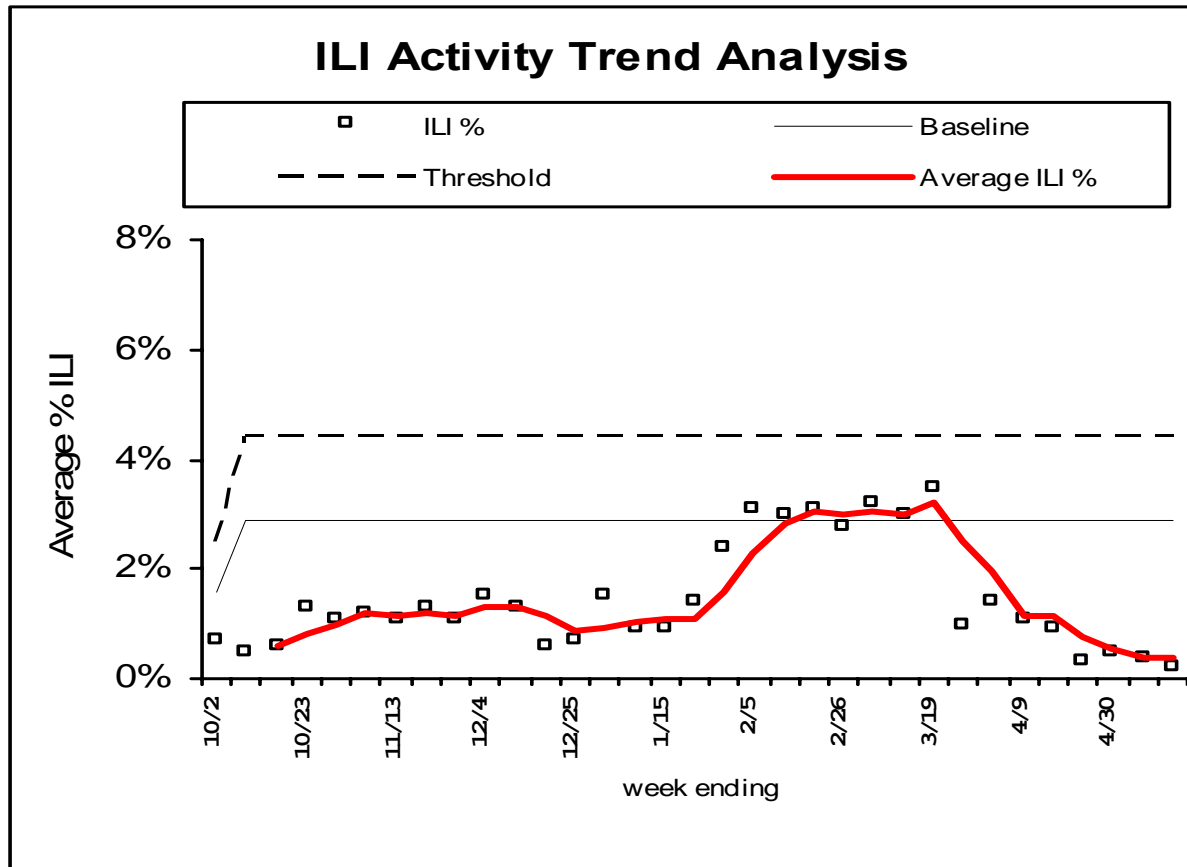
### **ILINet**

- **Surveillance for outpatient influenza-like illness**
- **Fever  $\geq 100$ , with cough or sore throat**
- **Total # with ILI / Total patients seen in a given week**
- **National, National/Regional, Statewide, and Statewide/Regional percentages are calculated**
- **Statewide/Regional broken into baselines and threshold for comparison**



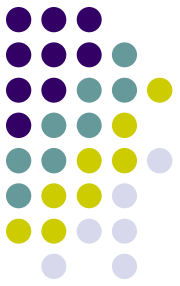
# Current Influenza Surveillance Systems

## ILINet



# Current Influenza Surveillance Systems

## ILINet



### Peak Activity (week ending)

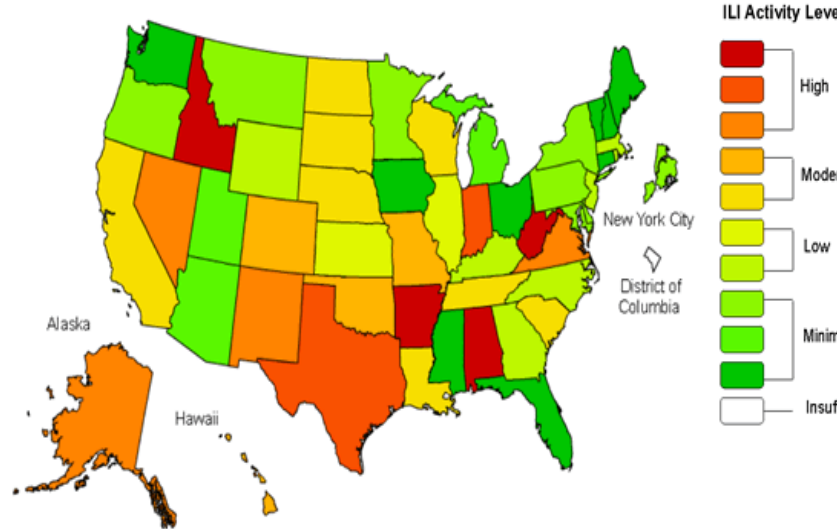
<b>National</b>	<b>February 5</b>
<b>Wisconsin</b>	<b>March 19</b>
<b>Southeastern Region</b>	<b>February 5</b>
<b>Southern Region</b>	<b>February 19</b>
<b>Northeastern Region</b>	<b>March 19</b>
<b>Northern Region</b>	<b>February 5</b>
<b>Western Region</b>	<b>March 19</b>

# Current Influenza Surveillance Systems

## State & Territorial Report/ ILI Intensity

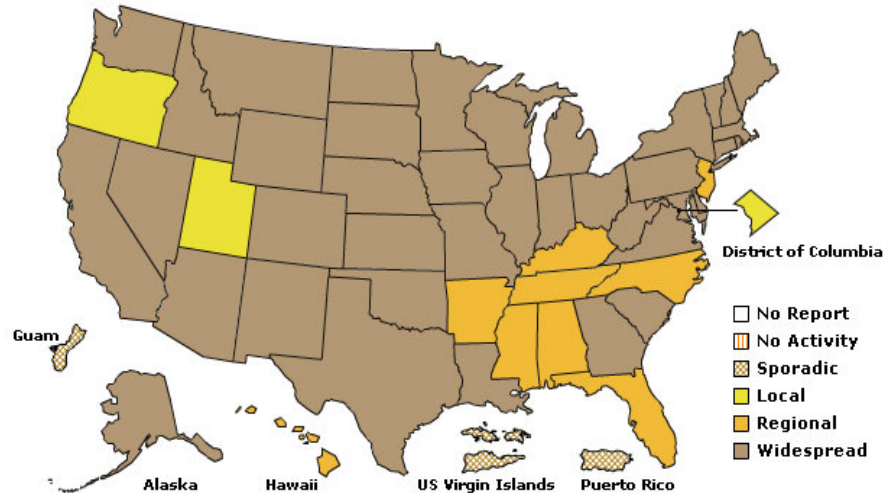


**Influenza-Like Illness (ILI) Activity Level Indicator Determined by Data Reported to ILINet**  
**2010-11 Influenza Season Week 9 ending Mar 05, 2011**



Intensity  
(based on ILINet data)

**A Weekly Influenza Surveillance Report Prepared by the Influenza Division**  
**Weekly Influenza Activity Estimates Reported by State and Territorial Epidemiologists\***  
**Week Ending March 05, 2011- Week 9**



