

Novel H1N1 Epidemiology and Response

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NVAC – June 2, 2009 – Washington, DC



**Swine Influenza A (H1N1)
Infection in Two Children –
Southern California, March–April
2009**

On April 21, this report was posted as an MMWR Early Release on the MMWR website (<http://www.cdc.gov/mmwr>).

Initial Detection

- Increasing numbers of swine influenza cases being detected from improved surveillance – *Shinde, NEJM 2009*
- Increasing efforts at states, CDC, and USDA to investigate human cases of swine influenza
- Southern California, 2009 - *MMWR 58(15);400-02*
 - April 13 – 10 yo boy, recovered
 - April 17 – 9 yo girl, recovered

Detection

- First case identified by investigational diagnostic device
 - Mesoscale Discovery Point-of-Care Prototype
 - Developed under contract with CDC/HHS
- Confirmed using FDA-Cleared CDC 5 target influenza assay



Enhancing Detection

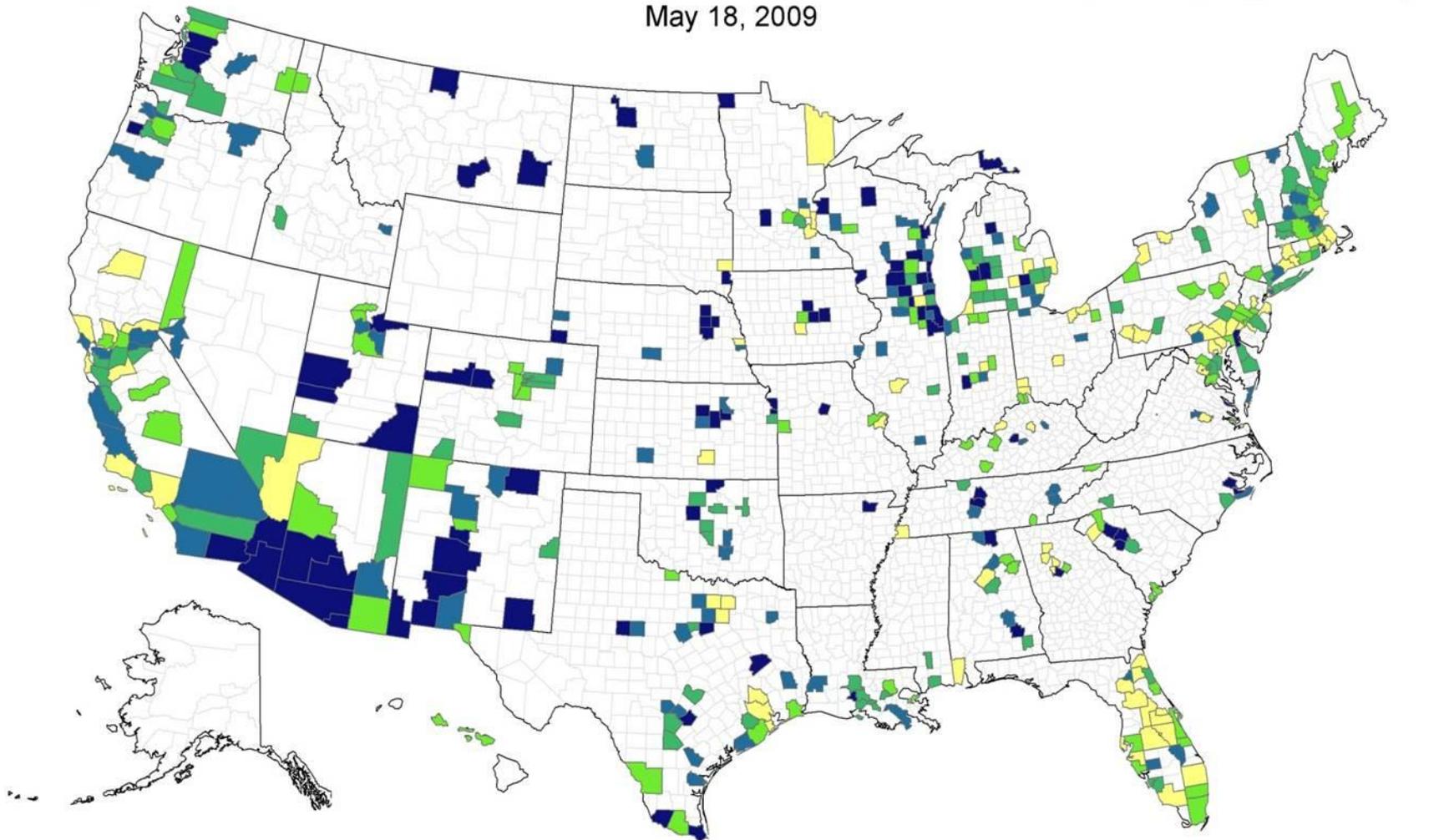
- Enhanced Surveillance
 - Virologic surveillance – 7 fold specimen submission
 - ILI and mortality surveillance – daily reporting
- PCR swH1N1 kits for testing
 - Development, authorization, manufacture and ready to ship in ~ 2 weeks
 - Distributed
 - Domestic: 95 labs
 - DOD: 15 labs
 - International: 237 labs
- Virus Characterization
 - 582 genes sequenced
 - Submitted to GenBank

Novel Influenza A (H1N1) Cases Laboratory-defined (confirmed or probable)

- US Cases: As of 29 May 2009 0100 EDT
 - 8975 confirmed or probable cases
 - 578 (6.4%) hospitalizations
 - 15 (0.16%) deaths
 - Diagnostic practices such that conf/prob cases likely represent minority of infections
- International Cases: 13,398 confirmed cases in 48 countries

