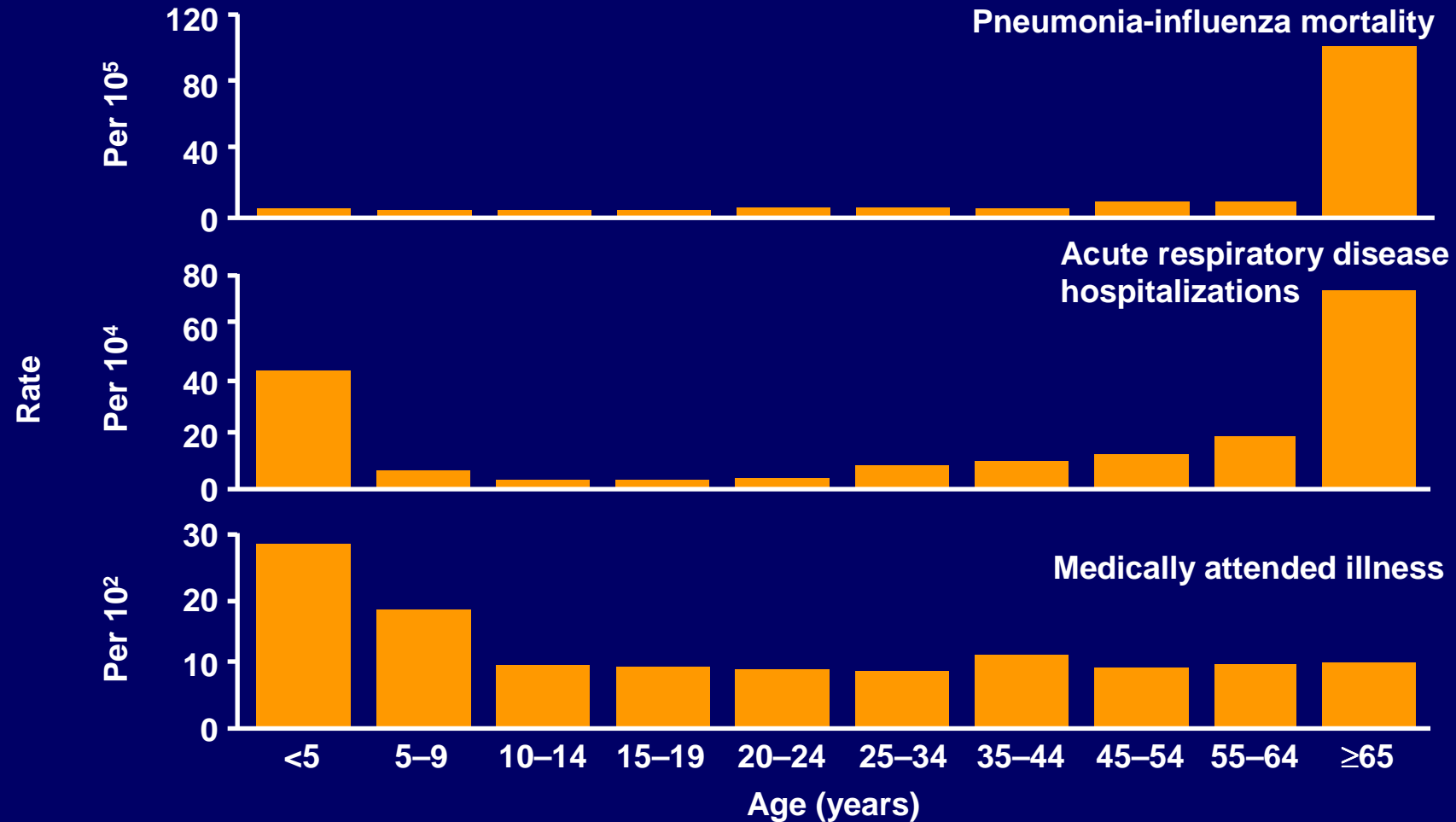


# Live Attenuated Influenza Vaccine: Experience in the United States

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