Advisory Committee on Immunization Practices

Influenza Session

Anthony Fiore, MD, MPH
Influenza Division, NCIRD, CDC

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Presentation Overview

- Review of 2007-2008 influenza season surveillance
- Review of antiviral resistance data
- Interim in-season vaccine effectiveness estimates (David Shay)
- Influenza vaccine coverage update
- ACIP influenza vaccine workgroup activities

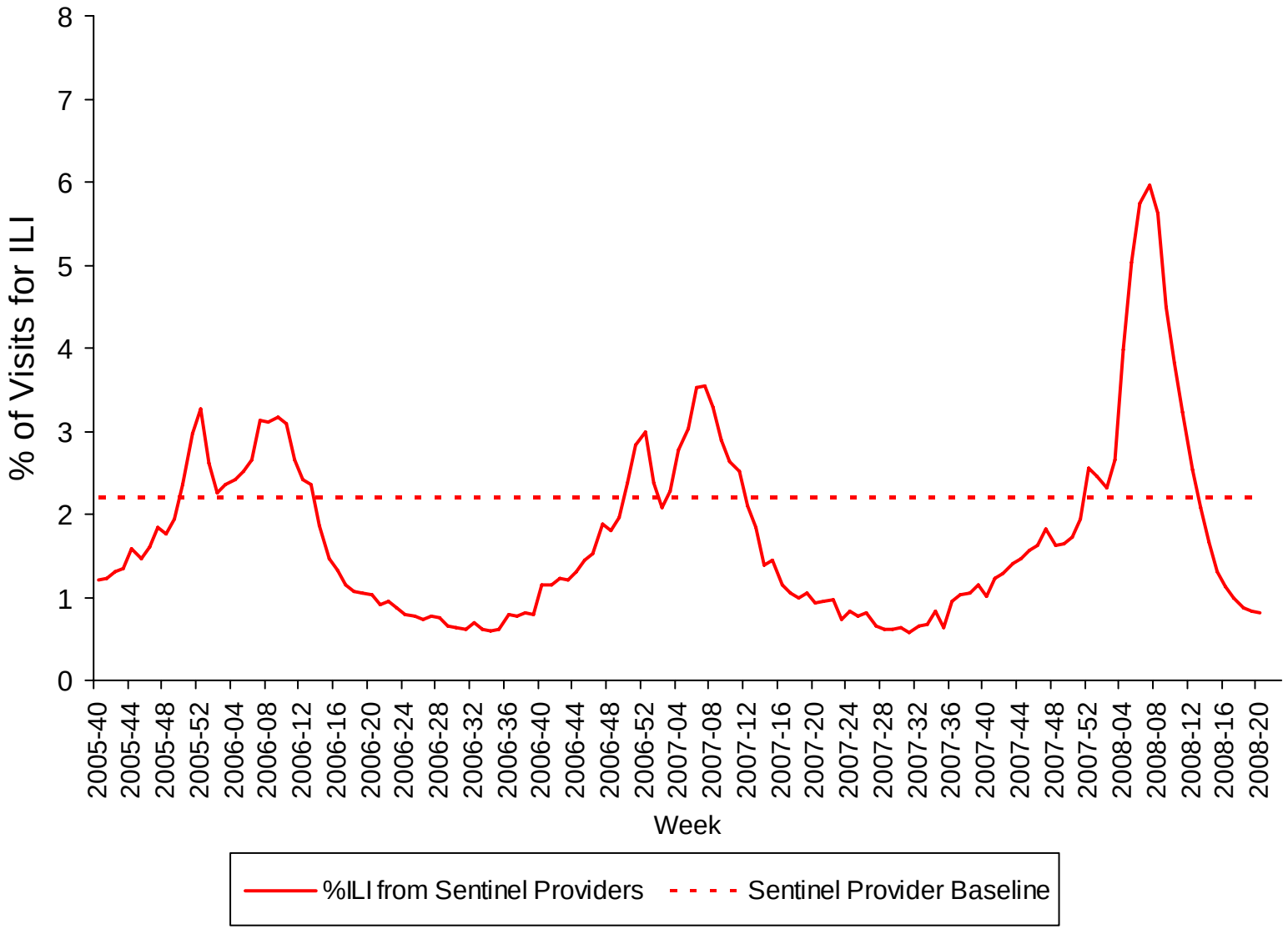
Influenza Surveillance 2007-08 Season

Source: Surveillance Team, Influenza Division

