

# Future public health strategies for influenza

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## Outline

- Lessons learned from H1N1 programs
- Improved flu surveillance
- Old and new partners
- Approaches to special populations
- Coverage assessment
- Vaccine safety monitoring
- Vaccine effectiveness
- Implications of a universal recommendation



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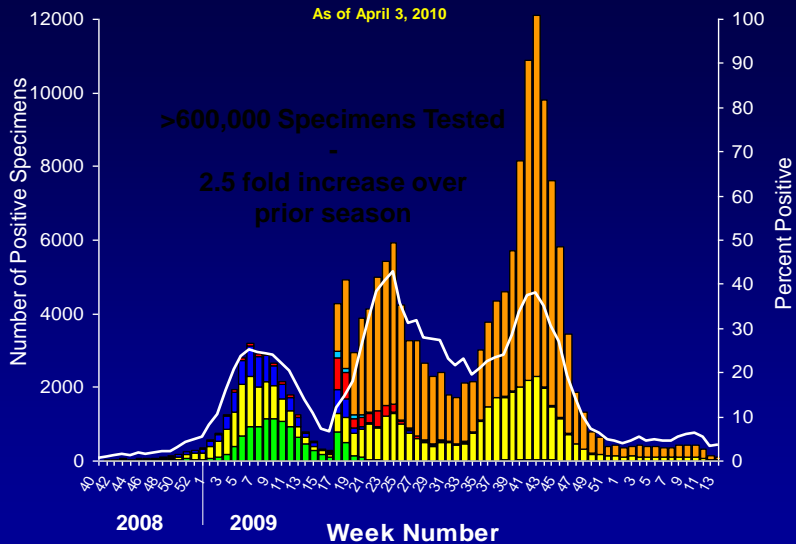


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## CDC Virologic Surveillance – 2008-10 Influenza Seasons

As of April 3, 2010



■ B ■ A(Subtyping not performed) ■ A(H1)  
■ A(H3) ■ A(Unable to subtype) ■ A(2009 H1N1)  
— Percent Positive

[www.cdc.gov/H1N1flu](http://www.cdc.gov/H1N1flu)



## Virologic Surveillance

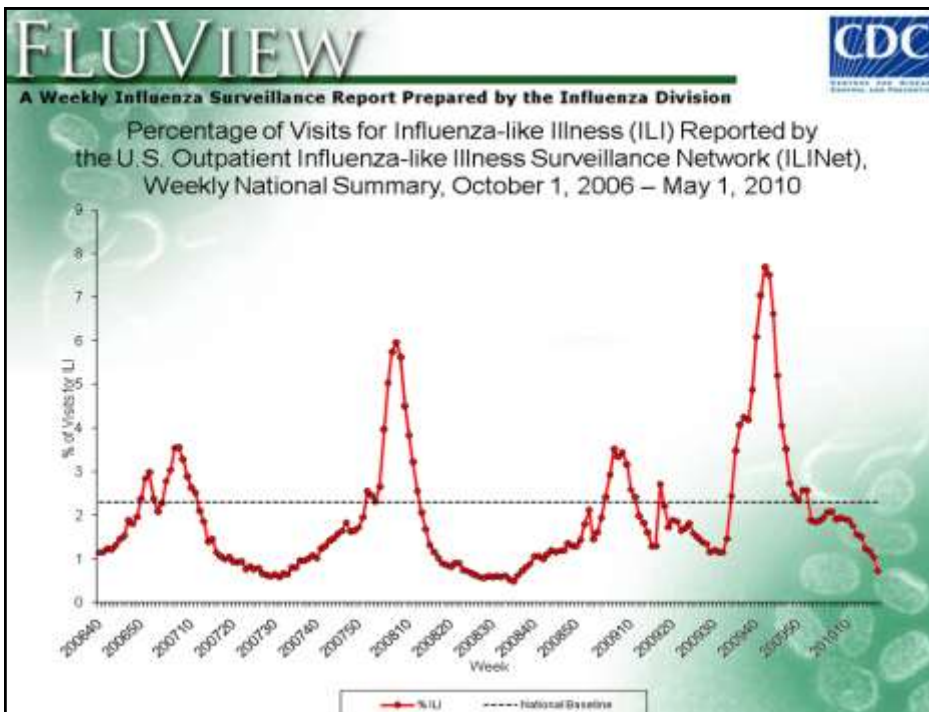
- Virologic surveillance is critical for directing vaccine strain selection and monitoring for viruses with pandemic potential
  - Increased support with reagents and TA to domestic and international labs
  - Increased antiviral resistance monitoring
  - Surveillance for reassortant viruses having genes from animal-origin viruses