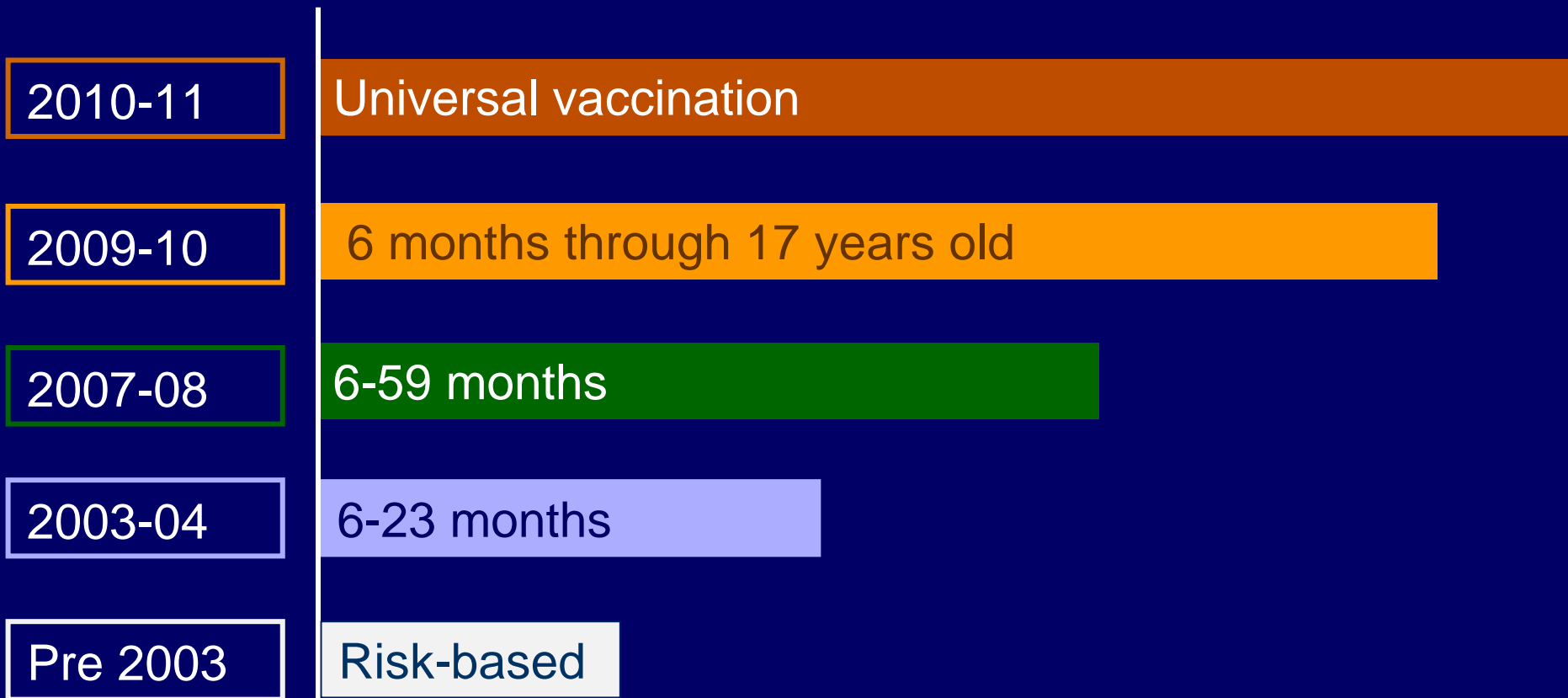
# Age Distribution of Influenza-associated Illnesses by Clinical Severity, Houston



Data from Glezen WP. Epidemiol Rev. 1996; 18:64-76.