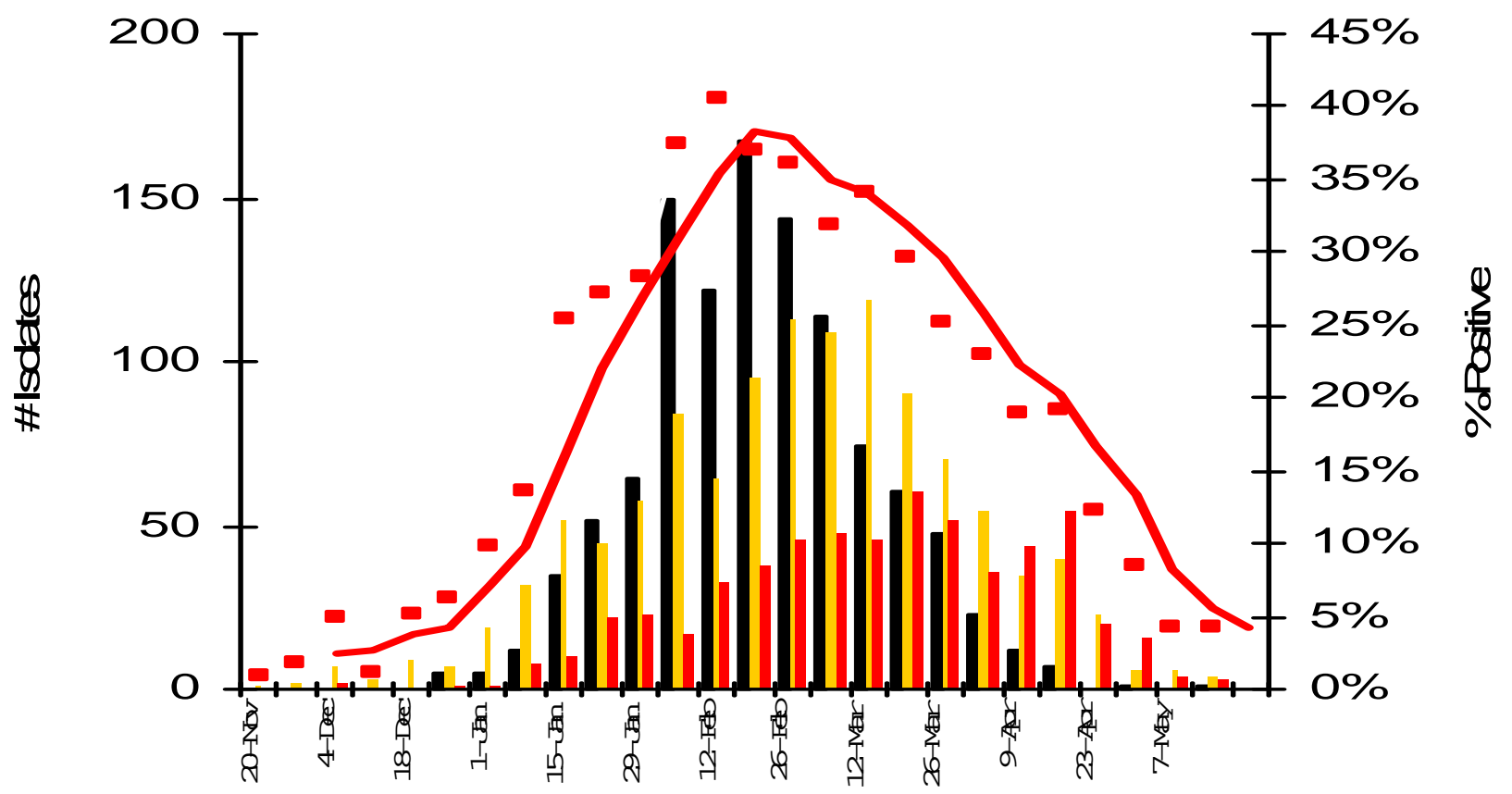
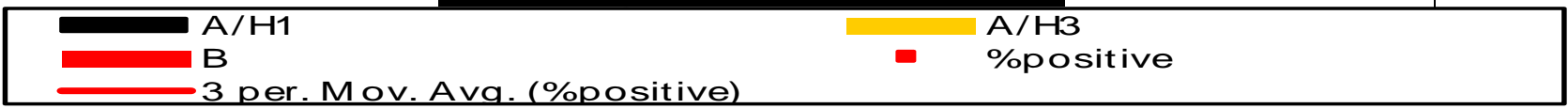
\*This map indicates geographic spread and does not measure the severity of influenza activity.

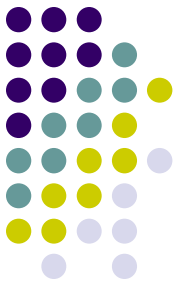
Geographic spread  
(based on multiple datasets)



# Current Influenza Surveillance Systems

## Virologic Surveillance





# Current Influenza Surveillance Systems

## Virologic Surveillance

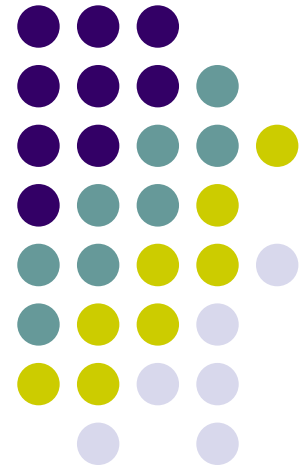
2010-2011 Influenza Season

	<b>A/H1</b>	<b>A/H3</b>	<b>A/Unknown</b>	<b>B</b>	<b>Total</b>
<b>Total Number positive</b>	<b>1096</b>	<b>1147</b>	<b>845</b>	<b>583</b>	<b>3671</b>
<b>% of Total number positive</b>	<b>30%</b>	<b>31%</b>	<b>23%</b>	<b>16%</b>	<b>100%</b>

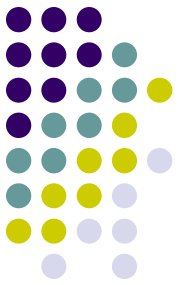
# 2011-2012 Influenza Syndromic Surveillance

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Matt Schwei  
Epidemiologist  
[matthew.schwei@wi.gov](mailto:matthew.schwei@wi.gov)



# Syndromic Surveillance



**Uses individual and population health indicators that are available before confirmed diagnoses or laboratory confirmation to identify outbreaks or health events.**

**Example: Emergency Department (ED) chief complaints for Influenza-like-illness (ILI) – keywords may include: fever, flu, cough, pneumonia, body aches, febrile...**

