Influenza Surveillance in the United States

Alicia P. Budd, MPH

National Adult and Influenza Immunization Summit Call
October 11, 2018
Outline

- Goals of the system
- System overview
- Reporting timeline
- Component by component
  - Methods
  - Current activity
- Influenza information resources
Goals of Influenza Surveillance

- Identify and characterize viruses/strains
- Identify viruses with pandemic potential
- Provide situational awareness
  - Describe the onset and duration of the season
  - Track geographic spread
- Monitor severity
- Describe clinical infections and those at risk
- Guide decisions for interventions
U.S. Influenza Surveillance

• National influenza surveillance is a collaborative effort
  – CDC Influenza Division coordinates the system
  – State and local public health staff are our primary partners
    • Influenza surveillance coordinator in every state, Chicago, DC, NYC, Puerto Rico, US Virgin Islands, Palau, Mariana Islands
    • Public health laboratorian in all states, NYC, DC
  – Data providers
    • Clinicians
    • Vital statistics staff
    • Laboratorians
U.S. Influenza Surveillance System
U.S. Influenza Surveillance Reports

https://www.cdc.gov/flu/weekly/fluactivitysurv.htm
# Reporting and Analysis Timeline

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- **Collect data about influenza activity occurring this week.**

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- **Report data.**
- **Analyze data.**
- **Review data; write FluView report.**
- **Post FluView report; update FluView interactive**
Virologic Surveillance: (1) U.S. World Health Organization (WHO) Collaborating Laboratories, (2) National Respiratory and Enteric Virus Surveillance System Laboratories (NREVSS), (3) Novel Influenza A Virus Reporting

- ~400 participating laboratories
  - ~100 public health laboratories
  - ~300 clinical laboratories
- Weekly reports
  - # specimens tested
  - # positive for influenza by type, subtype
  - Age data from WHO collaborating labs
- Data Uses/Interpretation
  - Is influenza activity increasing/decreasing and where?
  - Distribution of circulating viruses – A vs B; influenza A subtypes and B lineages
  - Identification of viruses with pandemic potential (novel influenza A virus surveillance)
Influenza Positive Tests Reported to CDC by U.S. Clinical and Public Health Laboratories, 2017-2018 Season
Viral Strain Surveillance

• Public health labs submit subset of influenza positives to CDC for additional testing
  – Full genome sequencing of all specimens
  – Detailed antigenic characterization
  – Antiviral resistance testing
  – Development of vaccine candidate strains as needed

• Data Uses/Interpretation
  – Monitor influenza virus evolution
  – Guide decisions about antiviral use and vaccine strain selection
Novel Influenza A Reporting: Cases by Season and Subtype

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Outpatient Influenza-Like Illness (ILI) Surveillance: ILINet

- **Monitor ILI**
  - Fever ≥100F AND cough and/or sore throat
- **Primary care providers (~2,500)**
  - >35 million patient visits per season
- **Weekly reports**
  - # of patient visits for ILI
  - # patient visits for any reason
- **Data Uses/Interpretation**
  - Is ILI (% of all visits that are for ILI) increasing/decreasing and where?
  - How does this season compare to previous season in terms of weeks with elevated activity, timing of increased activity and intensity of peak?
Percentage of Visits for Influenza-like Illness (ILI), 2017-2018 and Selected Previous Seasons
A picture from 2016-17, NOT THIS WEEK.
Hospitalization Surveillance: FluSurv-Net

- Population-based surveillance for laboratory-confirmed influenza-related hospitalizations
  - 13 states (70 counties)
  - ~9% US population under surveillance
- Weekly reports
  - # of patients admitted to the hospital that have a positive laboratory test for influenza and reside in the catchment area
  - Clinical/demographic information
- Data Uses/Interpretation
  - How does rate of influenza hospitalizations compare to previous seasons?
  - Are there changes to expected age/underlying condition/clinical characteristics?
Laboratory-Confirmed Influenza-Associated Hospitalizations, Cumulative Rate, 2017-2018 and Previous 5 Seasons
Mortality Data: National Center for Health Statistics (NCHS) National Vital Statistics

• Death certificate data
  – >99% of deaths occurring in the United States
  – Preliminary data available as NCHS mortality surveillance data

• Daily updates of reports from state vital statistics office
  – # of total deaths, pneumonia deaths and influenza deaths
  – > 50% of expected deaths available at time of report (2 week lag)

• Data Uses/Interpretation
  – Compare timing and severity of influenza impact on mortality (% of deaths due to pneumonia and influenza) to previous seasons
Influenza-Associated Pediatric Mortality

- Influenza-associated death in a person <18 years of age
  - Requires laboratory confirmation of influenza
  - Clinical and epidemiologic data
- Nationally notifiable condition since 2004-2005 season
- Data Uses/Interpretation
  - Are the number of reported deaths similar to previous seasons?
  - Does clinical/epidemiologic data show anything new about risk factors/clinical course?
From 2016-17, NOT THIS WEEK.
Summary of U.S. National Influenza Surveillance System

• Multi-component system that provides indicators of
  – Where, when and to what extent influenza activity is occurring and
  – Which viruses are responsible for that activity

• Requires participation of many partners – healthcare, public health

• Is NOT trying to count every case of influenza or influenza-related illness
  – Data from each component is analyzed/reported in way that most appropriately allows comparison from season to season
  – Can only compare case counts for novel influenza A and pediatric death

• Ultimate goal: provide data needed to guide public health and clinical decision making in order to minimize the impact of influenza
Often Confused Influenza Resources

• Influenza Activity
  – FluView (www.cdc.gov/flu/weekly/)
  – FluView interactive (www.cdc.gov/flu/weekly/fluviewinteractive.htm)

• Vaccine Availability
  – Flu Vaccine Finder (vaccinefinder.org)

• Vaccine Coverage
  – FluVaxView (www.cdc.gov/flu/fluvoxview/index.htm)
For more information, contact CDC
1-800-CDC-INFO (232-4636)

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.