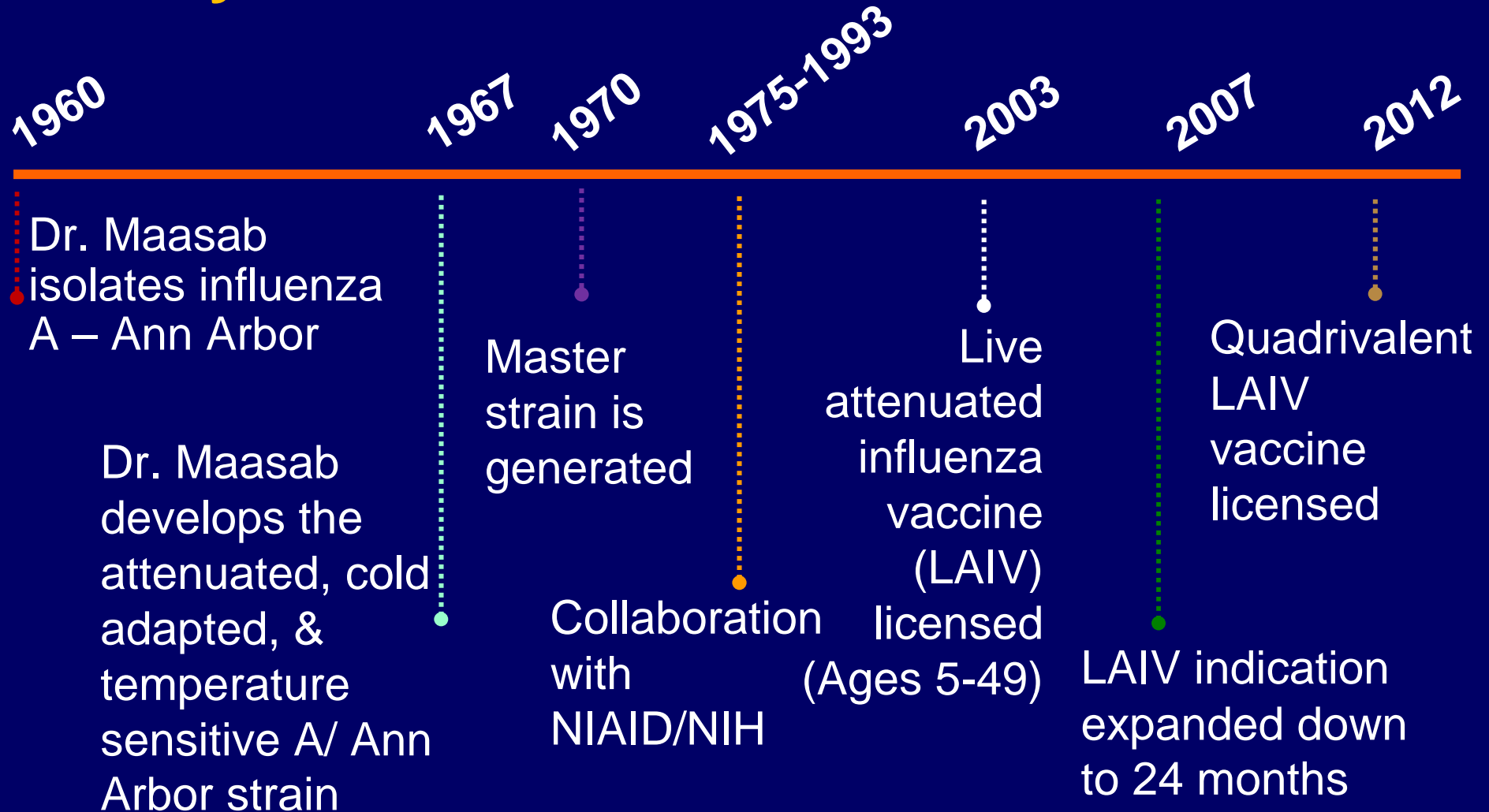
# Evolution of Influenza Vaccine Recommendation for Pediatrics in the United States

Early vaccination & vaccination throughout the influenza season



Recommendations of the Advisory Committee on Immunization Practices (ACIP) of the Centers for Disease Control and Prevention (CDC)