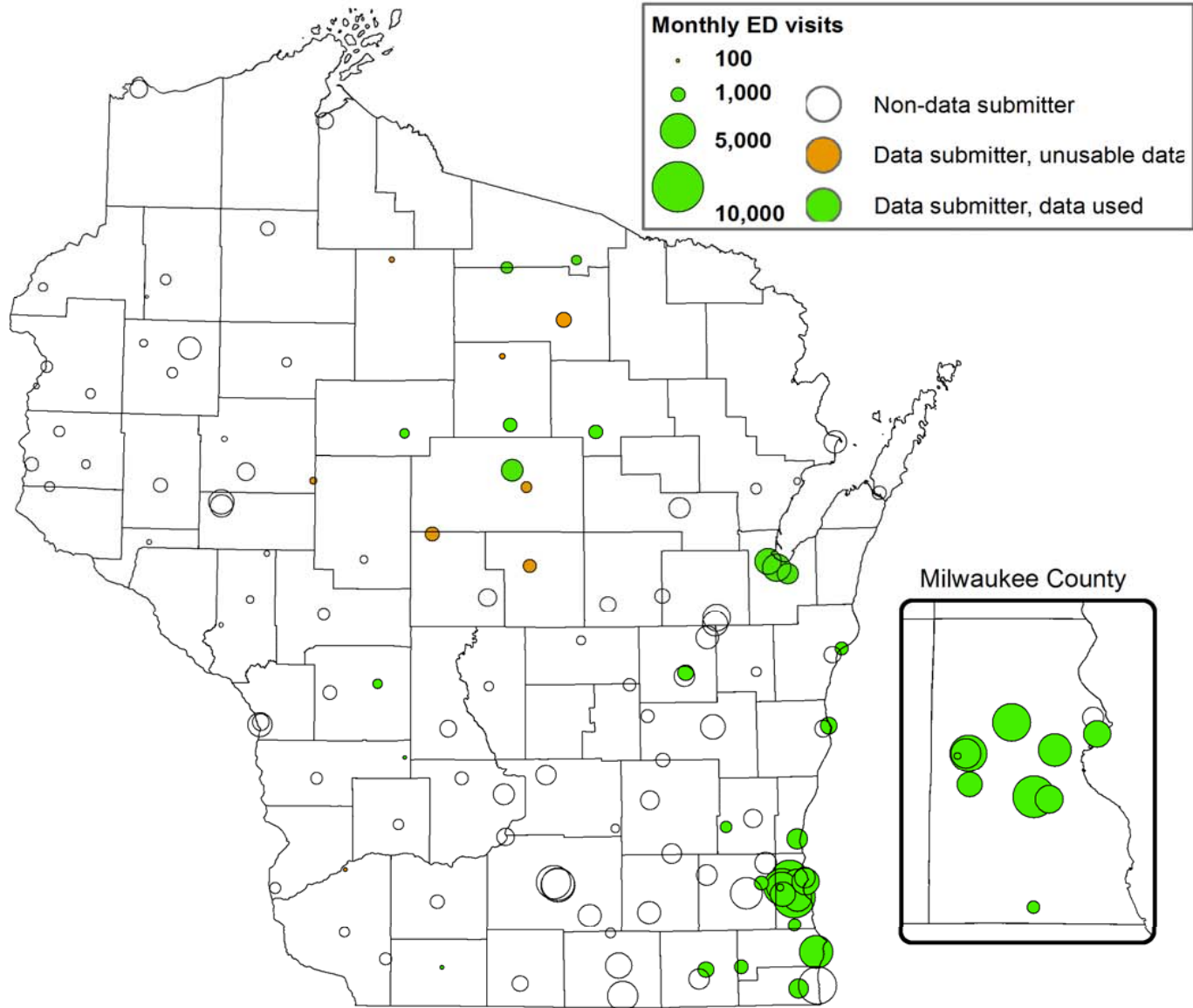
# Syndromic Surveillance in Wisconsin



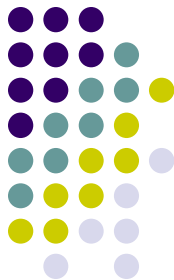
## Data Collection

- **47/123 hospitals send ED data to Wisconsin Health Information Exchange (WHIE)**
- **~ 45% of WI ED visits are analyzed by DPH (about 1 million visits/yr.)**
- **'chief complaint' field is analyzed for select keywords**

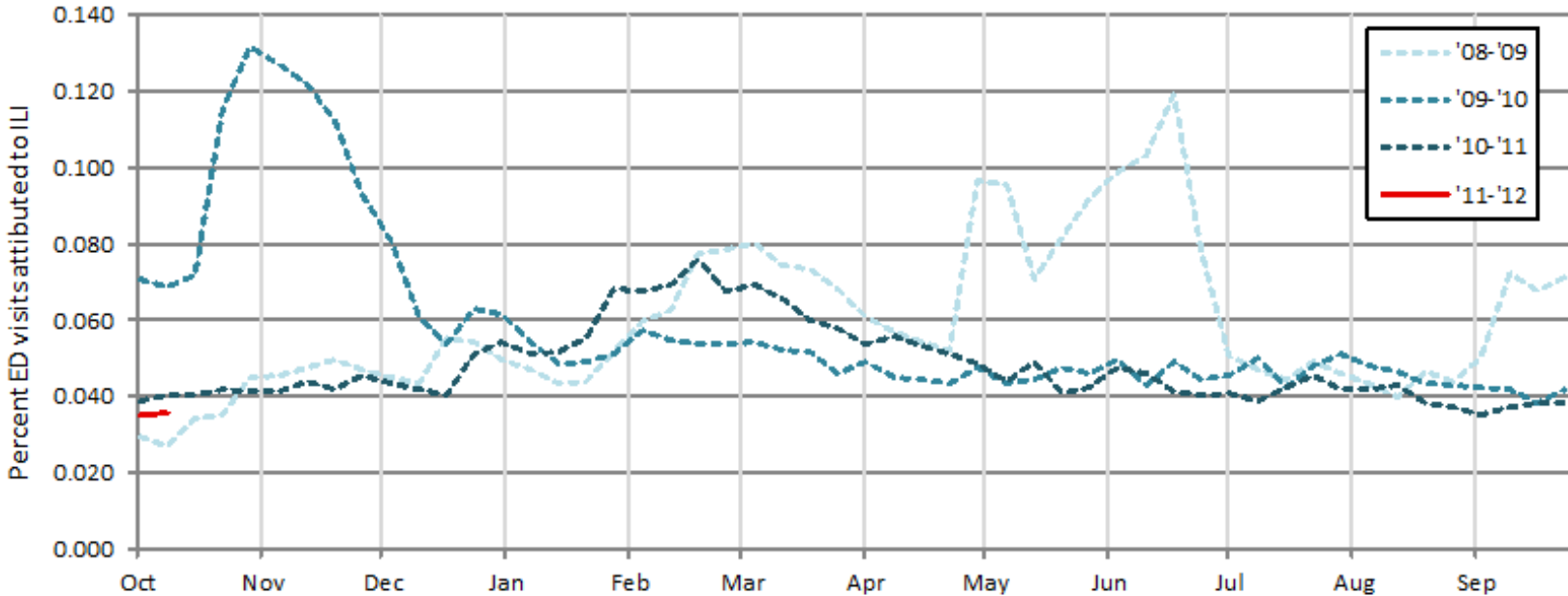
# Emergency Departments (ED) Submitting Syndromic Surveillance Data and Monthly ED Visit Volume



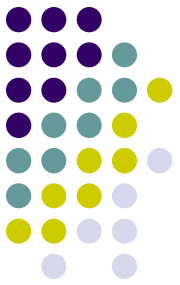
# Syndromic Surveillance in Wisconsin



Annual Seasonal Influenza-like-illness (ILI) Visit Ratio Reported by Wisconsin Hospital Emergency Departments (all ages)



# Syndromic Surveillance

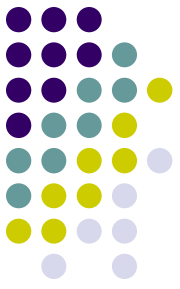


**Other sources of syndromic surveillance information/data**

- **CDC BioSense 2.0** - <http://www.cdc.gov/biosense/>
- **ISDS – Distribute Project** - <http://www.isdsdistribute.org/>
- **Google Flu Trends** - <http://www.google.org/flutrends/>
- **MARISSA** - <https://marissa.emed.wisc.edu/marissa/web/index.php>
- **Milwaukee ESSENSE**
- **School absenteeism data**

# **Current Influenza Surveillance Systems**

## **Influenza-associated Pediatric Mortality**



### **Case Definition**

A pediatric influenza-associated death is defined for surveillance purposes as a death resulting from a clinically compatible illness that was confirmed to be influenza by an appropriate laboratory or rapid diagnostic test in a person aged <18 years.

### **Case classification**

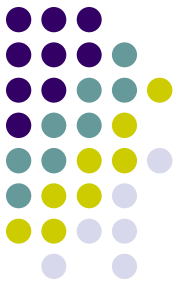
A death meeting the clinical case definition that is lab confirmed.

### **A death should not be reported if:**

1. There is no laboratory confirmation of influenza virus
2. The influenza illness is followed by full recovery to baseline health status prior to death.
3. The death occurs in a person 18 years or older.
4. After review and consultation there is an alternative agreed upon cause of death.

# Current Influenza Surveillance Systems

## Influenza-associated Pediatric Mortality



### **Nationwide**

- 116 laboratory-confirmed influenza-associated pediatric deaths from 34 states, Chicago, and New York City were reported.
- 45 of the 116 deaths reported were associated with influenza B viruses;
- 30 were associated with 2009 influenza A (H1N1) viruses;
- 21 deaths reported were associated with influenza A (H3N2) viruses,
- 20 were associated with an influenza A virus for which the subtype was not determined.