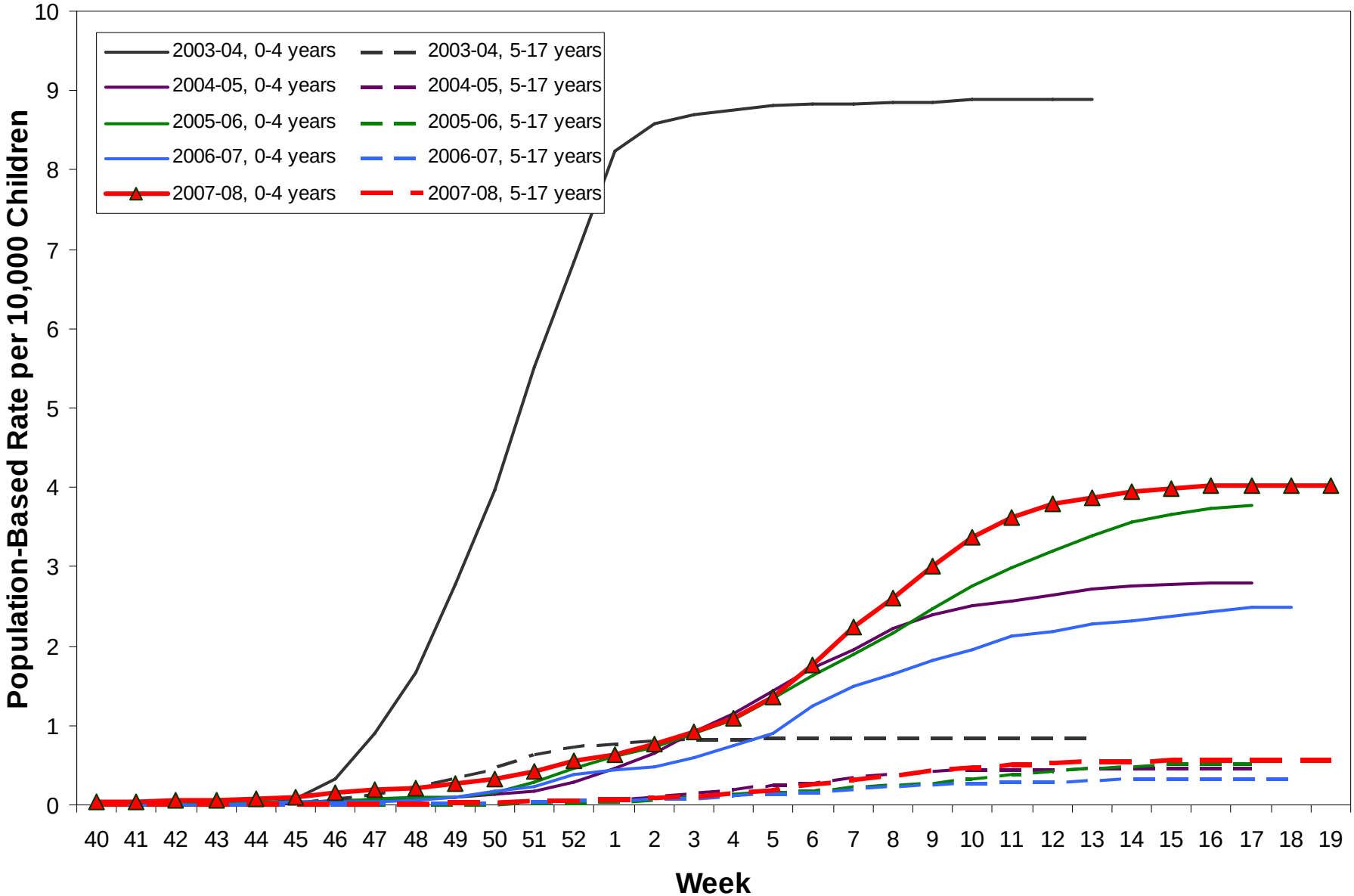
L Finelli, Team Leader

Additional thanks: S Epperson, R Dhara

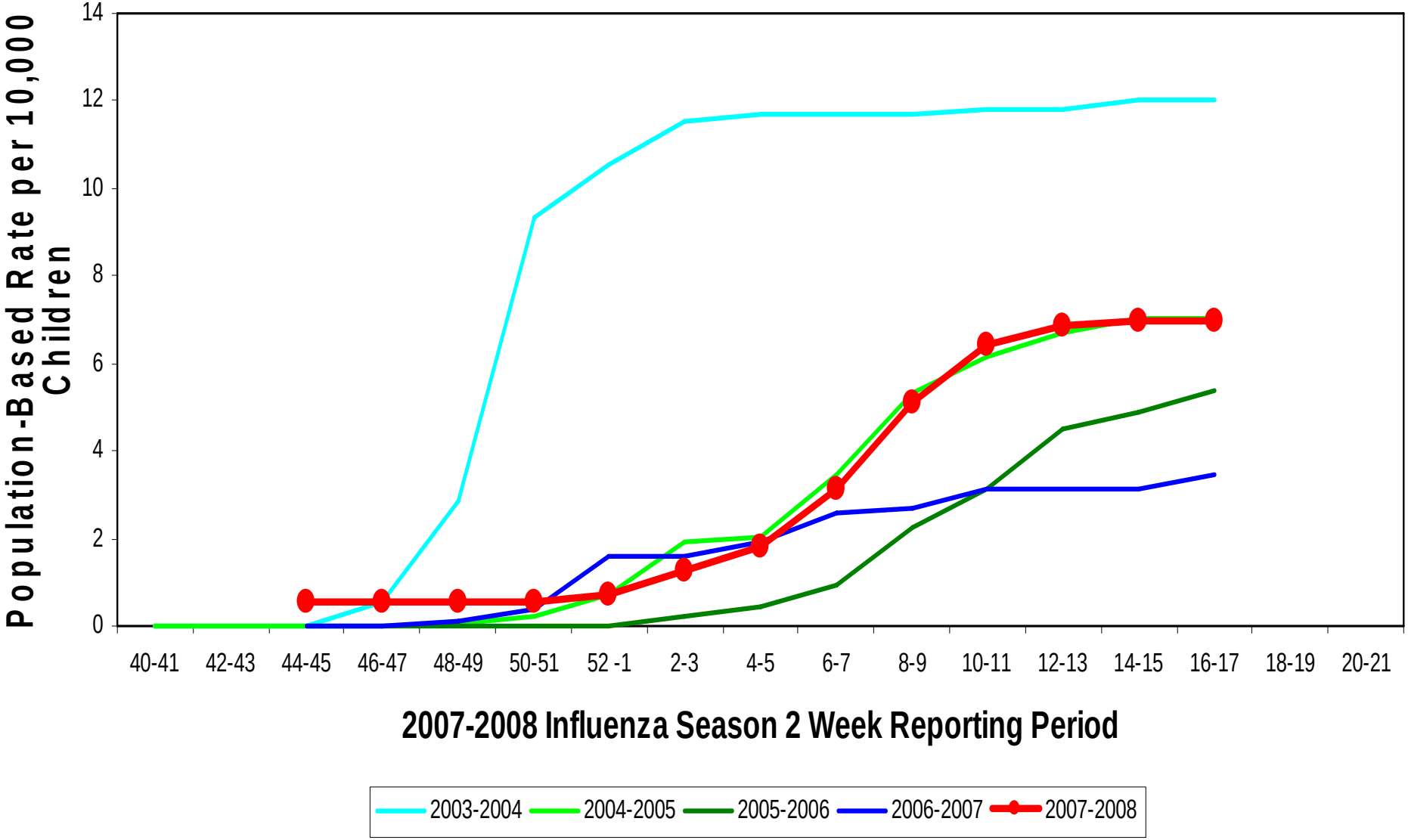
Percentage of Visits for ILI & ARI Reported by Sentinel Providers, 2005-06 through 2007-08 Influenza Seasons, National Summary



