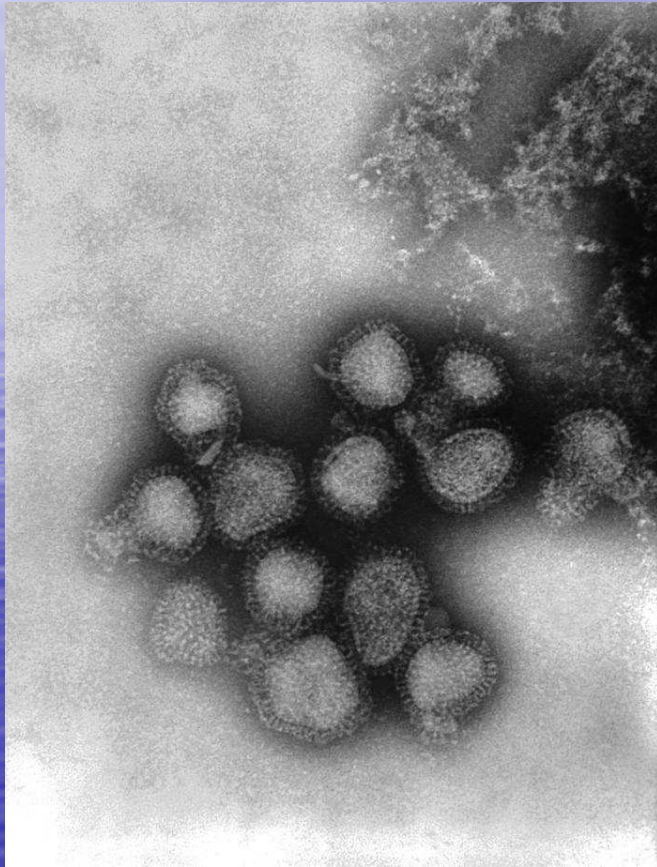


# The Case for Flu Vaccination in the Pediatric Population

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Vice President, Alabama Chapter of the  
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# Epidemiology of Influenza



1,200 deaths annually

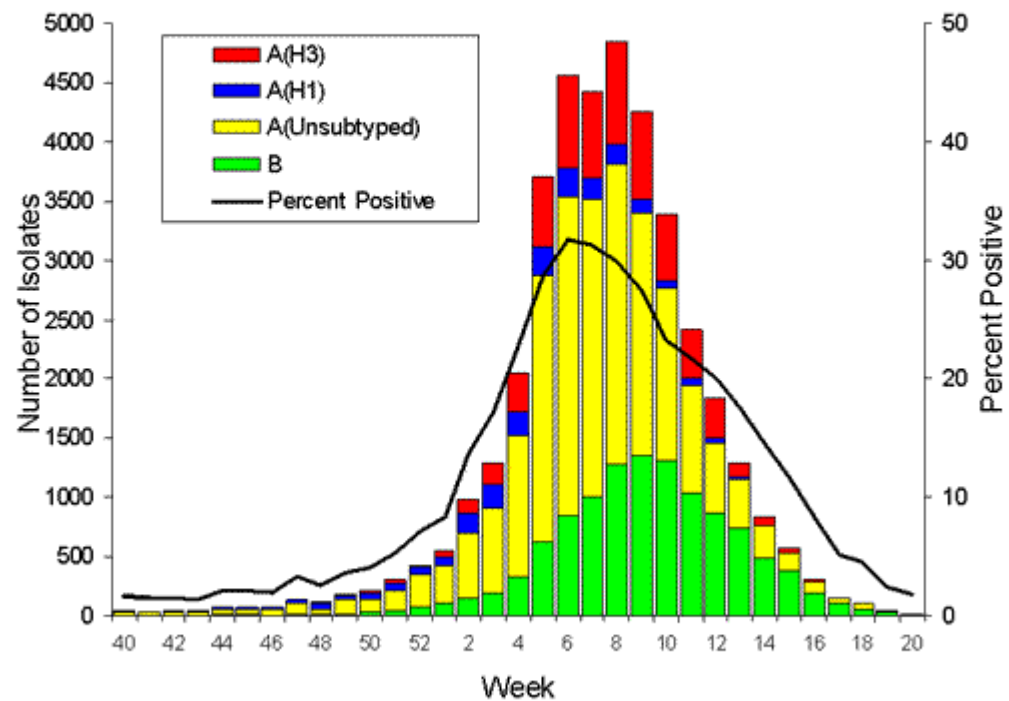
114,000 hospitalizations  
annually

7<sup>th</sup> leading cause of death in  
the US

8<sup>th</sup> leading cause of death in  
Alabama (2003)