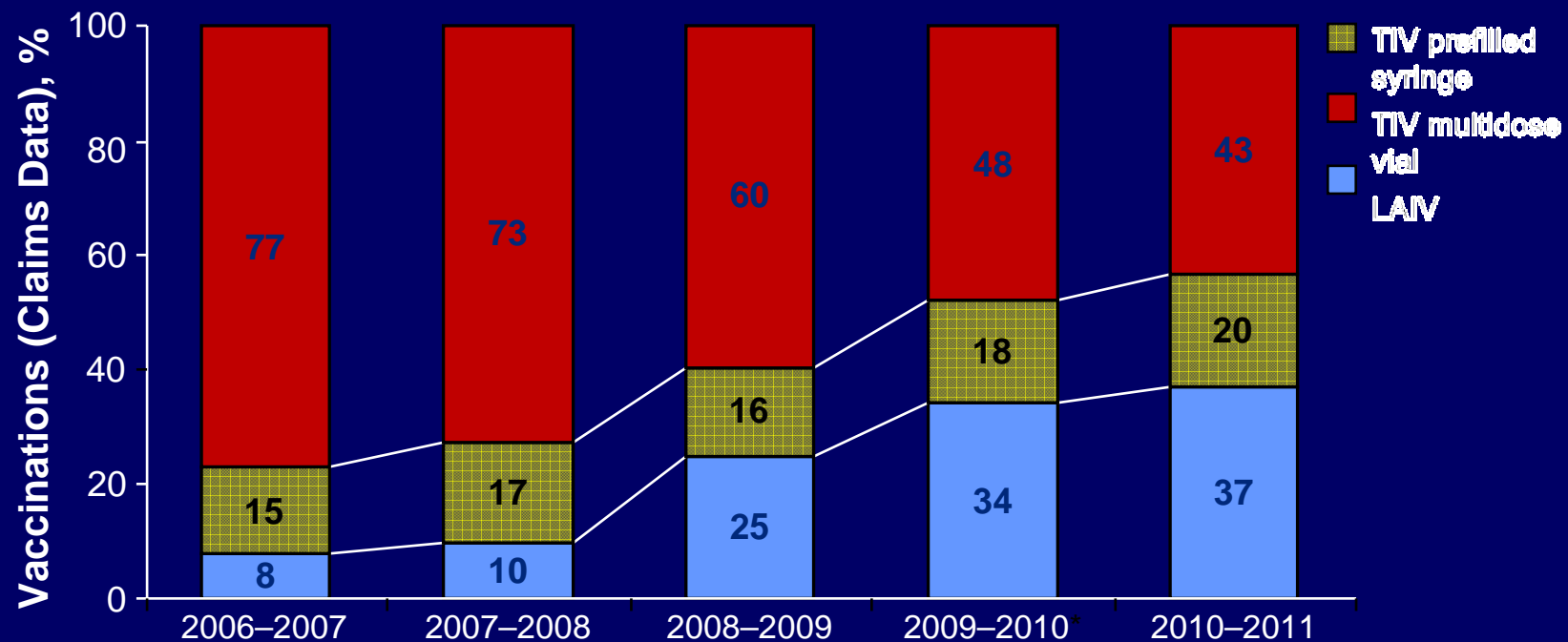
# History of Live Attenuated Influenza Vaccine<sup>1</sup>



1. Immunization Action Coalition.  
<http://www.immunize.org/timeline/>. Accessed December 15, 2011.

# LAIV Utilization Among United States Pediatric Providers

- Significant use in provider offices and school programs



\*Excludes 2009 H1N1 pandemic vaccinations

Toback et al., *Vaccine*, 29:4225-4229, 2011; Toback et al., Annual Conference on Vaccine Research, April 2011

# Countries That Have Approved Live Attenuated Influenza Vaccine - 2012

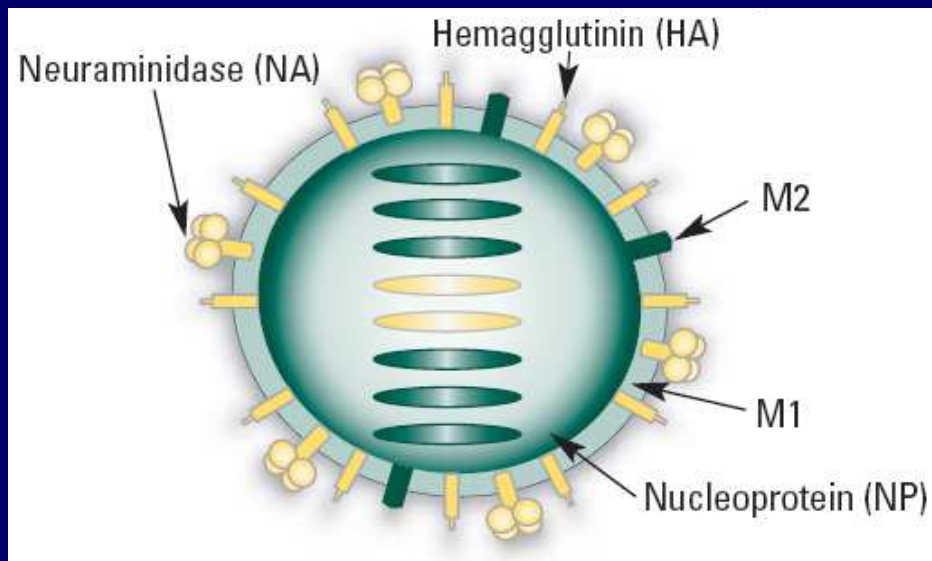
Country	Age Indication	Restrictions
United States <sup>1</sup> , South Korea <sup>1</sup> , Hong Kong <sup>1</sup> , Macau <sup>1</sup> , Israel <sup>1</sup>	2-49 years	Asthma, recurrent wheezing in children less than 5 years old,
Canada <sup>1</sup>	2-59 years	No restriction except severe asthma/active wheezing
European Union <sup>2</sup>	2-17 years	No restriction except severe asthma/active wheezing