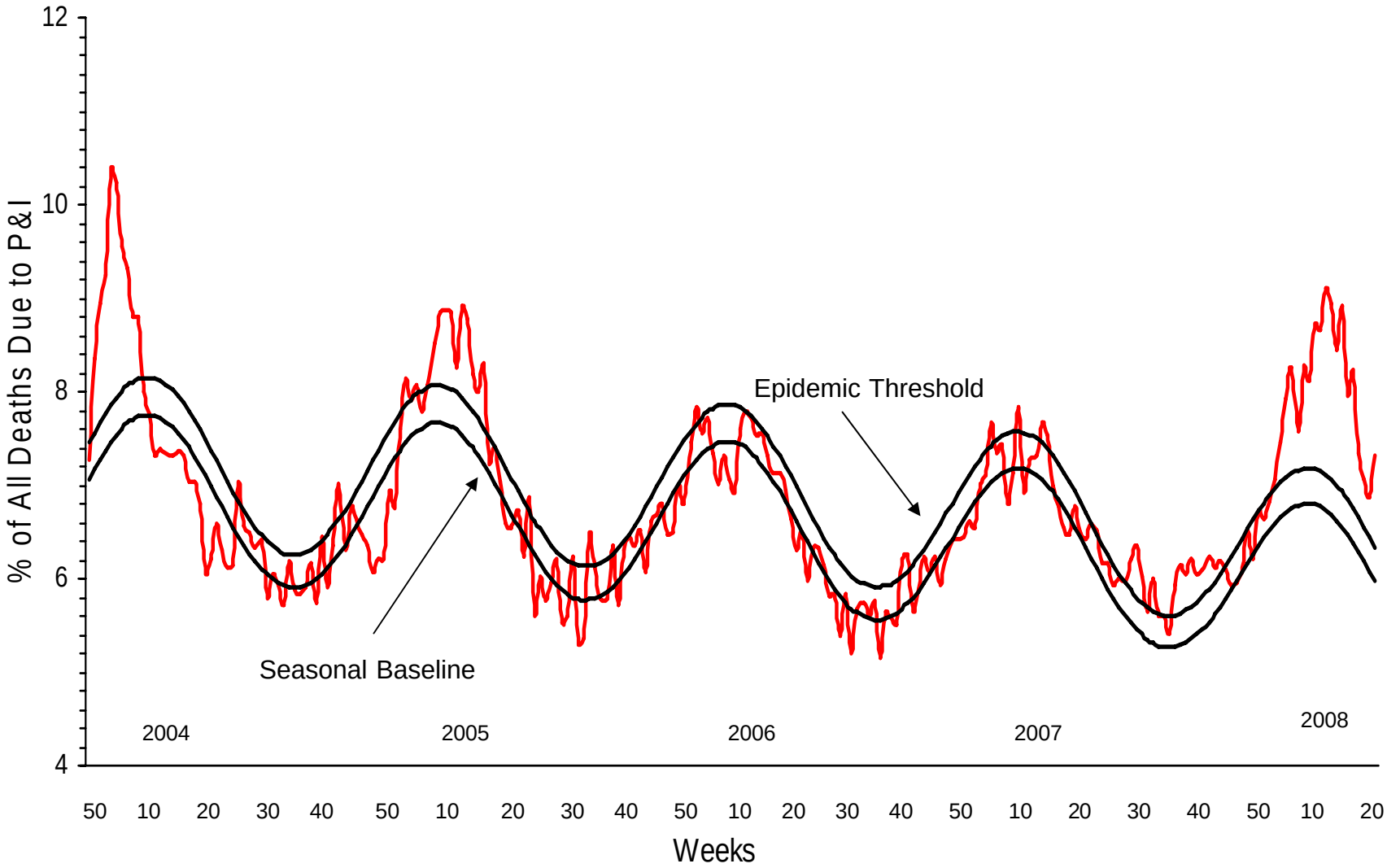
Emerging Infections Program: Laboratory-Confirmed Influenza Cumulative Hospitalization Rates for Children Aged 0-4 and 5-17 years, 2007-2008 and Previous 4 Seasons