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# Communication about Surveillance

**CDC** Centers for Disease Control and Prevention  
Your Online Source for Credible Health Information

## Flu Activity & Surveillance

Reports & Surveillance Methods in the United States

- Current United States Flu Activity Map
- Weekly U.S. Influenza Surveillance Report
- International Influenza Surveillance

Past Weekly Surveillance Reports

The most current information on 2009 H1N1 flu is available at <http://www.cdc.gov/h1n1flu/>.

Years	Report for the week ending
2009 - 2010	Current Weekly Influenza Report <input type="button" value="Go!"/>
2008 - 2009	Oct 3, 2009—Week 39 <input type="button" value="Go!"/>

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## Surveillance plans

- Surveillance will need to be resourced at a level that is greater than pre-pandemic but less than pandemic level
  - Flexible capacity for vigilance and follow-up in place
  - Need to be prepared for early influenza season in 2010-11
  - Increased need for urgent contemporaneous analyses and visualization
  - Planning for fall internally and with partners



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## Partners

- State and Local epi/surveillance, immunization, emergency preparedness, schools
- Medical specialists
  - Ob/gyn
  - Neurology
  - Others
- Retailers



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## Special Populations

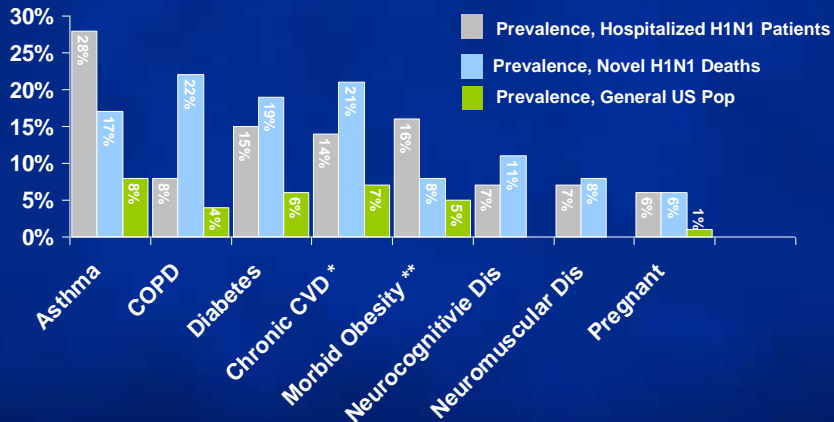
- Persons with medical indications
- School-aged children
- Pregnant women
- Health care workers
- Underserved populations



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## Underlying conditions among hospitalized patients and those who died from H1N1 compared to the general population



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## Special Populations and Venues for Vaccination

- **Persons with medical indications**
  - Retail establishments
  - Medical specialists
- **School-aged children**
  - School-located vaccination
- **Pregnant women**
  - Prenatal programs
- **Health care workers**
  - Workplace vaccination
- **Underserved populations**
  - Multiple venues



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## School-aged children

- Some school-located vaccination occurred in most states during the H1N1 campaign
  - During school
  - Afternoon, evening, weekend clinics at school
  - Students transported to central sites