Reports of Confirmed and Probable Novel Influenza A (H1N1) by County

May 18, 2009

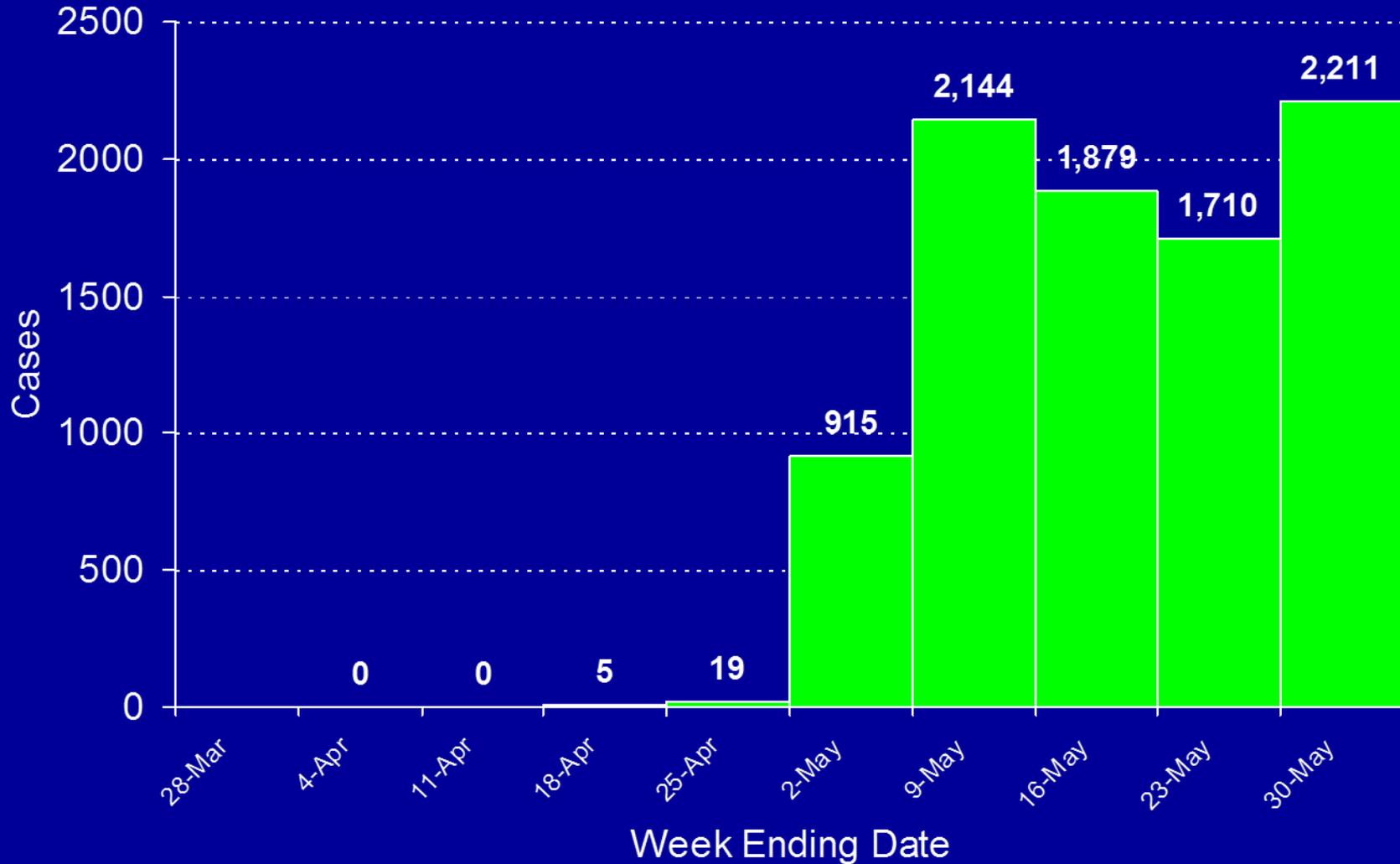


Rate Per 100,000 Population



Confirmed and Probable Novel Influenza A (H1N1) Cases by Report Date

As of 29 May 2009 0100 EDT (n=8,975) (Weekly*)

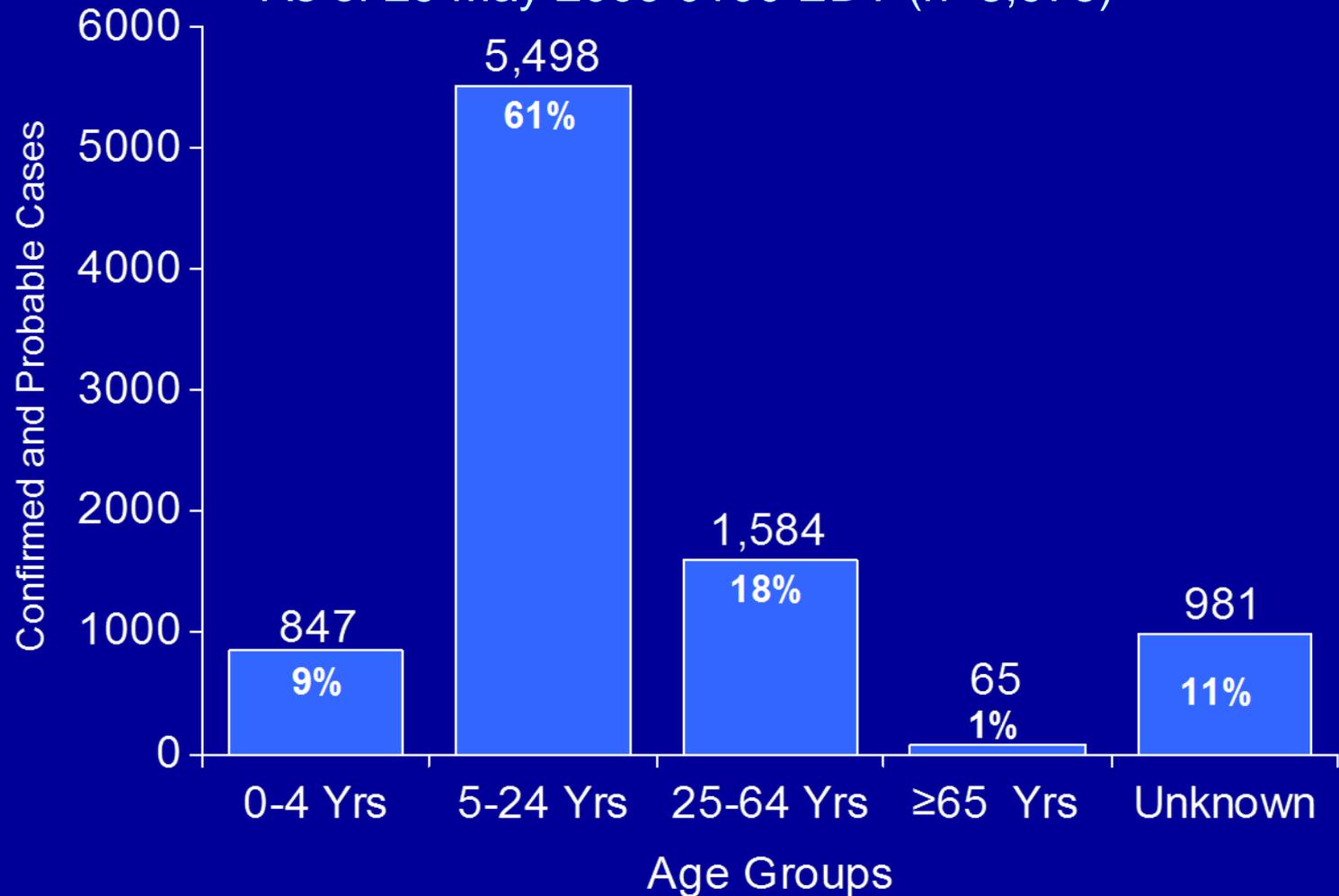


Data for week ending 30 May 2009 include reports submitted between 12:00AM (midnight) EDT 5/24/2009 and 12:00AM 5/28/2009.

