


**Overview of the
National Respiratory and
Enteric Virus Surveillance System**

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Objectives

- Describe the National Respiratory and Enteric disease Surveillance System (NREVSS)
- Explain how NREVSS data contributes to influenza surveillance at the national and state level

Outline

- **NREVSS Overview**
 - Website
 - Reporting Structure
- **Data Applications**
- **Influenza Surveillance**
 - National
 - Texas
- **Participating in NREVSS**

NREVSS Overview

- **Passive, laboratory-based surveillance system**
 - Specimen-based
 - Developed in the early 1980s
 - electronic data since 1989
- **Monitors real-time circulation of respiratory and enteric viruses**
- **Monitors trends in seasonality of respiratory and enteric viruses**

NREVSS Overview

- **Data sources**
 - State and local public health laboratories, commercial labs, and hospitals/universities
- **Test types**
 - Antigen detection
 - Virus isolation
 - PCR
- **Weekly reporting of no. tests and no. positives**

$$\text{Circulation} = \frac{\# \text{ positive results}}{\# \text{ tests performed}}$$

NREVSS Overview

- **Viruses include:**
 - Influenza
 - 2009 AH1N1, Seasonal AH1N1, AH3N2, A Unknown, Flu B
 - Respiratory Syncytial Virus (RSV)
 - Human Parainfluenza (HPIV) Viruses 1-4
 - Respiratory & Enteric Adenovirus
 - Rotavirus
 - Human Metapneumovirus*
 - Enterovirus*
 - Rhinovirus*

* added in 2007

NREVSS Overview

Season	# reporting labs
2000-2001	81
2001-2002	86
2002-2003	80
2003-2004	94
2004-2005	96
2005-2006	106
2006-2007*	393
2007-2008*	648
2008-2009*	717
2009-2010*	678

*Surveillance Data, Inc. (SDI), a private company that conducts RSV surveillance with support from MedImmune, Inc. (Gaithersburg, Maryland), contributes laboratory data to NREVSS.

NREVSS Overview

2009-2010 National Statistics

Virus	# labs reporting
RSV	652
Influenza	288
Rotavirus	203
Respiratory Adenovirus	129
HPIV 1-4	128
Enterovirus	74
hMPV	61
Rhinovirus	56
Enteric Adenovirus	32

Map of Participating NREVSS Labs



<http://www.cdc.gov/surveillance/nrevsslabs/map.html>

Current NREVSS Website

<http://www.cdc.gov/surveillance/NREVSS/>

Data Entry Site

Data Applications

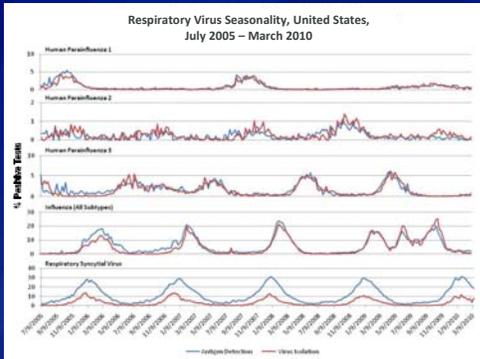
- Recognize and consider possible etiologies and outbreaks of respiratory and enteric diseases
- Determine seasonality of viruses
- Real-time reporting and greater public access to data

Data Applications – Outbreak

- ❑ Fall 2009
 - Hospital in an urban setting
 - Increase in emergency room visits for respiratory disease
 - Very few flu positive lab results
 - Pandemic H1N1?
 - CDC asked to investigate

Data Applications

- ❑ Recognize and consider possible etiologies and outbreaks of respiratory and enteric diseases
- ❑ Determine seasonality of viruses
- ❑ Real-time reporting and greater public access to data



Data Applications

- ❑ Recognize and consider possible etiologies and outbreaks of respiratory and enteric diseases
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- ❑ Real-time reporting and greater public access to data

Surveillance Reports



NREVSS INFLUENZA SURVEILLANCE

National Influenza Surveillance

□ Data Sources (~155 laboratories)

- 85 U.S. WHO collaborating labs
 - All state public health laboratories
 - Some county public health laboratories
 - Some large tertiary care or academic medical centers
- 70 NREVSS labs
 - Chosen based on geographic region
 - Excluding NREVSS labs that may also be WHO collaborating labs
 - Supplements existing WHO data