Live, attenuated intranasal spray: FluMist<sup>1</sup> or Fluenz<sup>2</sup>

# Influenza Vaccines Available in the United States

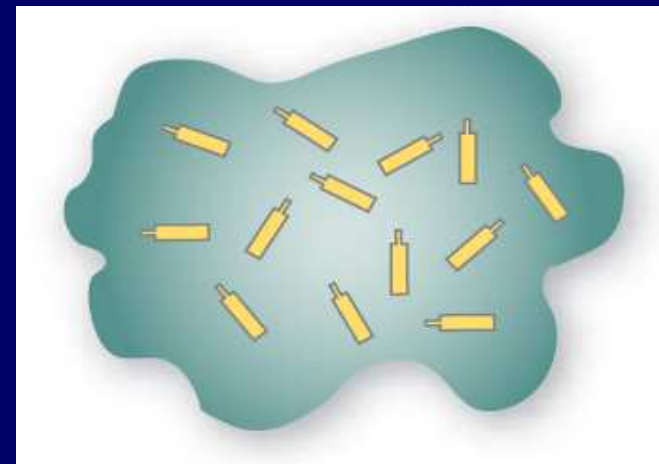
## LAIV

- Attenuated vaccine with multiple antigens<sup>1,2</sup>



## TIV

- HA is the only standardized component; other antigens may be present<sup>3,4</sup>



\*Image adapted from: *Clinical Virology*, 6th ed. 1997:911-942.

1. FluMist [prescribing information]. Gaithersburg, MD: MedImmune Vaccines, Inc.; 2007.

2. Hayden FG, et al. *Clinical Virology*, 6th ed. 1997:911-942.

3. Fluzone® [prescribing information]. Swiftwater, PA: Sanofi-Pasteur, Inc.; 2006.

4. Fluvirin® [prescribing information]. Emeryville, CA: Novartis Vaccines and Diagnostics, Inc.; 2006.

# Comparisons Between Live and Inactivated Influenza Vaccines in Children

## HEALTHY CHILDREN 2 TO 18 YEARS OLD

### Live attenuated influenza vaccine

- superior efficacy
- superior cross-protection
- potential for 1 dose option for vaccine naïve children < 9 yrs old
- longer lasting protection
- protection provided by innate and adaptive immunity
- easy to administer
- preferred by most children
- avoids needle stick injury

## CHILDREN AT-RISK & LESS THAN 24 MONTHS OLD

### Inactivated influenza vaccine

- only current option
- provides good protection against vaccine strains
- variable protection to drifted strains
- two doses are needed for vaccine naïve children <9 yrs old; 1 dose provides no significant protection
- excellent safety record



# School-based Vaccination Program In Central Texas

- In 2007-2008, influenza vaccine delivery was moved to the elementary schools of Eastern Bell County; 47.5% were vaccinated.
- The following year, 2008-2009, the Field Trial was expanded to include all 50 elementary, middle and senior high schools.
- 2008-2009 School Enrollment – 22,914

Vaccinated – 9,003 – 39.3% vaccinated; 6,909 (77%)  
received LAIV.

Elementary Schools	-	47% vaccinated (LAIV 82%)
Middle Schools	-	29% vaccinated (LAIV 75%)
High Schools	-	23% vaccinated (LAIV 63%)

# Take-home Messages

- Increased use of influenza vaccines can improve the control of influenza
- Integrating the use of both LAIV and TIV vaccines in the medical homes and through school-based clinics will enhance the ability to directly protect children and indirectly protect the community against influenza related morbidity and mortality