Confirmed and Probable Novel Influenza A

(H1N1) Cases by Age Group

As of 29 May 2009 0100 EDT (n=8,975)



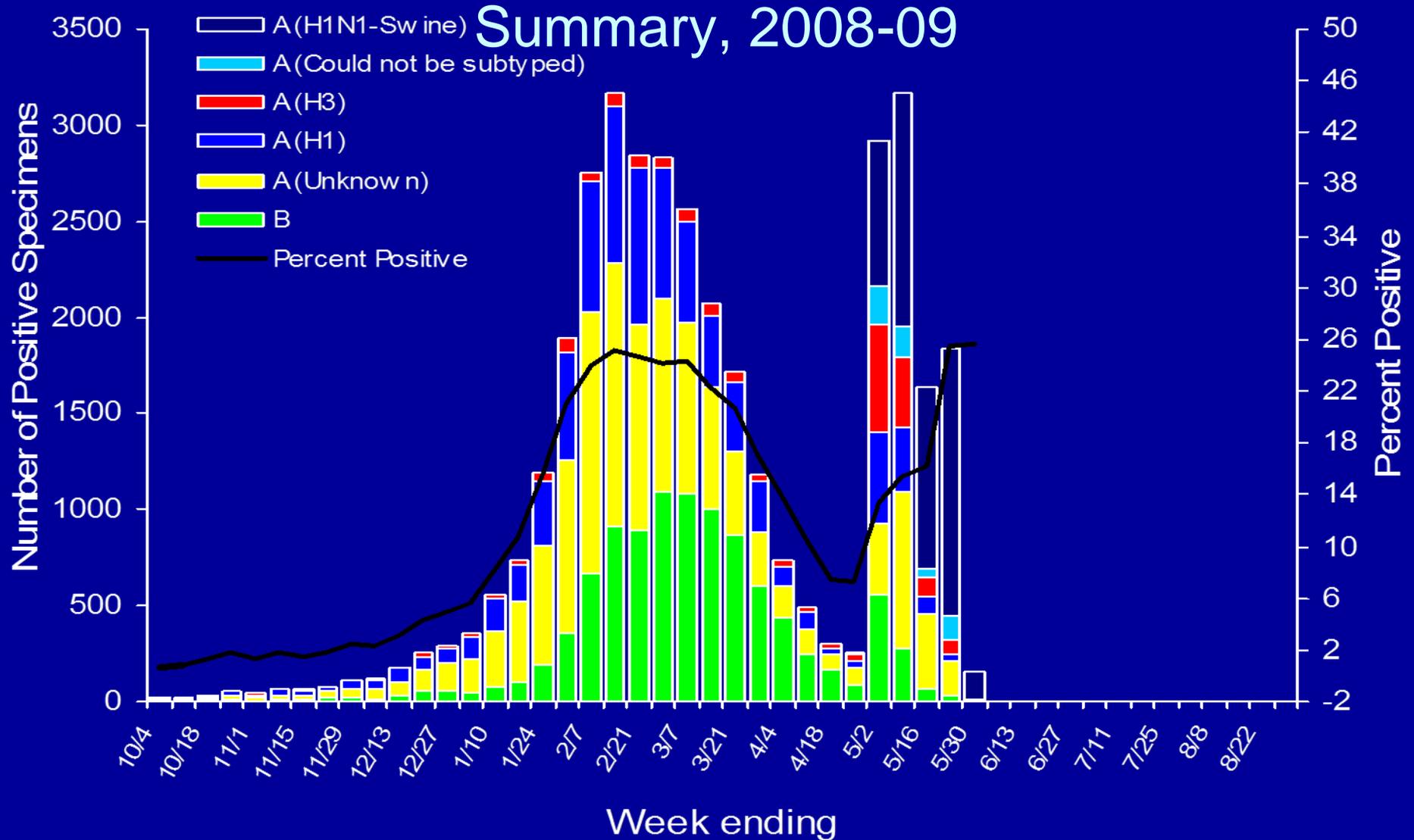
Novel Influenza A (H1N1) - 29 May 2009

Characteristics of Hospitalized Persons (N=302)

- 302 hospitalizations;
 - 34 (11%) admitted to ICU
 - 53% female; 47% male
 - Median age 18 years (range 1 mo-86 yrs)
 - 74% with underlying chronic conditions
 - 11 deaths

Novel Influenza A (H1N1) - 29 May 2009

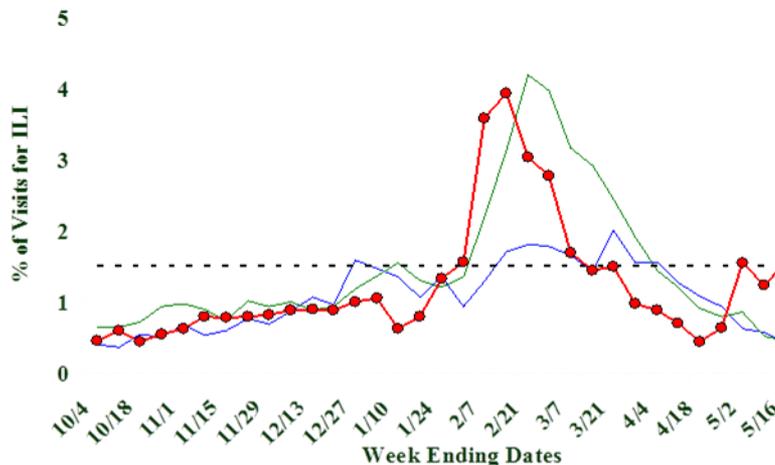
U.S. WHO/NREVSS Collaborating Laboratories