New Vaccine Surveillance Network: Influenza Laboratory-Confirmed Cumulative Hospitalization Rates for Children 0 - 4 Years, 2007- 08 and Previous 4 Seasons



Pneumonia and Influenza Mortality for 122 U.S. Cities
2007-08 Influenza Season and Previous 4 Seasons



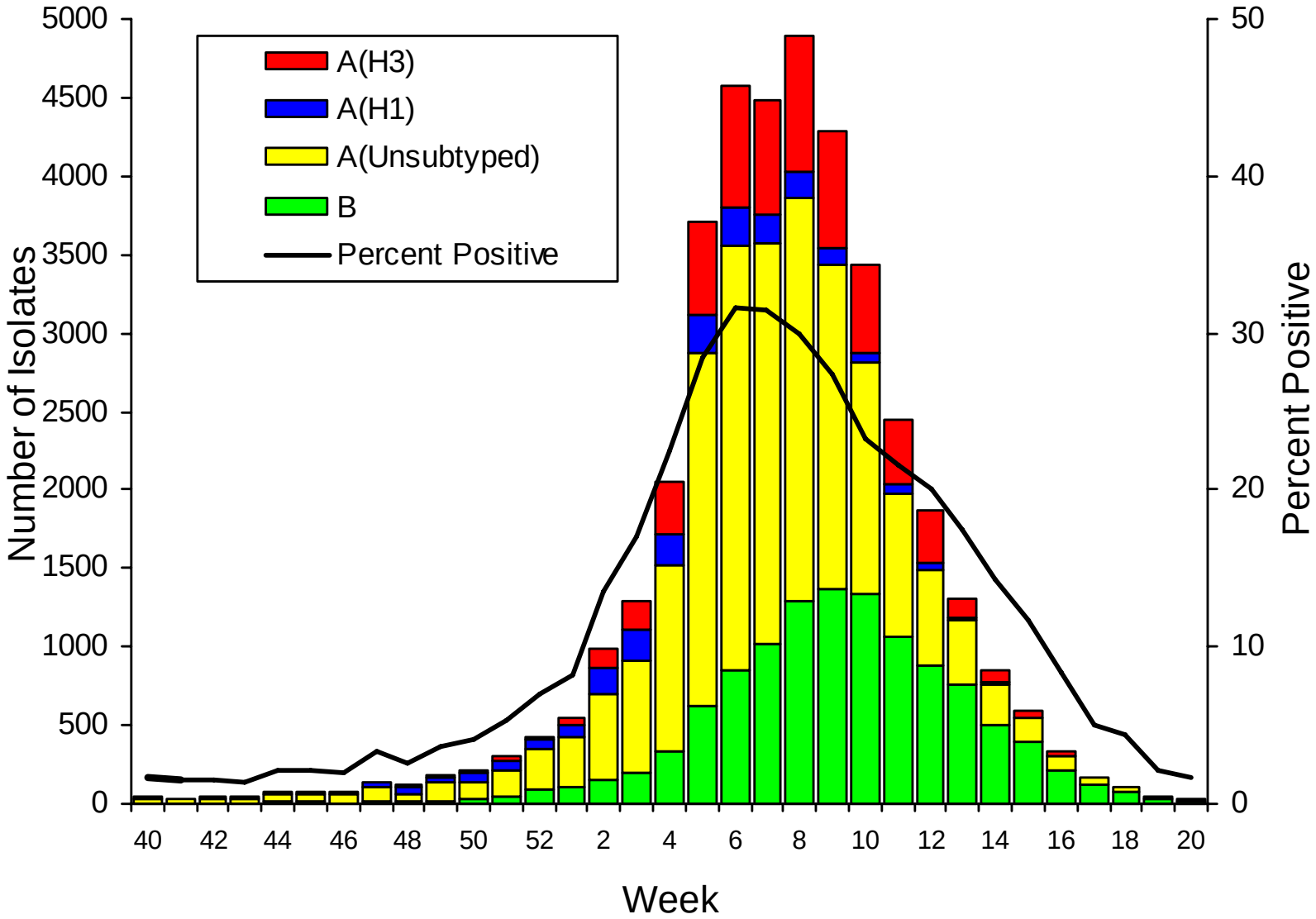
Surveillance for Deaths among Children with Laboratory-Confirmed Influenza Virus Infection, 2007-08 Season