Season typically December  
through March but may  
extend from October to  
May, especially in the  
South

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



# Timing is Everything

- TIV (shot, killed) typically available early October
- LAIV (nose spray, live) can be given earlier, i.e. during back-to-school check ups during the summer
- Takes 2 weeks to be protective
- If vaccine naïve, doses must be given 4 weeks or 6 weeks apart for TIV and LAIV, respectively



# Why Immunize All Kids?

- To keep them healthy
- To avoid missed school, parent's work
- To prevent outpatient visits, hospitalizations and deaths



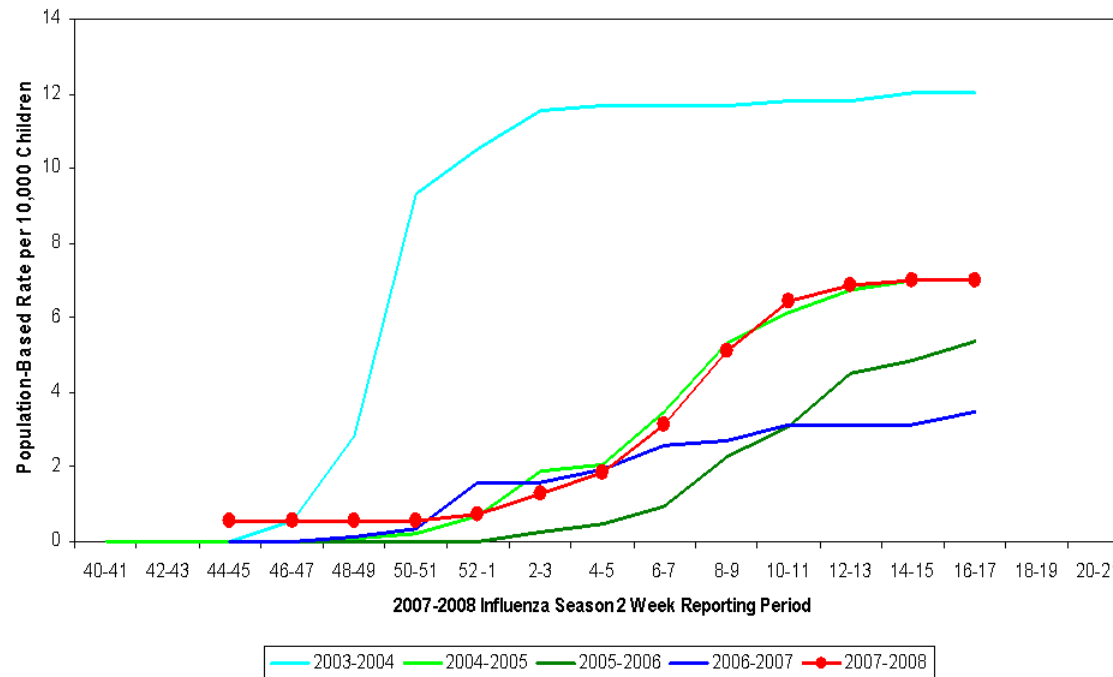
# Pediatric Hospitalization Rates

- 108 hospitalizations per 100,000 patient years in children under 5 years, **similar for other high-risk groups** including those over the age of 65