### **Wisconsin**

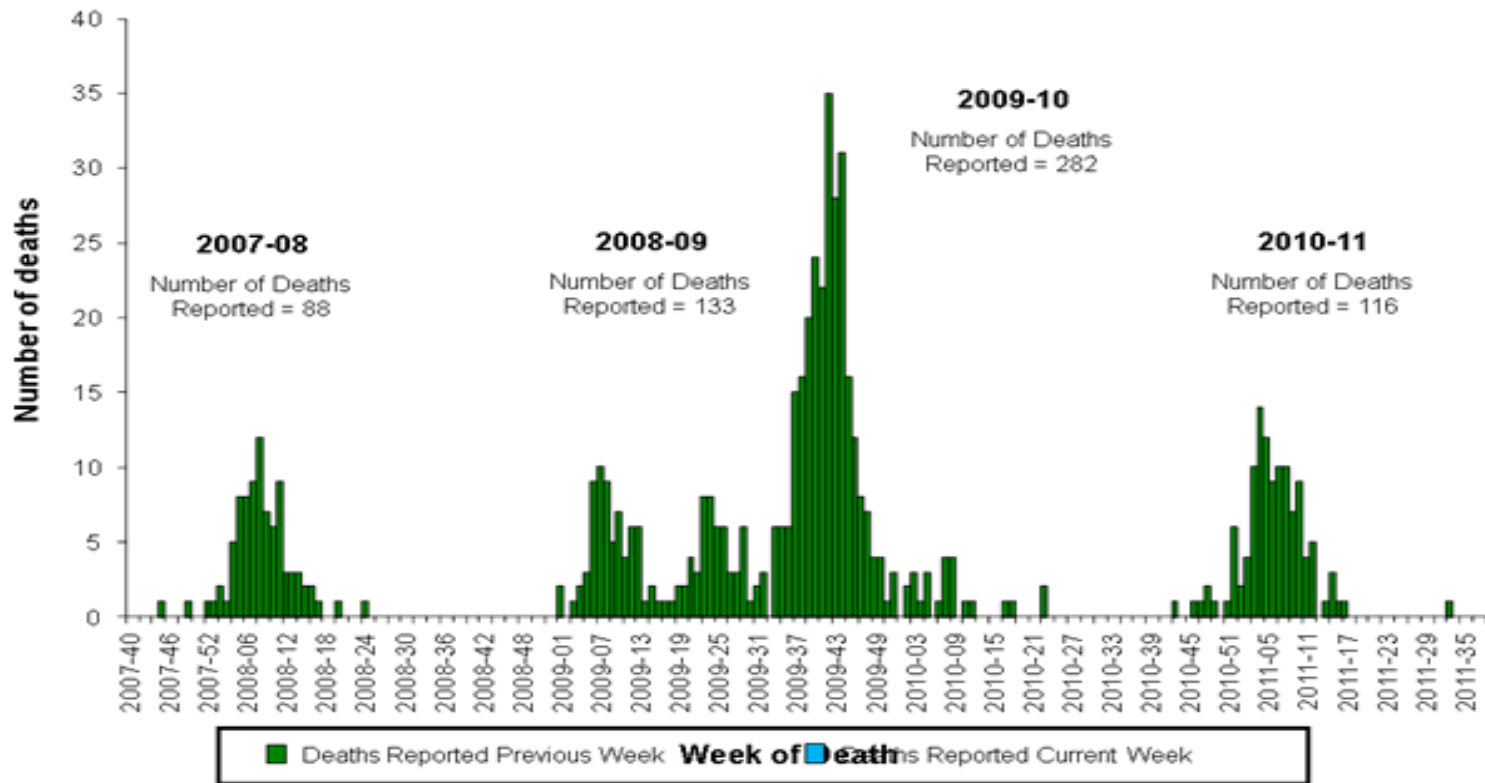
- 4 pediatric deaths reported
- Age (1, 3, 4, 12)
- None vaccinated for flu

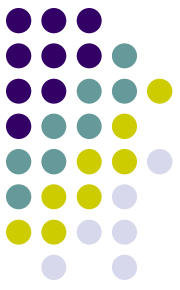


# Current Influenza Surveillance Systems

## Influenza-associated Pediatric Mortality

Number of Influenza-Associated Pediatric Deaths  
by Week of Death: 2007-08 season to present





## **Current Influenza Surveillance Systems** **Influenza-associated Hospitalizations**

886 reported cases

- 730 confirmed (82%)
- 156 probable (18%)

91% Influenza A, 9% Influenza B

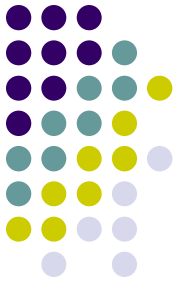
- Influenza A 66% A Unknown, 13% A/H3, 20% A/H1

35% of those eligible received influenza vaccine

19% admitted to ICU, 8% required mechanical ventilation

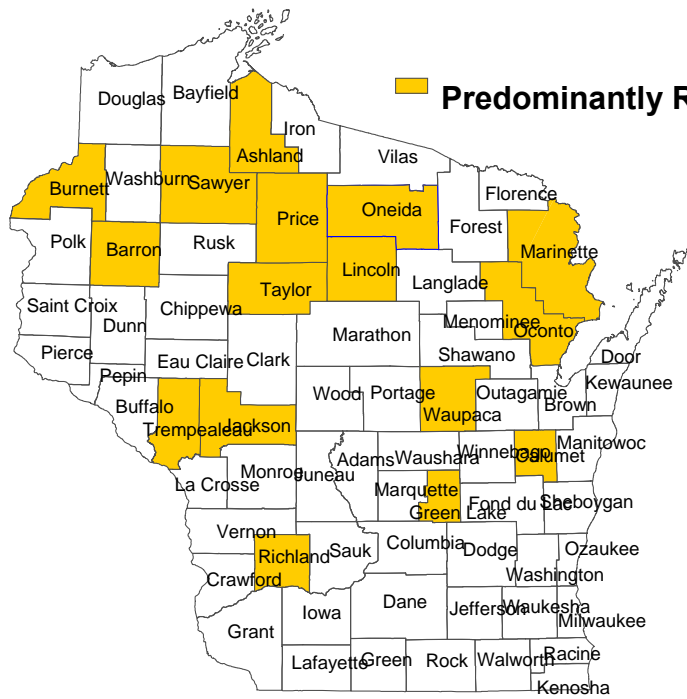
30 reported cases among pregnant woman

- 17% received influenza vaccine

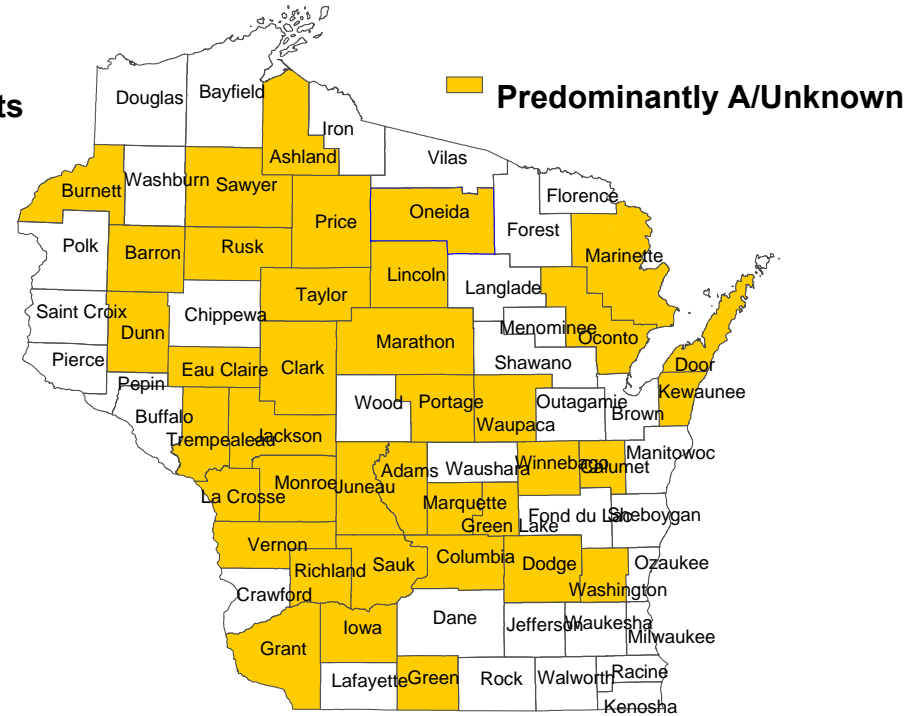


# Current Influenza Surveillance Systems

## Influenza-associated Hospitalizations



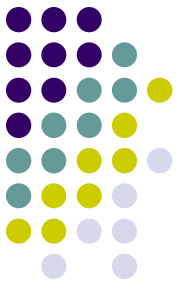
Revised 09/30/2011



Revised 09/30/2011

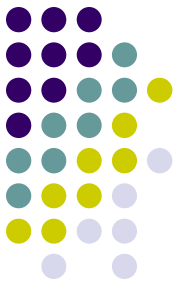
# **Current Influenza Surveillance Systems**