National Influenza Surveillance

□ WHO Lab

- Resources to subtype
- Report on age

□ NREVSS Lab

- Report subtypes if available
- No demographic information

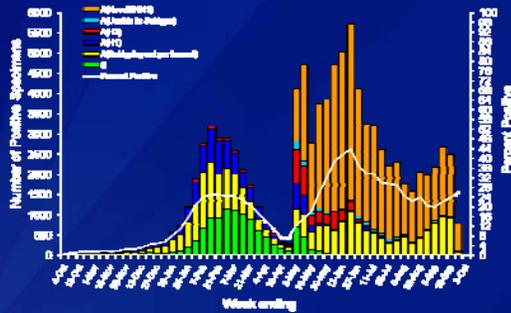
vs.

□ Data Applications

- H1N1 pandemic
 - timing and extent of influenza circulation
 - impact of other respiratory viruses
- Help describe unexplained increases in ILI

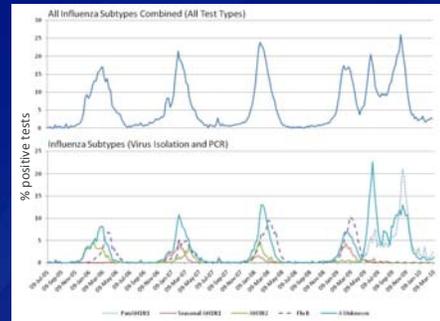
Epidemiology/Surveillance

U.S. WHO/NREVSS Collaborating Laboratories, National Summary, 2008-09



<http://www.cdc.gov/flu/weekly/>

National Influenza (NREVSS Data)



Unpublished Data

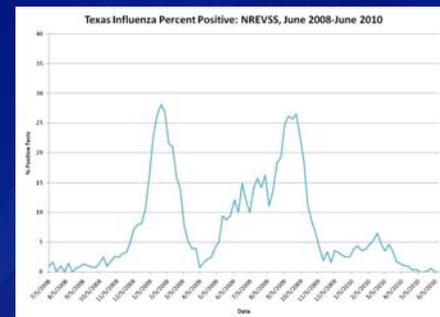
NREVSS: Texas

□ 64 participating labs from 52 cities

- Limited data from 1990
- 27 report flu
- 2008-2009
 - 85,709 tests, 12490 pos = 14.6%
- 2009-2010
 - 128,344 tests, 16643 pos = 13.0%

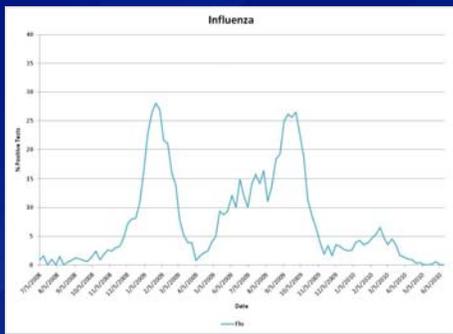
Virus	# labs reporting (2009)
RSV	53
Influenza	27
Rotavirus	21
Respiratory Adenovirus	10
HPIV 1-4	10
hMPV	5
Enterovirus	4
Rhinovirus	4
Enteric Adenovirus	2

Texas Influenza Trends (NREVSS)



Unpublished Data

Texas Respiratory Virus Trends (NREVSS)



Summary

- **NREVSS**
 - Passive surveillance system
 - Specimen-based
 - Information on circulating respiratory and enteric viruses
- **Influenza**
 - Supplements U.S. WHO surveillance
 - Trends in influenza subtypes and other contributing pathogens

Limitations

- **Generalizability**
 - Not population based
 - Insufficient representation of certain geographic regions
 - No demographic information
- **Specimen-based reporting**
- **Some delays in reporting**

Participate in NREVSS

- **Uniform reporting structure**
- **Not labor intensive**
- **Epidemiological information and support**
- **Better regional representation**
- **Contact: NREVSS@cdc.gov**



Thank You!

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For more information please contact Centers for Disease Control and Prevention

1600 Clifton Road NE, Atlanta, GA 30333
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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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Division of Viral Diseases, Epidemiology Branch



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