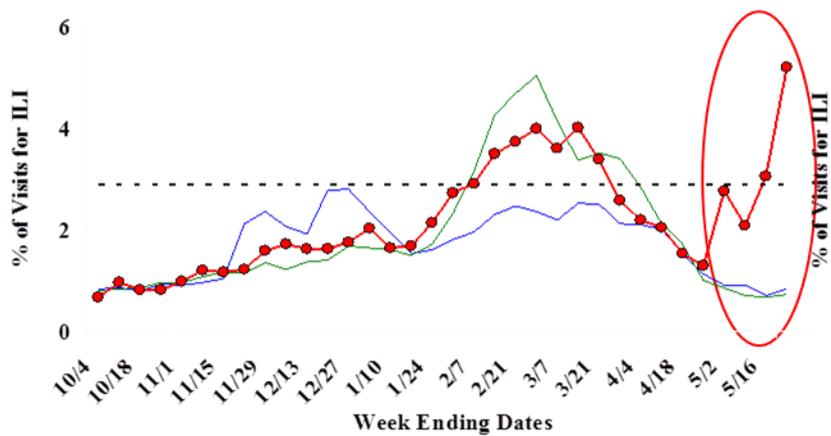
Novel Influenza A (H1N1) - 29 May 2009

Current Influenza Surveillance – ILINet Regions I-III

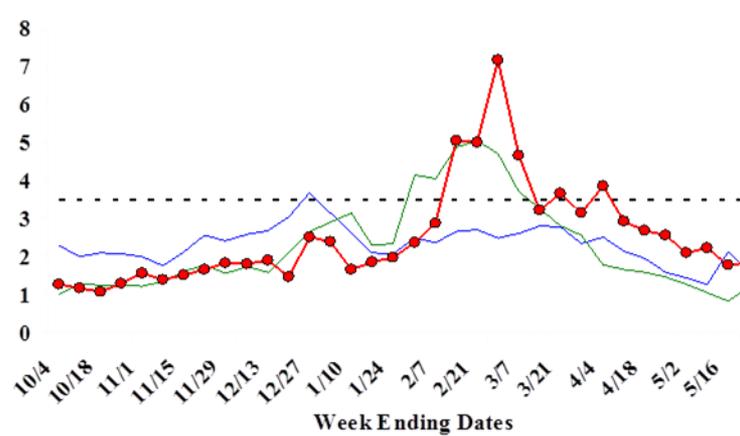
Region I - CT, ME, MA, NH, RI, VT



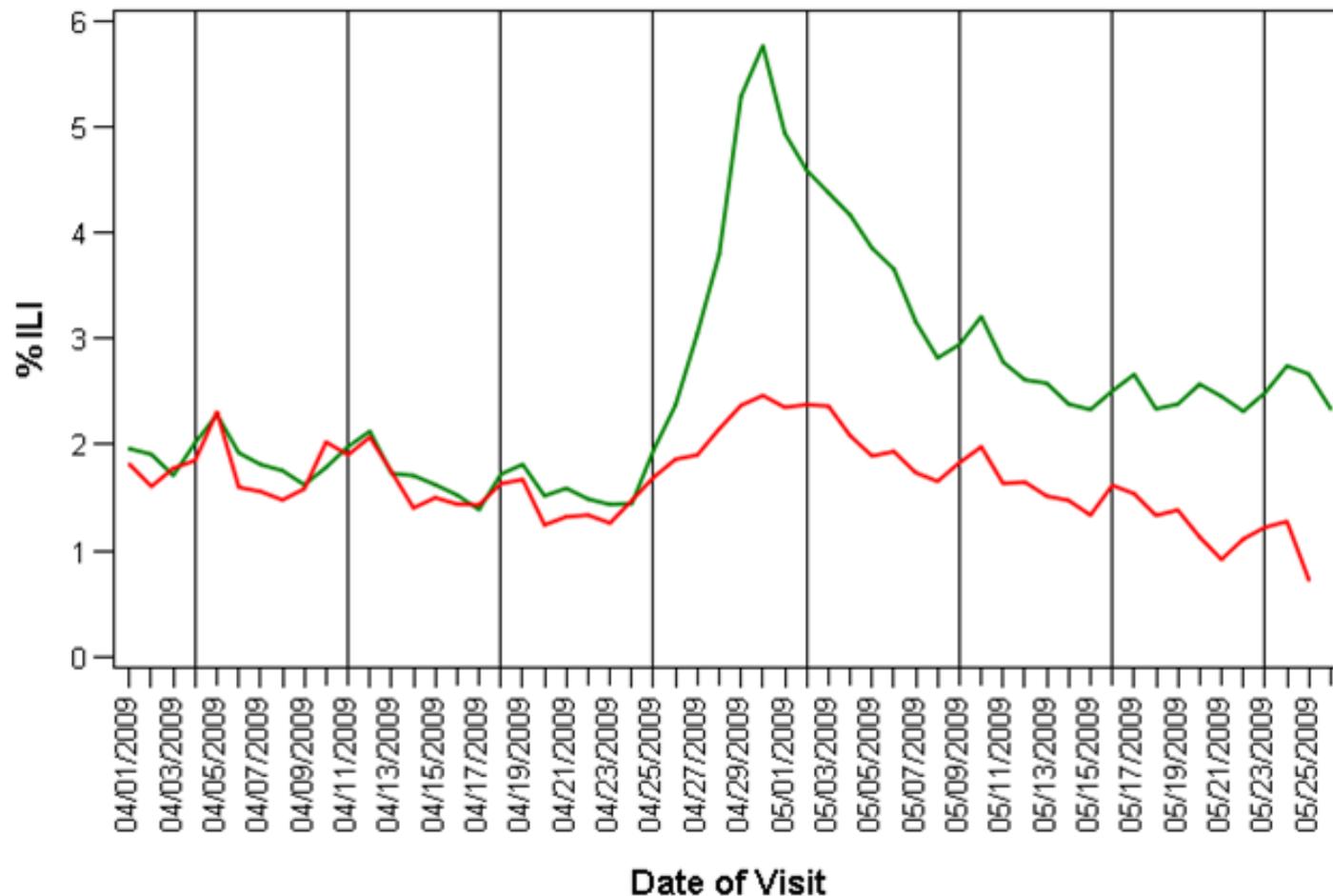
Region II - NJ, NY



Region III - DE, DC, MD, PA, VA, WV



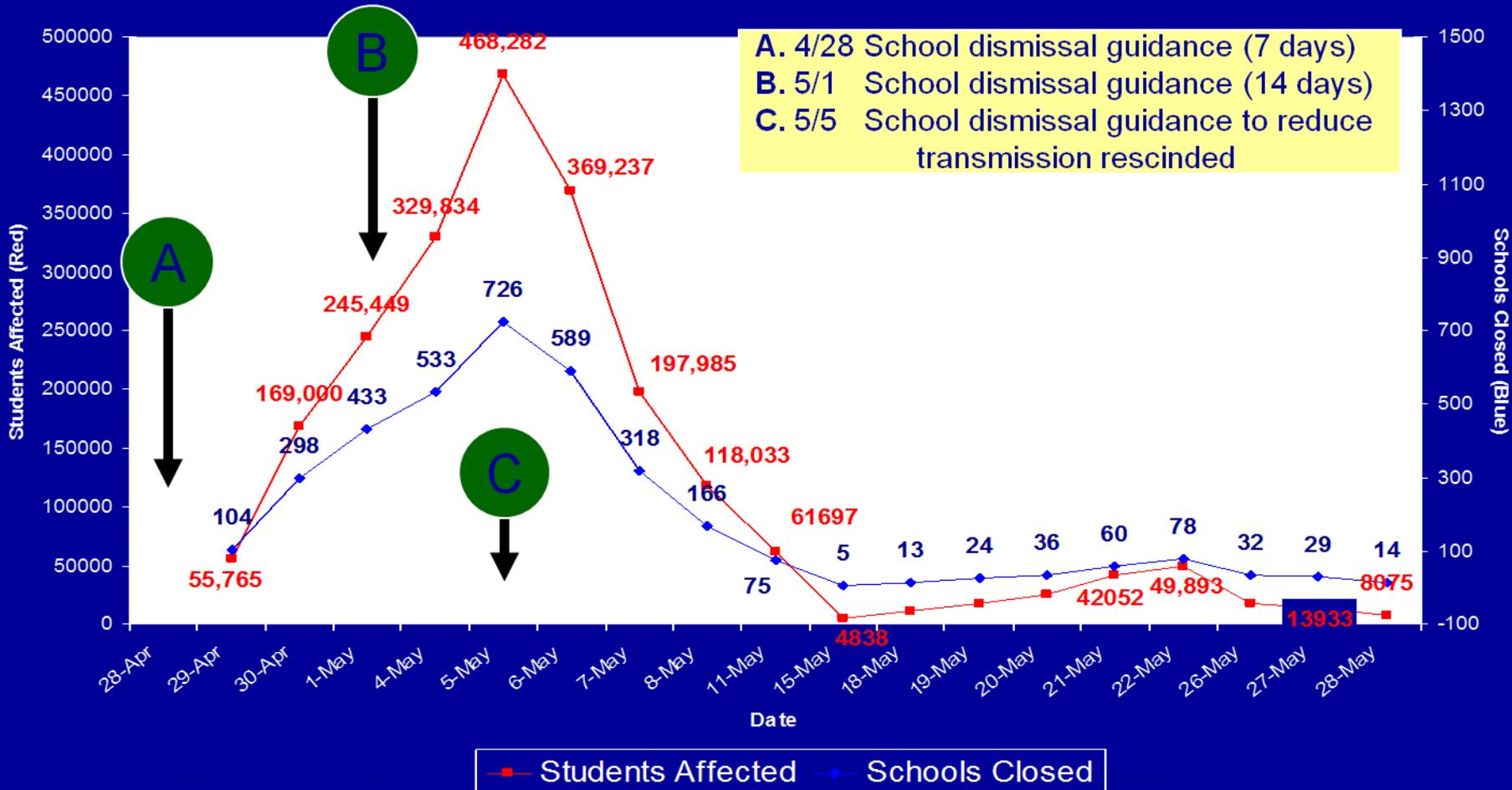
BioSense: % of Emerg Dept Chief Complaint Visits for ILI and Final Diagnosis Visits w/ ICD-9-CM codes for Influenza or ILI, 4/01-5/26/2009: US



datatype — ED Chief Complaint — ED Final Diagnosis

Novel Influenza A (H1N1) - 29 May 2009

School Dismissal, United States 4/29 – 5/27, 2009



Selected CDC Response Actions

- >1900 CDC staff involved in response (thru May 29)
- 11 million courses antivirals from SNS deployed
- Dx test developed & kits shipped to >400 labs
- >8 million web visits/day at peak
 - Interim guidance, MMWRs, Q&As, situation updates
 - Extensive traditional & new media outreach
- 8 Congressional hearings to date
- Shipped candidate vaccine virus strains to mfgs

Situational Assessment

- Novel virus with sustained transmission in areas throughout US
- Clinical spectrum ranges from mild to severe
- Highest attack rates and hospitalizations in children and young adults; rare in elderly
- Comorbidities, incl pregnancy, evident in majority of severe cases
- Explosive outbreaks in schools in many communities
- School dismissal most evident societal impact in US
- Travel and trade restrictions extensive internationally
- Disease decline suggested by syndromic surveillance in most areas
 - BUT ongoing transmission and hospitalizations in some cities
- Persistence over summer and Southern Hemisphere patterns key focus areas

Novel H1N1 Immunization Program Framework

NVAC June 1, 2009



Outline

- Context for novel H1N1 vaccination
- Comparison with seasonal flu vaccine circumstances
- CDC approach to coordinated planning
- Scenarios, communication, engagement

Context for potential novel H1N1 immunization (1)

- Implementation planning needs to start now -- before decision to offer H1N1 vaccine is made
- Data to support future decisions (e.g. whether to vaccinate, target population(s), need for tiering) will include
 - Southern Hemisphere epidemiologic and virologic data
 - Clinical trial safety and immune response results
 - Ongoing analyses of novel H1N1 disease in US
- Specific timing, yields, and formulation(s) predicted for novel H1N1 vaccine are **at best** estimates

Context for possible novel H1N1 immunization (2)