## **Influenza-associated Hospitalizations**



**Why is monitoring for use of rapid tests and influenza A subtyping important?**

- 1. Use of rapid tests, especially when overall ILI is low can result in false positive results**
- 2. Rapid tests cannot identify influenza A subtypes**
- 3. Subtyping of at least a represented sample of cases helps identify geographic spread of the viruses**
- 4. Should seasonal (non 2009) H1N1 emerge, or a change in antiviral resistance is noted, subtyping gives guidance for antiviral use**



# Current Influenza Surveillance Systems

## Influenza-associated Hospitalizations

### Influenza Antiviral Resistance

<b>Antiviral</b>	<b>Influenza A/ 2009 H1N1</b>	<b>Influenza A/Seasonal H1N1</b>	<b>Influenza A/H3</b>	<b>Influenza B</b>
<b>Adamantanes (Amantadine, Rimantidine)</b>	<b>R</b>	<b>S</b>	<b>R</b>	<b>NA</b>
<b>Oseltamivir (Tamiflu)</b>	<b>S</b>	<b>R</b>	<b>S</b>	<b>S</b>
<b>Zanamivir (Relenza)</b>	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>

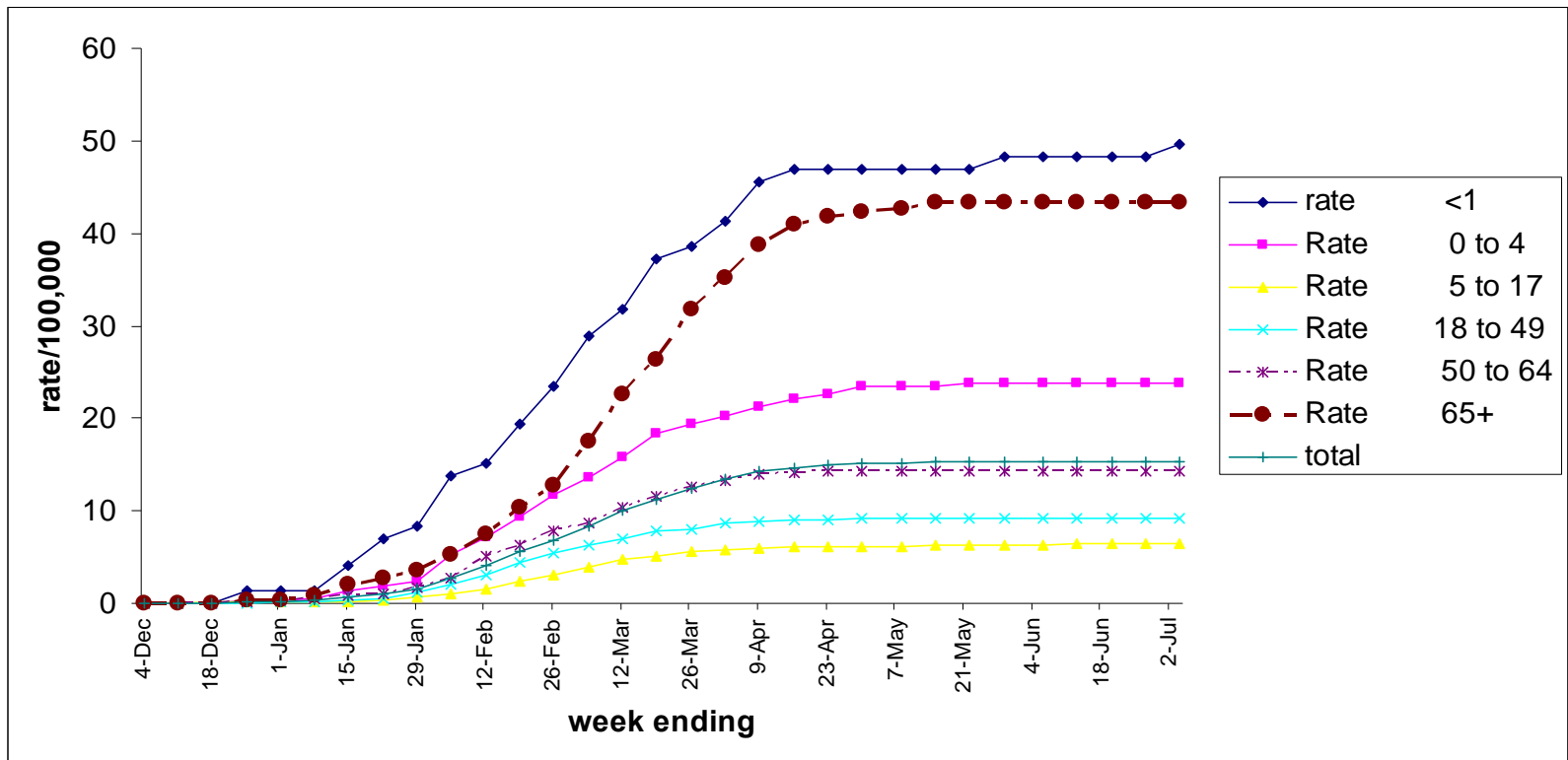
R-Resistant S-Susceptible

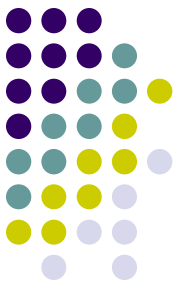


# Current Influenza Surveillance Systems

## Influenza-associated Hospitalizations

Age association





# Current Influenza Surveillance Systems

## Influenza-associated Hospitalizations

Age-association

<u>Region of residence</u>	<u>Overall Rate region</u>	<u>Rate &lt;1</u>	<u>Rate 0 to 4</u>	<u>Rate 5 to 17</u>	<u>Rate 18 to 49</u>	<u>Rate 50 to 64</u>	<u>Rate 65+</u>
<b>Rate/100,000</b>	<b>15.6</b>	<b>51.0</b>	<b>24.3</b>	<b>6.0</b>	<b>9.7</b>	<b>14.7</b>	<b>43.7</b>
<b>Northern</b>	<b>11.8</b>	<b>34.7</b>	<b>30.8</b>	<b>3.7</b>	<b>6.1</b>	<b>13.4</b>	<b>24.7</b>
<b>Northeastern</b>	<b>9.0</b>	<b>26.6</b>	<b>18.2</b>	<b>4.4</b>	<b>3.4</b>	<b>7.9</b>	<b>29.4</b>
<b>Western</b>	<b>8.7</b>	<b>42.2</b>	<b>23.6</b>	<b>3.1</b>	<b>4.9</b>	<b>5.4</b>	<b>24.7</b>
<b>Southern</b>	<b>20.6</b>	<b>48.1</b>	<b>20.7</b>	<b>8.4</b>	<b>10.2</b>	<b>17.2</b>	<b>78.6</b>
<b>Southeastern</b>	<b>20.3</b>	<b>72.2</b>	<b>28.4</b>	<b>7.1</b>	<b>16.0</b>	<b>21.5</b>	<b>46.9</b>

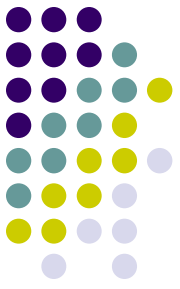


# Current Influenza Surveillance Systems

## Influenza-associated Hospitalizations

### Race-Ethnicity

<u>Region of residence</u>	<u>Overall Rate Region</u>	<u>Rate White</u>	<u>Rate Black</u>	<u>Rate American Indian</u>	<u>Rate Asian</u>	<u>Rate Hispanic</u>
<b>Rate/100,000</b>	<b>15.6</b>	<b>11.9</b>	<b>34.1</b>	<b>19.1</b>	<b>10.0</b>	<b>12.5</b>
<b>Northern</b>	<b>11.8</b>	<b>9.6</b>	<b>0.0</b>	<b>37.4</b>	<b>8.5</b>	<b>25.6</b>
<b>Northeastern</b>	<b>9.0</b>	<b>8.2</b>	<b>16.8</b>	<b>14.0</b>	<b>11.6</b>	<b>6.4</b>
<b>Western</b>	<b>8.7</b>	<b>7.7</b>	<b>0.0</b>	<b>13.3</b>	<b>8.2</b>	<b>8.8</b>
<b>Southern</b>	<b>20.6</b>	<b>16.3</b>	<b>36.0</b>	<b>15.5</b>	<b>10.8</b>	<b>17.9</b>
<b>Southeastern</b>	<b>20.3</b>	<b>14.4</b>	<b>36.2</b>	<b>14.3</b>	<b>9.5</b>	<b>12.2</b>