- As of June 19, 2008, CDC has received 83 reports of influenza-associated deaths among children <18 years old
  - Median age 5 years (range, 29 days – 17 years)
    - Of 65 tested for bacterial coinfection, 28 (43%) had *S. aureus* infection
      - 15 MRSA
    - Vaccination status (#)
      - Unvaccinated (53)
      - Ineligible (< 6 months old) (9)
      - Vaccinated (5)
      - Partially vaccinated (5)
      - Unknown (11)
- 2006-2007: 76 deaths
- 2005-2006: 47 deaths
- 2004-2005: 46 deaths
- 2003-2004: 153 deaths

Influenza Virus Surveillance and Antiviral Resistance 2007-08 Season

Source: Surveillance Team, Epidemiology and Prevention Branch
and
Viral Surveillance and Diagnostics Branch, Influenza Division
(A Klimov, L Gubareva)

U.S. WHO/NREVSS Collaborating Laboratories Summary, 2007-08



Strain Characterization, 2007-8 Season

CDC has characterized 1,161 viruses collected by U.S. laboratories since October 1, 2007*

Influenza A (H1N1) [n=407]:

- 66% similar to A/Solomon Islands/3/2006-like viruses (2007-08 vaccine strain)
- 29% similar to A/Brisbane/59/2007 (selected 2008-09 vaccine strain)

Influenza A (H3N2) [n=404]

- 23% similar to A/Wisconsin/67/2005-like viruses (2007-08 vaccine strain)
- 60% similar to A/Brisbane/10/2007 (selected 2008-09 vaccine strain)

Influenza B [n=264]

- 2% in Victoria lineage (represented in 2007-08 vaccine by B/Malaysia/2506/2004)

- 98% in Yamagata lineage
  - 89% similar to B/Florida/4/2006 (selected 2008-09 vaccine strain)

***as of June 19, 2008**

Antiviral Resistance (Adamantanes), 2007-8 Season*

- 1,392 virus isolates tested for sensitivity to adamantane medications (rimantadine and amantadine)
  - 99% of 487 influenza A (H3N2) viruses tested were resistant
  - 11% of 905 influenza A (H1N1) viruses tested were resistant
- Influenza B viruses are not sensitive to adamantanes
- Adamantanes are not recommended for treatment or chemoprophylaxis