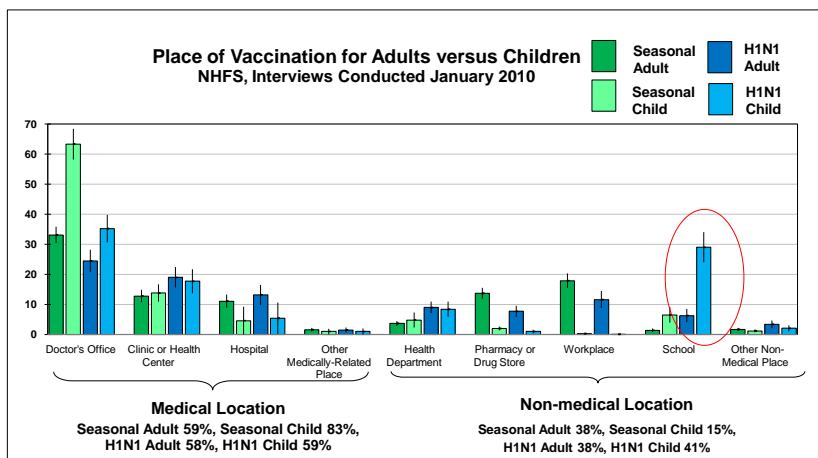


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## NHFS – Place of Vaccination





## School-aged children

- Some school-located vaccination occurred in most states during the H1N1 campaign
  - During school
  - Afternoon, evening, weekend clinics at school
  - Students transported to central sites
- Many immunization programs planning school-located vaccination for fall



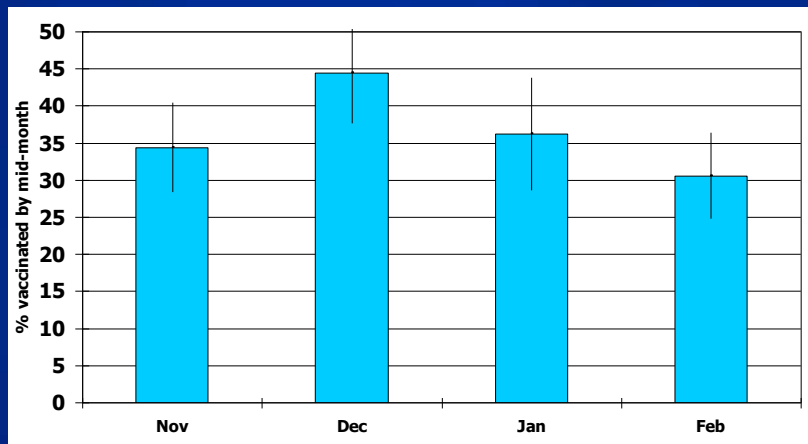
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## Pregnant Women H1N1 Vaccination Coverage, BRFSS



Sample sizes were 218, 161, 136, and 185 currently pregnant women in Nov, Dec, Jan and Feb, respectively.  
States not included: VT in Nov and Dec; AZ, CT, DC, RI, UT, VT in Jan; DC, VT in Feb.



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## Pregnant Women

- Will continue to be a focus for communications efforts
  - Vaccine safety
  - Importance of early ILI treatment, low threshold for intervention
- New CDC working group
- Increasing OB and prenatal clinic vaccinators



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- Estimated vaccine coverage among healthcare personnel:
  - Seasonal influenza: 62%
  - pH1N1: 37% (31% - 39%)
    - Either vaccine: 64%
    - Both vaccines: 35%



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## Health Care Personnel

- Coverage varies greatly by job type among health care personnel
  - Targeting different professions
  - Employer recommendation/requirement
- Using/developing new methods to assess vaccination coverage



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## Racial/Ethnic Disparities in H1N1 and Seasonal Vaccination Coverage by mid-March, NHFS, February 28 – March 27, 2010

	Difference in coverage rate, Black – White		Difference in coverage rate, Hispanic – White	
	H1N1	Seasonal	H1N1	Seasonal
Children	-4.2	-5.6	5.5	-2.6
Adults	-9.8*	-16.5*	-11.5*	-21.7*
All	-7.6*	-13.7*	-6.3*	-16.5*