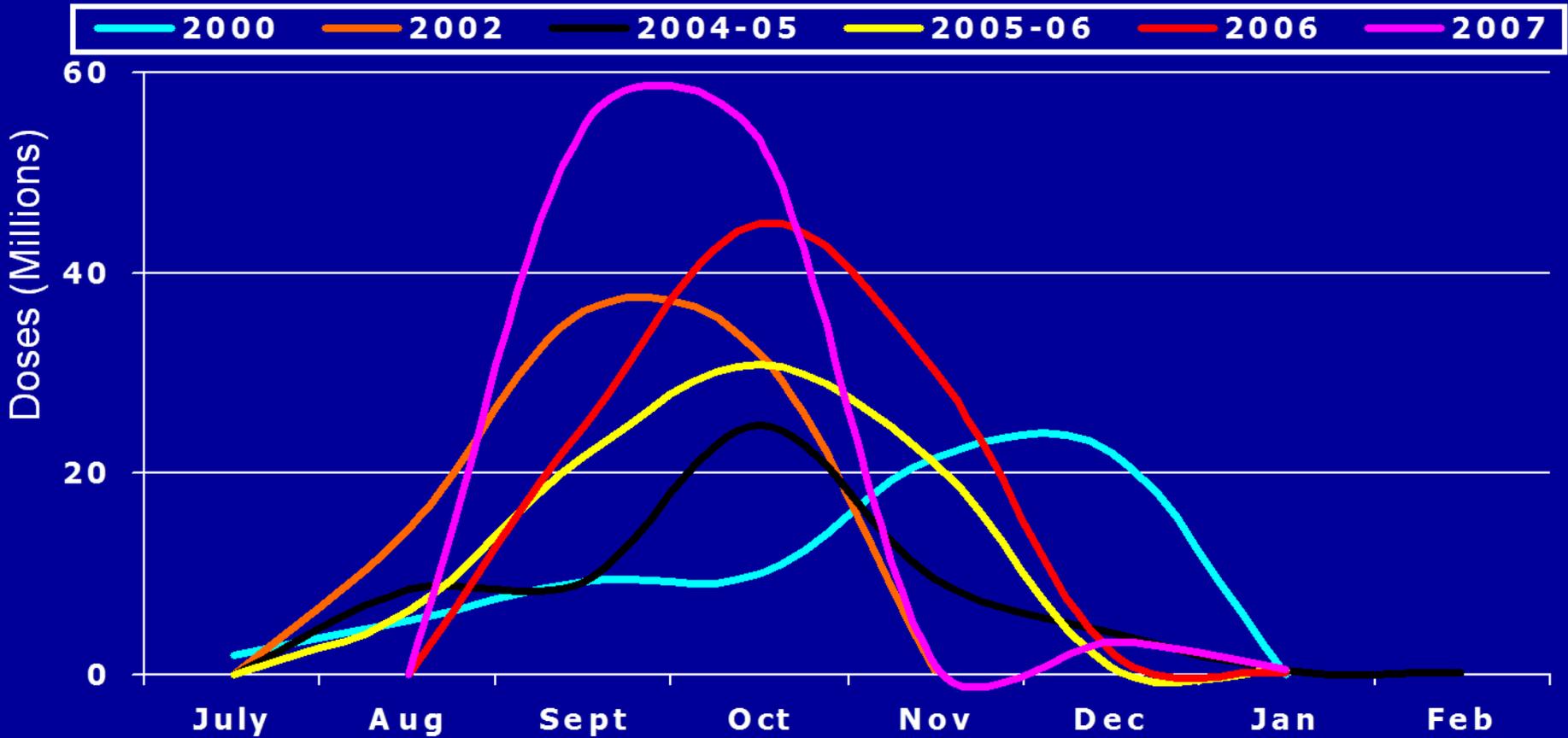
- ***Expect to plan for multiple scenarios***
- ***Expect implementation details heavily dependent on state and local program inputs***

Seasonal vs. Novel H1N1 vaccination

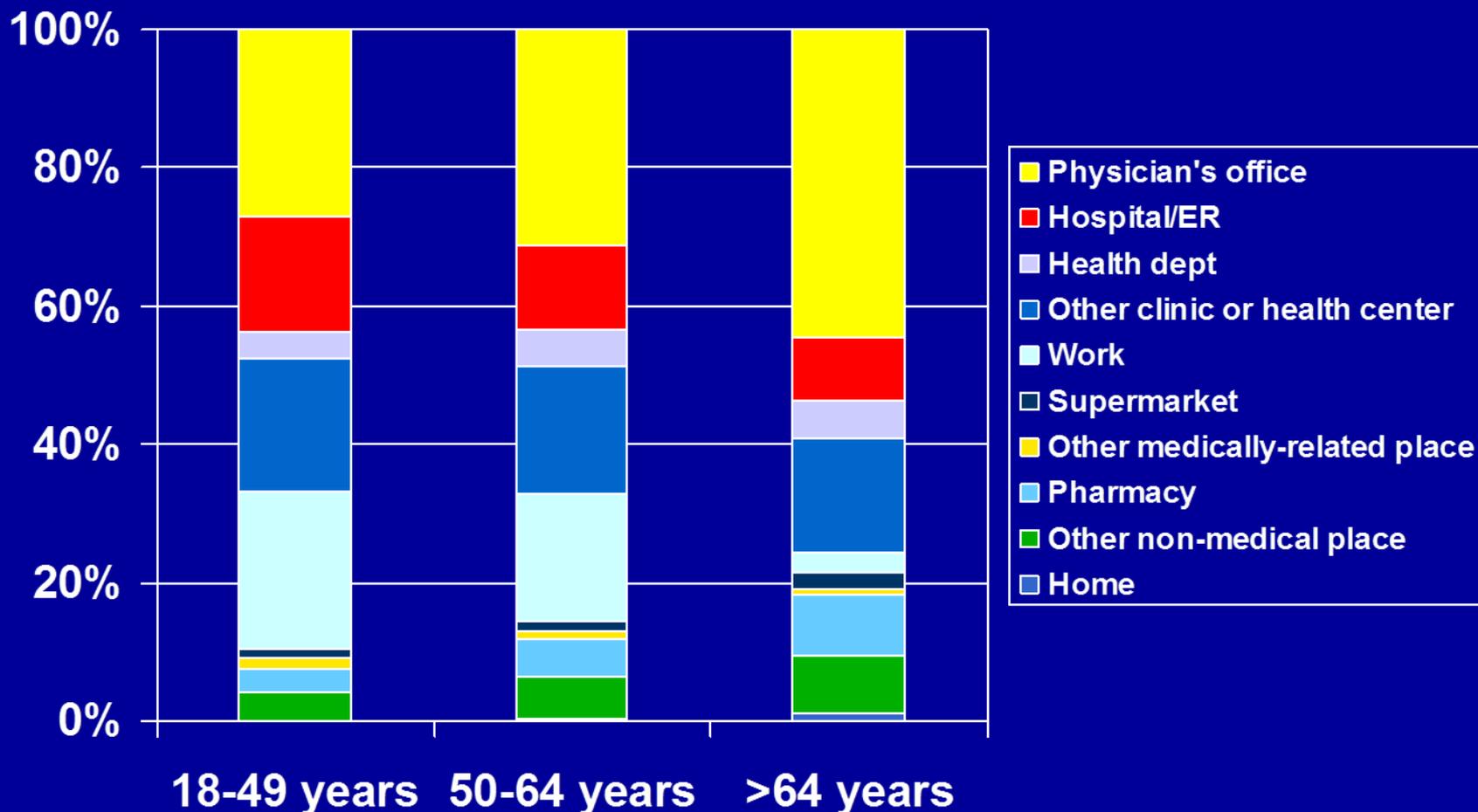
- Most vaccine is used in elderly, high risk adults
- Mainly privately procured
- ~110 M doses typically given from Sept-Jan
- Most vaccination ends before flu season begins
- Shortages, delays, and dist challenges common
- Diverse venues used for delivery – more by private than public sector
- Most people need only 1 dose
- Greater priority for vaccinating children likely
- Government procured
- May need to give many more doses over shorter time
- Vaccine may not be available before novel H1N1 increases
- Supply-demand challenges likely
- Prepandemic state planning mainly for mass clinics
- Most may need 2 doses