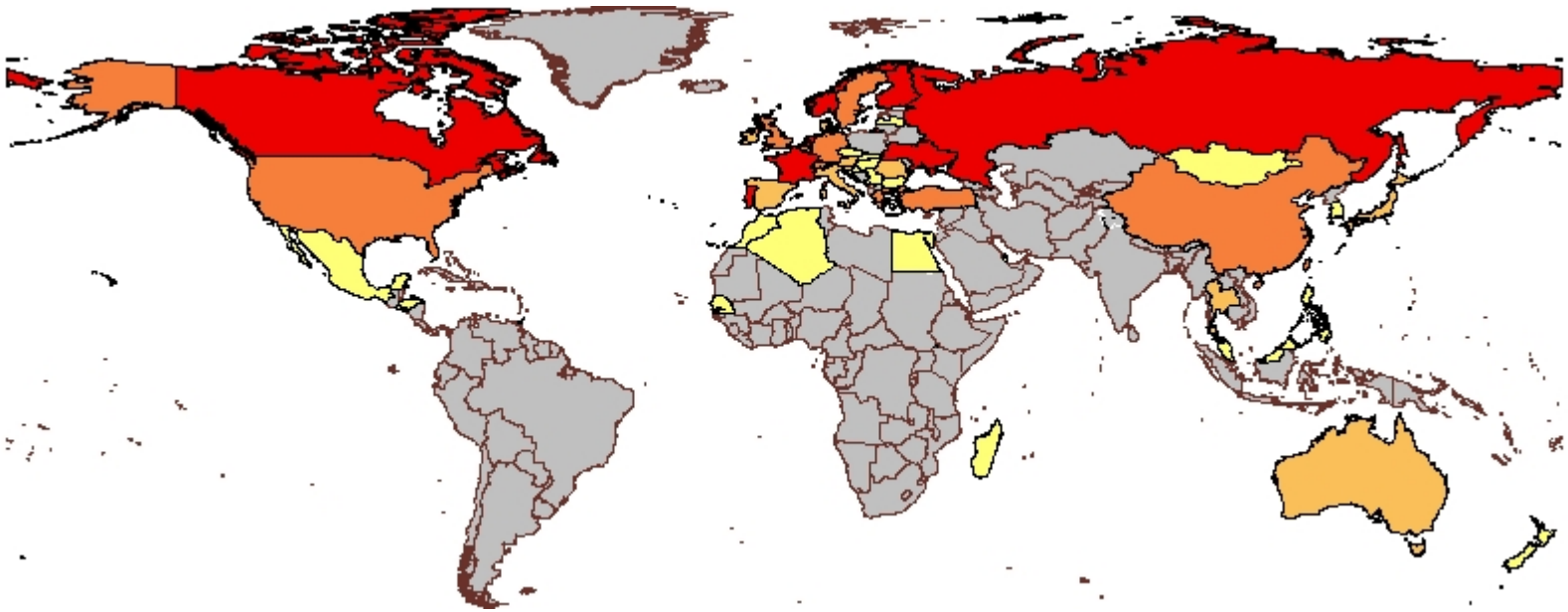
***as of June 19, 2008**

Antiviral Resistance (Neuraminidase Inhibitors), 2007-8 Season*

- 1,705 virus isolates tested for sensitivity to neuraminidase inhibitor medications (oseltamivir and zanamivir)
  - 109 (11%) of 1003 influenza A (H1N1) viruses resistant to oseltamivir
    - All of the resistant viruses have H274Y mutation
    - 2006-7 season: 4 (0.7%) of 588 influenza A (H1N1) viruses isolated in U.S. were resistant
  - 0 of 397 influenza A (H3N2) viruses resistant to oseltamivir
  - 0 of 305 influenza B viruses resistant to oseltamivir
- All tested viruses were sensitive to zanamivir
- Low prevalence of oseltamivir resistance overall, given type/subtype distribution (~2%)
- Oseltamivir or zanamivir continue to be recommended for treatment or chemoprophylaxis

***as of June 19, 2008**

Prevalence of oseltamivir-resistant H1N1 viruses, Last quarter 2007 - First quarter 2008



No data available

% of H1N1 samples tested resistant

- < 1%
- 1-<10%
- 10-<25%
- >25%

Note: Some countries have results from a very limited number of samples which make the interpretation of the percentage difficult

Characteristics of Influenza Caused by Oseltamivir-Resistant Influenza A(H1N1) Viruses*

- **Persons were typically not taking oseltamivir at the time resistant virus was isolated**
- **Most persons infected with resistant influenza A H1N1 did not have an epidemiologic link to other persons taking oseltamivir or to each other**
- **Symptoms and severity is similar to illness caused by oseltamivir-sensitive viruses**
- **Transmissible between persons**

***Based on preliminary data, WHO and CDC**