\* Coverage rate difference statistically significant,  $p < 0.05$



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## Underserved Populations

- Existing new and CDC partnerships with minority organizations
- Communications campaigns
- Universal vaccination recommendation



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## New Analytic Approaches Improving Precision

Kaplan-Meier survival estimates –  
Improving the “enhanced” approach



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## Plans for 2010-2011 Season Influenza Vaccination Surveillance

- Adult coverage surveys: data monthly by state (BRFSS)
- Children:
  - National weekly estimates
  - State-level estimates in November-December
- “Snapshot” surveys in selected metro areas
  - Mid-season and March snapshots
  - Vaccination, opinions, behaviors
- Special population surveys, mid-season & March
  - Health care personnel
  - Pregnant women
- PRAMS, SDI, College Health Database



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## Within-Season Uses of Influenza Vaccination Data

- At state level
  - Target communications for National Influenza Vaccination Week
  - Brief state government officials
  - Evaluate progress of state vaccination campaign
- At federal level
  - Brief CDC leadership and HHS on progress
  - Identify states doing well or lagging
  - Identify target populations for heightened communications
  - Provide a denominator for vaccine safety surveillance



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## Vaccine Safety Monitoring

- **Daily review of VAERS reports**
  - Follow-up (obtain medical records) for:
    - All serious reports
    - All GBS
  - Generate weekly automated tables
- **Collaborate with FDA**
  - Signal detection and verification of signal
    - Datamining
    - Vaccine Safety Datalink
  - Share reports received by CDC



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## Vaccine Safety Monitoring

- **Real-time monitoring of specified health events in managed care**
  - GBS
  - Demyelinating disease
  - Disorders of the peripheral nervous system, neuropathies
  - Seizures
  - Encephalitis, myelitis, encephalomyelitis
  - Bell's Palsy, Other cranial nerve disorders
  - Ataxia (other cerebellar ataxia, ataxia)
  - Anaphylaxis, allergic reaction
  - Myocarditis, pericarditis
  - Hemorrhagic and ischemic stroke
  - Wheezing, asthma, other diseases of trachea/bronchi, bronchiolitis
- **New DoD-DMSS and VA electronic medical record monitoring, developed during pH1N1**



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## Vaccine Effectiveness (VE) Monitoring

- VE for prevention of RT-PCR confirmed medically attended influenza
  - Assessment conducted in 4 communities
  - Case-control: among persons seeking ARI care
  - Offers earliest estimate of VE
- VE for prevention of influenza hospitalizations
  - Diagnosed by provider-ordered clinically available tests in 10 Emerging Infections Program sites
  - Case-control evaluations



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## Vaccine Effectiveness (VE) Monitoring

- VE among pregnant women
  - Few data in this high-risk population
  - Will begin in Sept 2010, managed care organizations
  - Will enroll 1 000 women with influenza; 2 control groups
  - Also to evaluate effects of maternal immunization on risk for influenza among infants during first 6 months of life
- VE in other populations of particular interest
  - Health care personnel
  - VE for prevention of life-threatening influenza (ICU admission) among children and young adults
- Overall goal: monitor VE annually for a common influenza outcome (i.e., health care visit) and periodic assessments of VE for severe outcomes



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## Implementing a Universal Vaccination Recommendation

- Simple messaging
- Use surveillance and epidemiology to target programmatic efforts
- Monitor vaccine coverage
- Continue to target communications to highest risk populations
- Improving venue based vaccination
- Increasing child vaccination
- Measuring the impact



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## Potential Legacies of Pandemic in United States

- Better diagnosis, increased levels of antiviral treatment and surveillance
- More community level vaccination including schools and retail establishments
- More obstetricians vaccinating
- Better links: health care, public health and local, state and federal partnerships



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## Summary

- Lessons have been learned from H1N1 programs
- Improved flu surveillance
- Work with old and new partners
- Use new approaches to special populations
- Improved coverage assessment
- Enhanced vaccine safety monitoring
- Enhanced vaccine effectiveness monitoring
- Universal vaccination recommendation



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**Thank you**

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