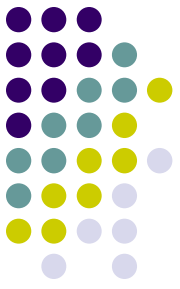


# Current Influenza Surveillance Systems

## Influenza-associated Hospitalizations

### Age-Race-Ethnicity

Age Group	Total rate	Rate White	Rate Black	Rate American Indian	Rate Asian	Rate Hispanic
Total	15.6	11.9	34.1	19.1	10.0	12.5
<1	51.0	14.6	106.1	173.3	134.5	142.7
0 to 4	24.3	13.0	44.3	43.4	22.4	38.0
5 to 17	6.0	4.3	12.0	21.3	6.2	1.3
18 to 49	9.7	6.1	39.7	13.7	1.5	7.0
50 to 64	14.7	12.2	41.7	23.1	32.0	19.8
65+	43.8	37.9	46.7	0.0	32.5	53.8



# Current Influenza Surveillance Systems

## Influenza-associated Hospitalizations

Age-Race-Ethnicity

Ratio to White

<u>RATIOS</u>							
<u>White:</u>	<u>total</u>	<u>&lt;1</u>	<u>0 to 4</u>	<u>5 to 17</u>	<u>18 to 49</u>	<u>50 to 64</u>	<u>65+</u>
Black	2.9	7.3	3.4	2.8	6.5	3.4	1.2
American Indian	1.6	11.9	3.3	5.0	2.2	1.9	0.0
Asian	0.8	9.2	1.7	1.5	0.2	2.6	0.9
Hispanic	1.0	9.8	2.9	0.3	1.1	1.6	1.4
Non-white	1.8	8.8	3.0	1.8	3.3	2.7	1.1

# **Current Influenza Surveillance Systems**

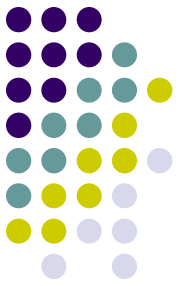
## **Influenza-associated Hospitalizations**



### **Conclusions and Interpretation**

- 1. Need to assure more conclusive testing for influenza in counties where the rapid test is primarily used**
- 2. Need to assure as many specimens as possible are sent to the Wisconsin State Lab for subtyping**
- 3. Age and racial/ethnic disparities have been identified and need to be monitored closely for changes**
- 4. Need more complete data regarding race/ethnicity**

## **“The Before and After flu...flu”**

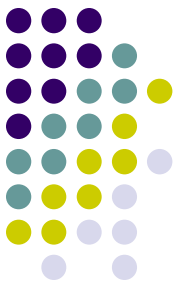


**In response to complacency concerns in some long term care facilities to identification and response to respiratory outbreaks prior to and after influenza season.**

**It remains imperative to conduct surveillance for and respond to respiratory outbreaks in a facility.**

**Testing only for influenza, usually by rapid tests, is not adequate for diagnosis and response to respiratory outbreaks**

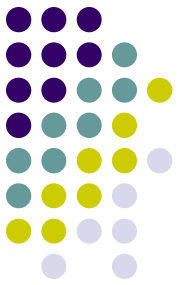
**Many different virus can and have caused respiratory outbreaks among LTC facilities in the State**



## **“The Before and After flu...flu”**

### **Protocol for Long Term Care Facilities**

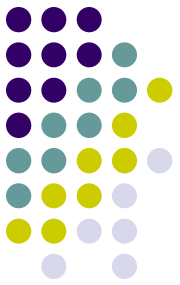
- **A respiratory disease outbreak is defined as three or more residents from the same unit whose onset of respiratory illness was within 72 hours of each other.**
- **When an outbreak of respiratory disease is suspected in a facility, notify local public health.**
- **With prior approval from the Division of Public Health testing (free of charge) is initiated.**
- **Results will be sent to the Division of Public Health and to the specimen submitter.**



## **“The Before and After flu...flu”**

### **Protocol for Long Term Care Facilities Common Errors**

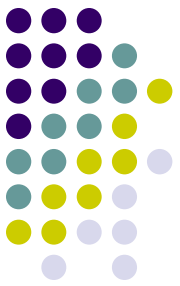
- Relying solely on influenza testing
- Being to specific in original diagnosis (URI vs pneumonia)
- Reasons for inadequate responses
  - It's aspiration pneumonia i.e. not infectious
  - The resident was/is on palliative care
  - These residents always have some kind of respiratory illness



## **“The Before and After flu...flu”**

### **Specimen Collection**

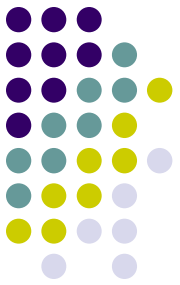
- **Collect specimens from 2-3 residents or staff with the most recent onset.**
- **A nasopharyngeal (NP) swab is the preferred specimen**
- **An oropharyngeal swab is an alternative if an NP cannot be collected**
- **The swab should be placed in viral transport media (kit #18 at State Lab) and sent overnight with a cool pack to the Wisconsin State Laboratory of Hygiene**



## **“The Before and After flu...flu”**

### **Specimen Collection Common Errors**

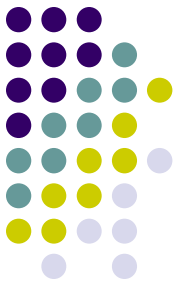
- **Specimens received from residents/staff who onset is > 5 days prior**
- **Inexperience in collecting NP/OP swabs for testing**
- **Delay in collection because no viral transport media is available**
- **Specimens are not sent overnight and sometimes need to be rejected by State Lab due to unsafe transport**



## **“The Before and After flu...flu”**

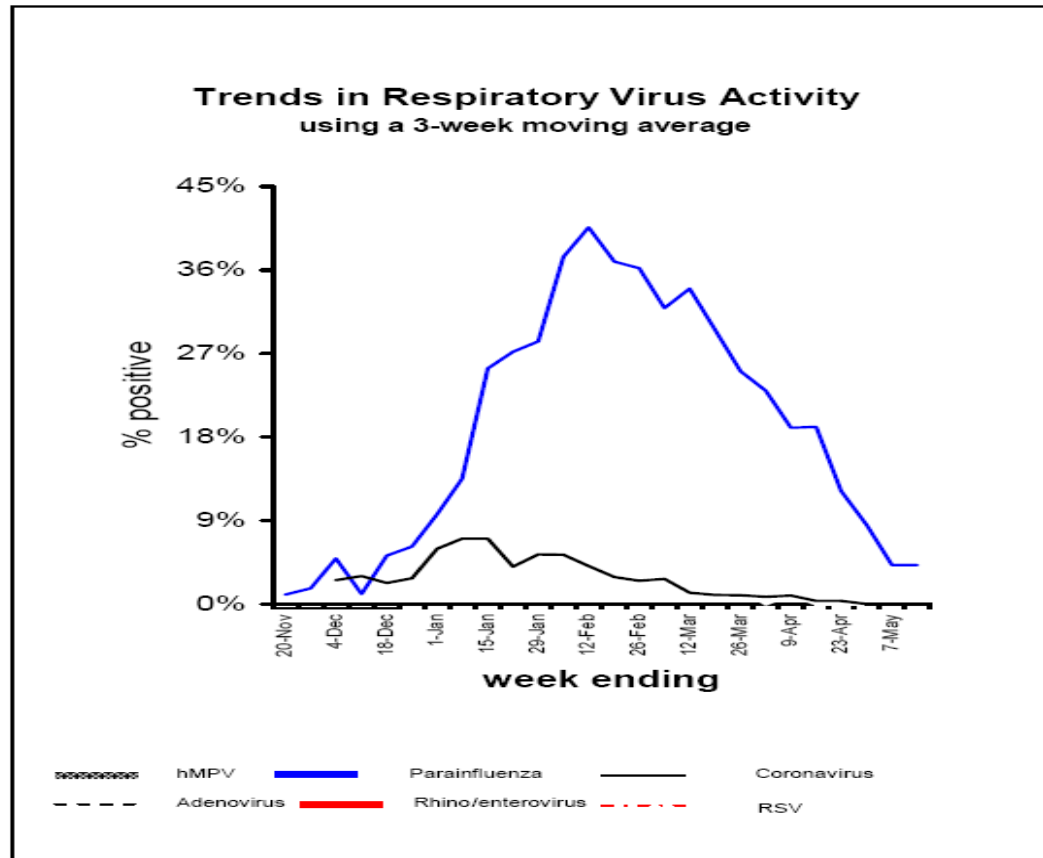
### **Tests Provided**

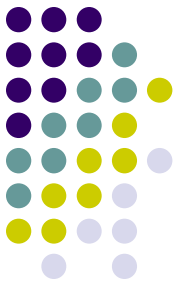
- **Each specimen is initially tested for influenza via RT-PCR**
- **Respiratory Virus Panel (RVP)**  
**Negative tests are tested for a multi-virus target RT-PCR for RSV, Coronaviruses, Adenoviruses, Parainfluenza viruses, Bocaviruse, Rhino/enteroviruses, Human metapneumovirus,**