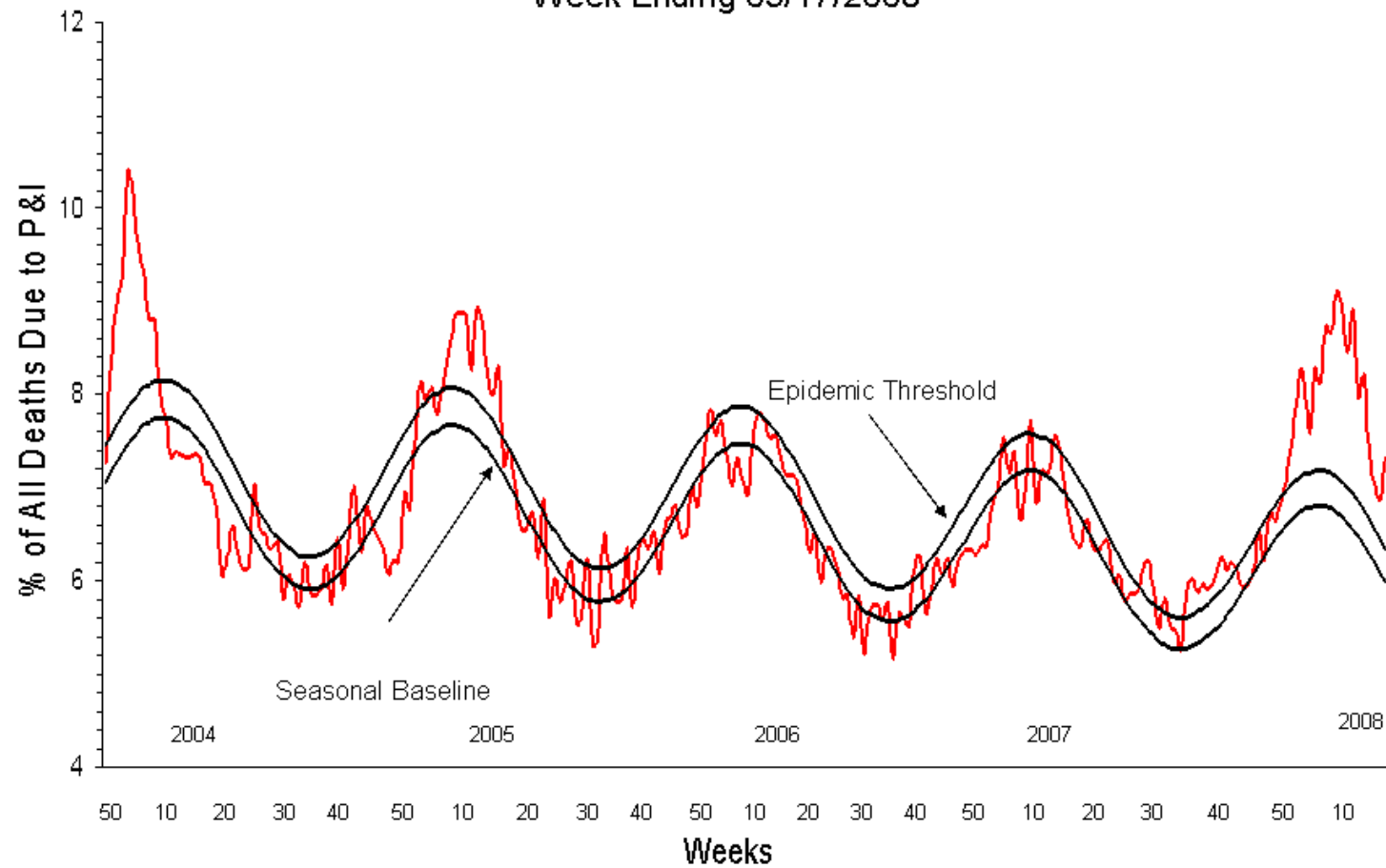
# Hospitalization rates last four seasons in children under 4 years

NVSN 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

Week Ending 05/17/2008





# Influenza Deaths In Children

- Fortunately rare in children <5 years
- 92 per year on average in the 1990s
- .4 per 100,000 people
- Represent a substantial proportion of vaccine-preventable deaths
- **Not** predicted by risk factors

# 153 lab-confirmed influenza deaths reported to the CDC in 2003-2004

- 96 (63%) were under 5 years
- 61 (40%) were under 2 years
- 100 (67%) didn't have an underlying health condition that would have led to immunization under the CDC ACIP recommendations at the time

# Effectiveness of the Flu Vaccine

- Varies because of drift/vaccine mismatch
- Varies according to outcome measured
- Varies by age group
- Varies by health status of the patient
- Varies by the choice of vaccine
- Varies by the timing of vaccine and the number of vaccines given