Additional challenge of overlapping/simultaneous distribution of seasonal and novel H1N1 vaccine

Monthly Seasonal Influenza Vaccine Distribution



Where Adult Influenza Vaccine Recipients were Immunized: NHIS 2007*



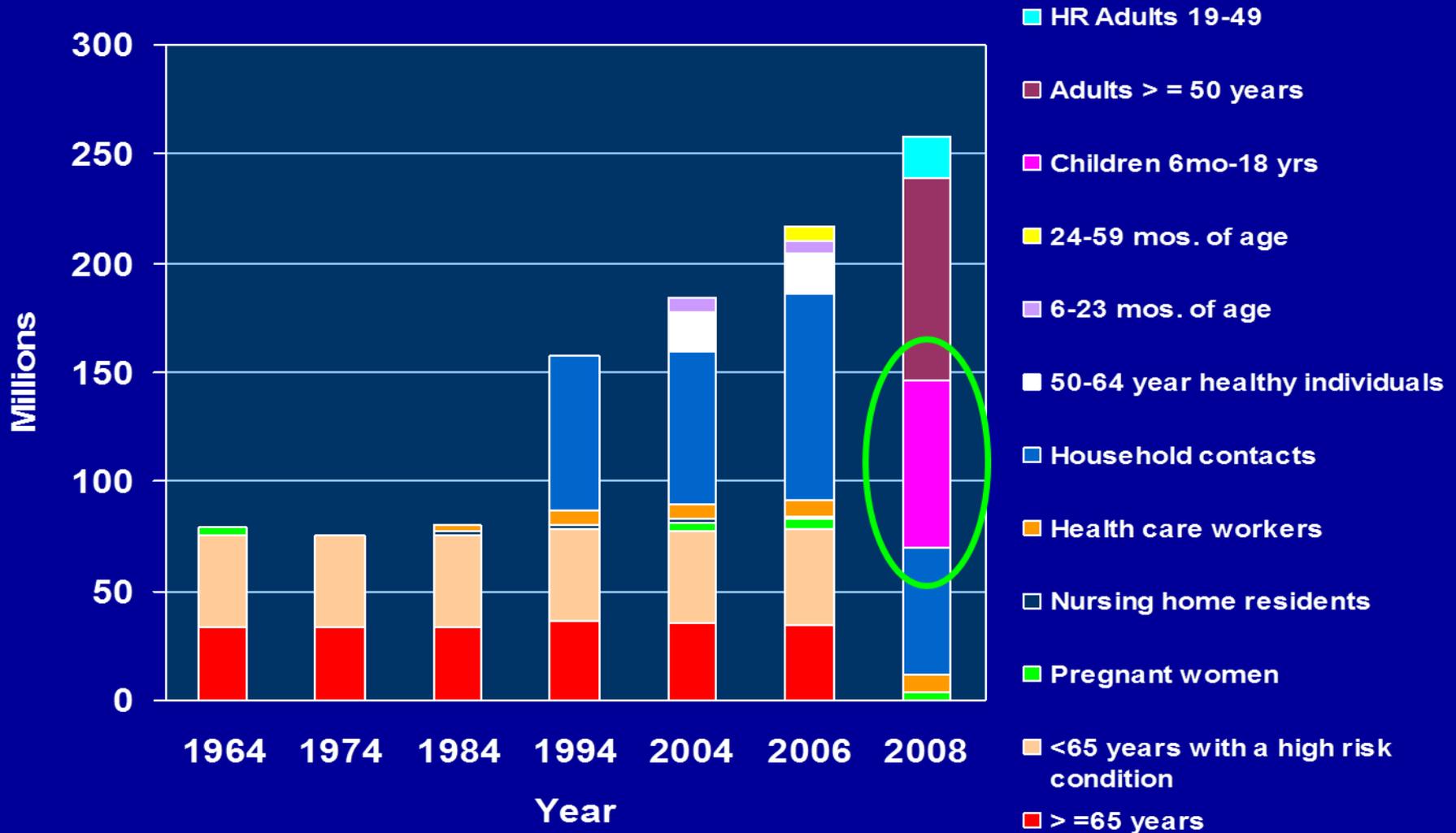
Coverage varies by age as well:

18-49 yo high risk: 25.5%

50-64 yo 36%;

≥65 yo 66%

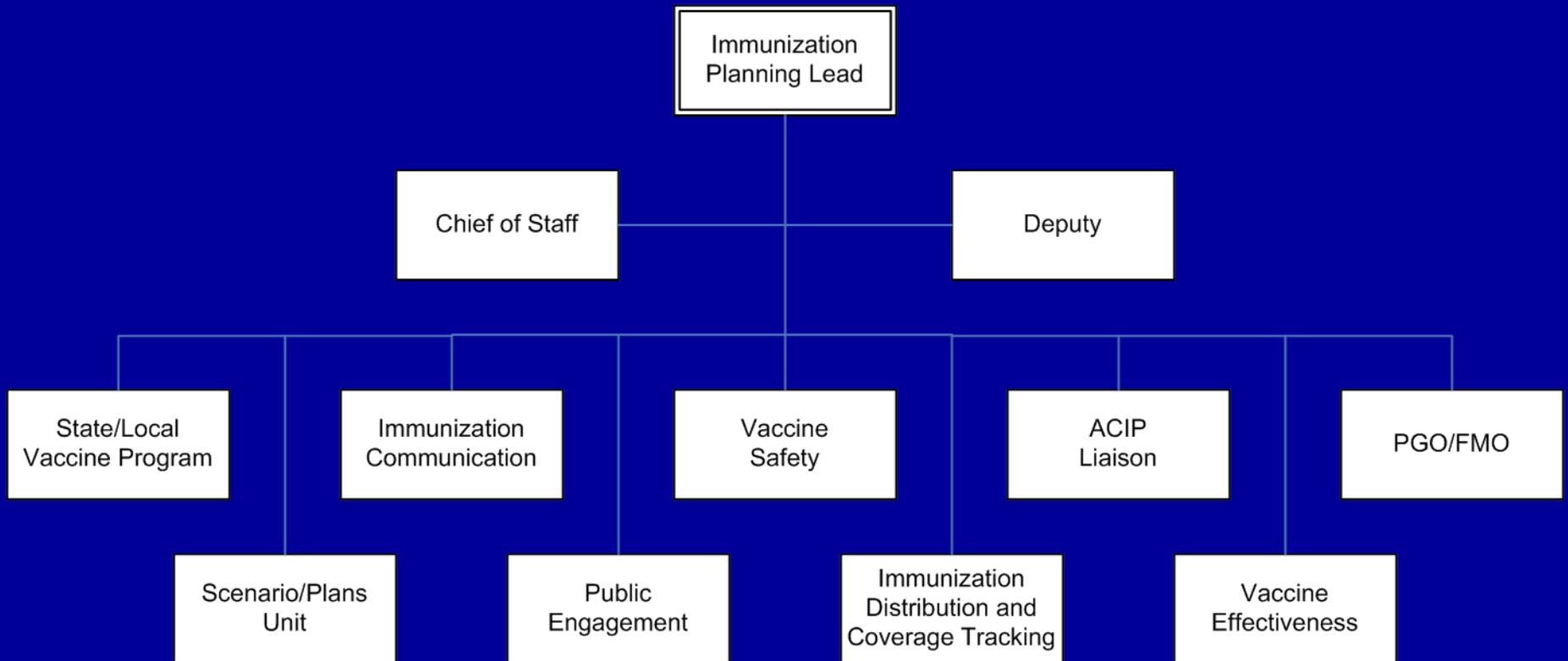
Recent Expansion of Recommendations for Seasonal Vaccine to include 5-18 y.o.