# “The Before and After flu...flu”

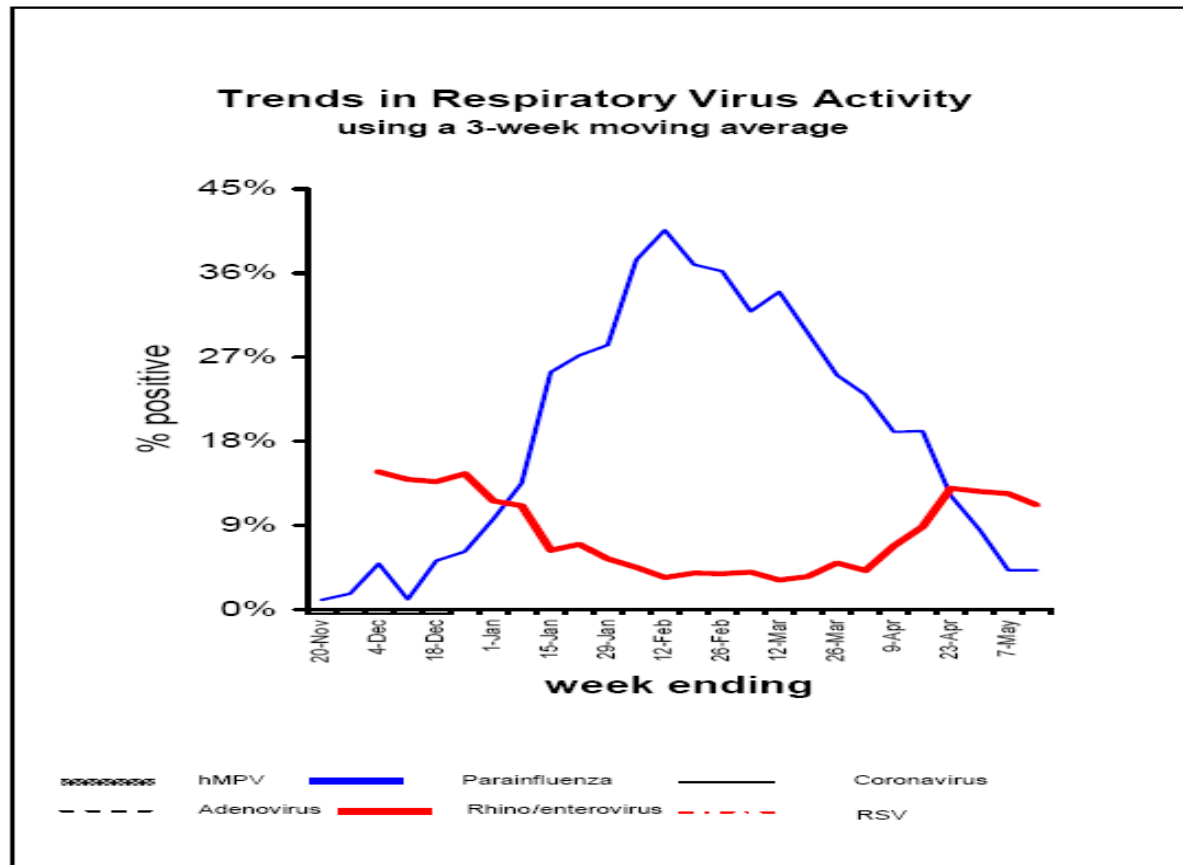
## Before flu ...flu Coronavirus

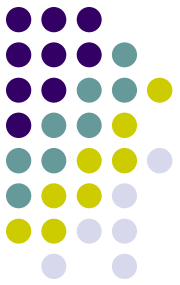




# “The Before and After flu...flu”

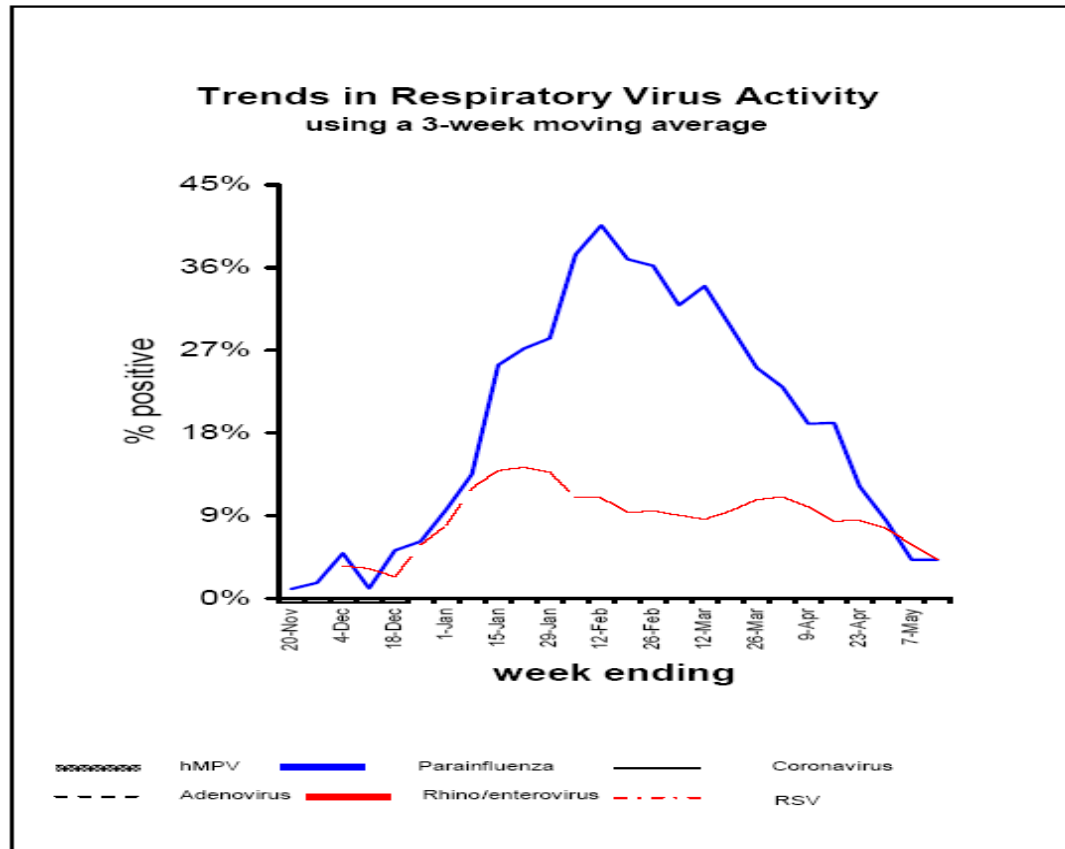
## Before and After flu ...flu Rhino/Entero