Pandemic Planning over Past Several Years Had Assumed...

- **Goal: Vaccinate all persons in the U.S. who choose to be vaccinated**
- **Assumed:**
 - **Vaccine supply will not be available all at once**
 - **Decisions on who will be vaccinated first will have to be made**
 - **Overarching objectives would be to reduce the impact on health and minimize disruption to society and the economy**
 - **Actual epidemiology would factor into updated guidance**

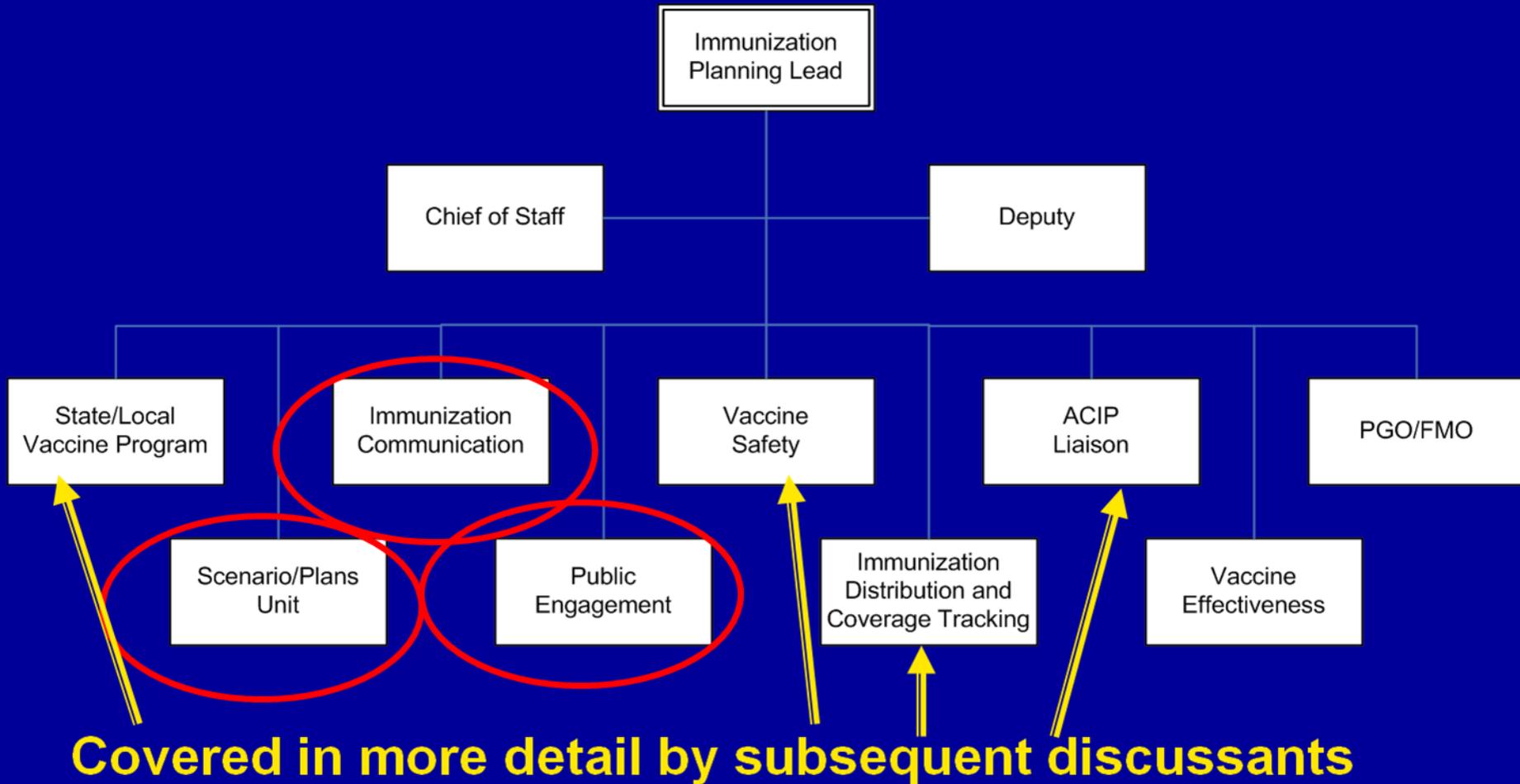
CDC Immunization Implementation Planning Team Structure



Coordinated, Integrated Planning

- Interdependence among units
 - Timing, delivery strategies, recommended groups → influence methods needed for safety, effectiveness
 - Communication especially vital to vaccine delivery efforts, safety monitoring and risk management
 - Vaccine safety and effectiveness monitoring depend on where/to whom and how much vaccine has been delivered

CDC Immunization Implementation Planning Team Structure



Scenario or Plans Section

- Develop potential scenarios to inform vaccination program planning and implementation
- Provide rationales, pros/cons of different models of delivery
- Sample issues to be framed for planning purposes:
 - Mass immunization clinics, school-based, private sector delivery
 - Priority groups
 - Formulations (adjuvanted; 1 v 2 doses)
 - Timing in relationship to seasonal flu vaccine use

Communication Section

- Develop and test messages for multiple scenarios
- Provide tech assistance to state/local HDs
- Develop vaccine safety risk communication program
- Identify strategies to
 - increase or modulate demand
 - address simultaneous seasonal flu vaccine
 - handle severe, early novel H1N1 disease
 - Anticipate vaccine hesitancy concerns
 - Mitigate perceived inequity of distribution
- Address communication needs for special populations (e.g., children; pregnant women)
- Public engagement

Public Engagement

- Previous public engagement efforts related to influenza
 - Prioritization of pandemic vaccine
 - Community mitigation during pandemic