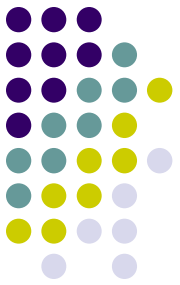




# “The Before and After flu...flu”

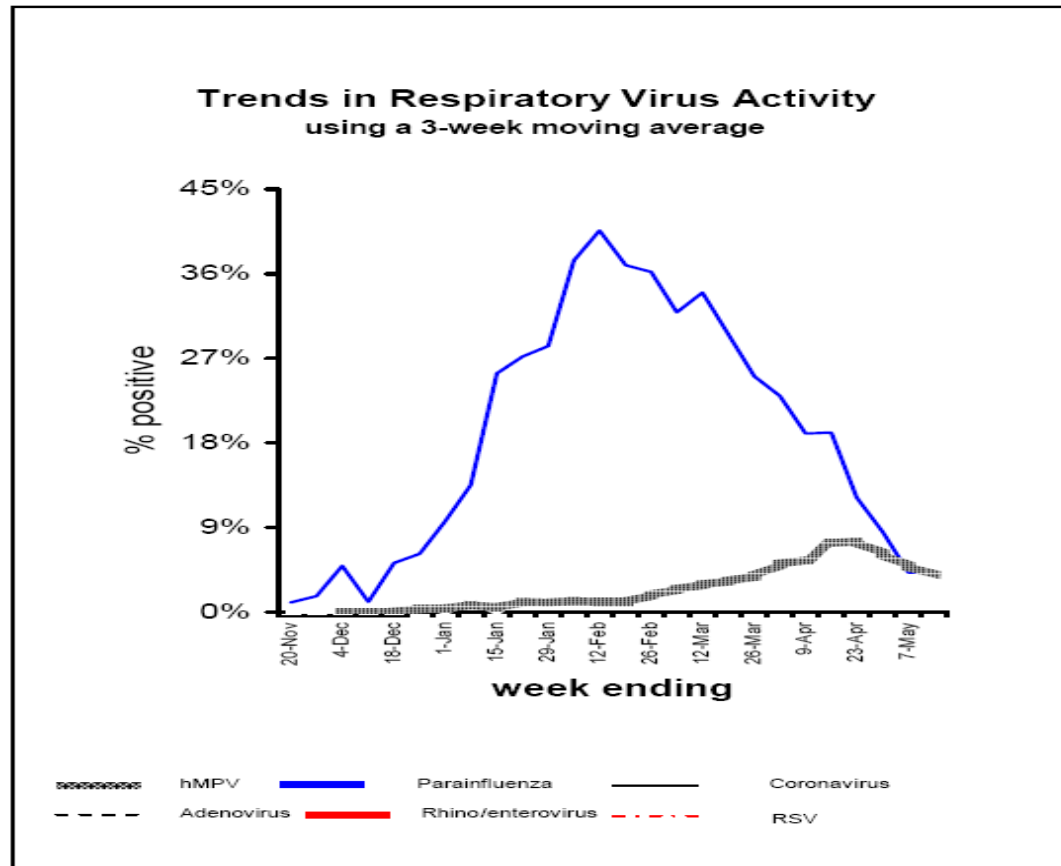
## Before, During and After flu ...flu Rhino/Entero

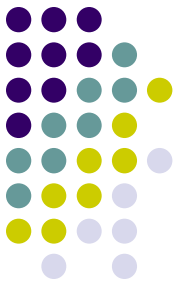




# “The Before and After flu...flu”

## After flu ...flu Human Metapneumovirus

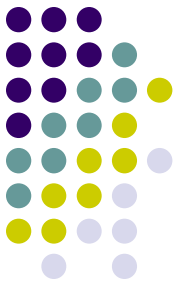




## **“The Before and After flu...flu”**

### **Analysis (Why this is important)**

- 1. Respiratory illness cannot always be distinguished based on signs and symptoms.**
- 2. Respiratory illness can rapidly spread throughout a long term care facility if proper infection control precautions are not implemented.**
- 3. Illness caused by some viruses require precautions in addition to droplet precautions**

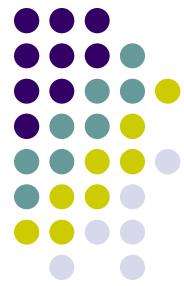


# “The Before and After flu...flu”

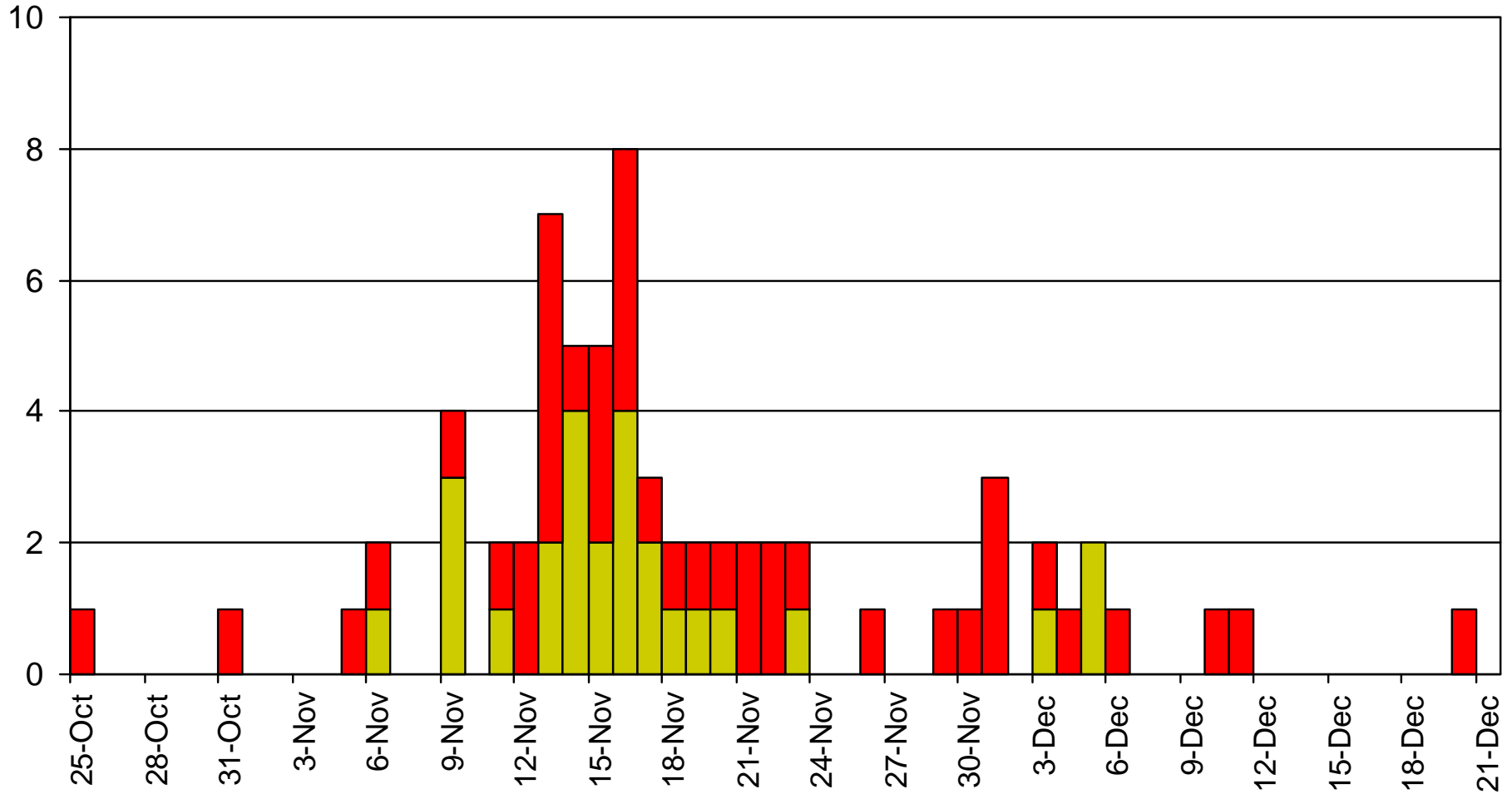
## Analysis (Why this is important)

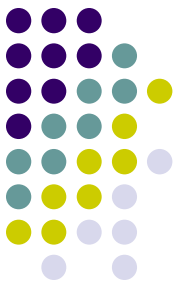
	Droplet Precautions	Contact Precautions
Influenza	√	
RSV		√
Parainfluenza		√
Rhino/Enterovirus	√	
Coronavirus		√
Human Metapneumovirus		√
Adenovirus	√	√

Coronavirus OC-43  
October-December, 2008  
N=64



residents staff





## Hospitalization Reporting Through WEDSS

- Influenza-Associated Hospitalizations should be reported by providers through WEDSS (web report)
- Some laboratories report hospitalizations through ELR (lab report)
- Providers reporting through WEDSS should choose the disease “Influenza-Hospital Admission”. LPHAs see this listed as “Influenza-Associated Hospitalization”.
- Reports should contain all known information, especially onset date and race/ethnicity
- Do NOT report 2009 A/H1N1 as novel influenza
- For more information on how to report through WEDSS visit <http://www.dhs.wisconsin.gov/wiphin/WEDSS.htm> or contact your local health department or the Division of Public Health WEDSS staff (email: [DHSWEDSS@wisconsin.gov](mailto:DHSWEDSS@wisconsin.gov))