# Effectiveness of the Flu Vaccine

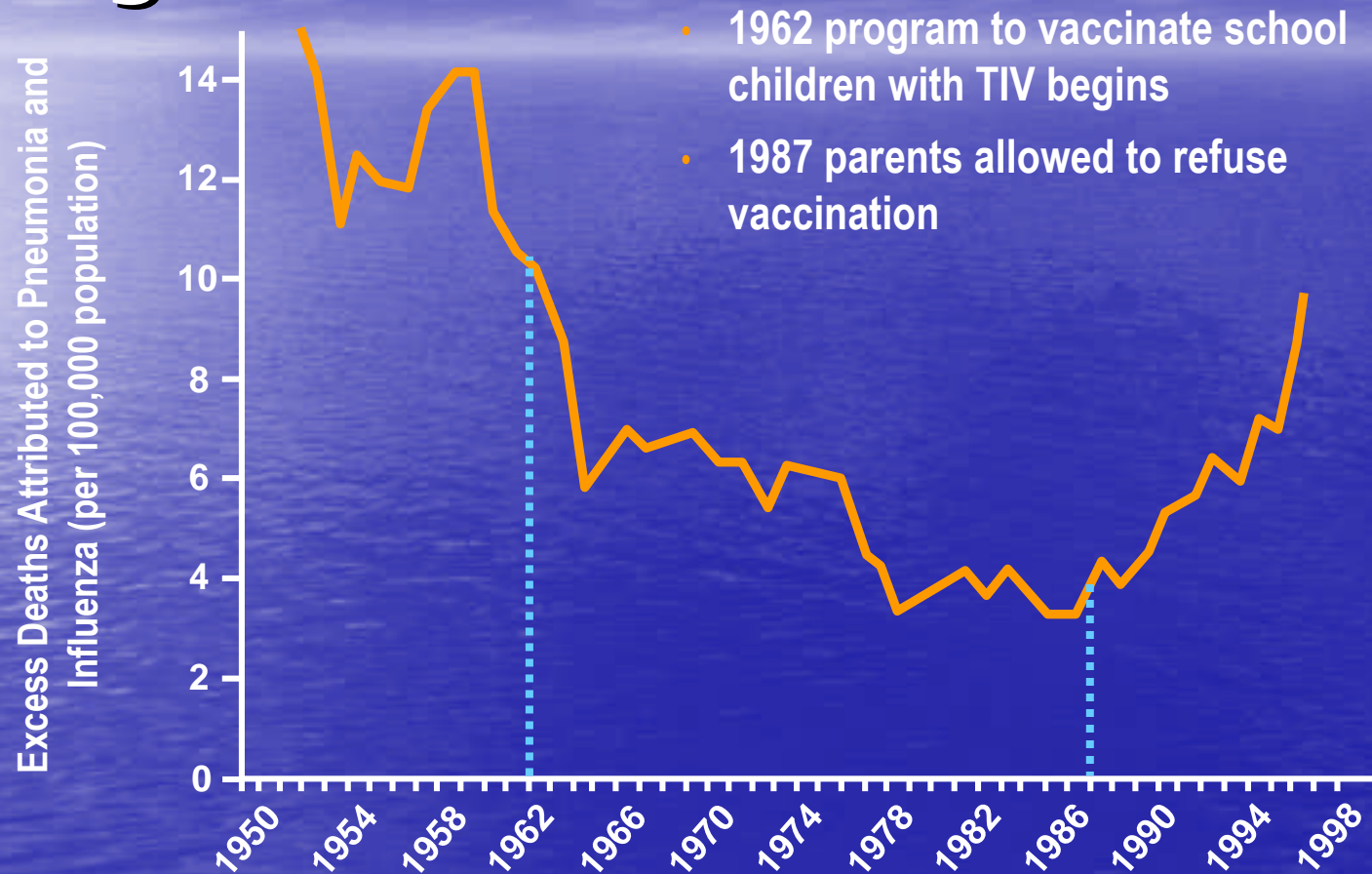
- Similar to other vaccines
- When first immunized children who get two doses four weeks apart have equal protection to previously immunized
- Depending on age, outcome, drift and vaccine given, effectiveness is between 50 and 90% at preventing clinically significant disease
- Secondary outcomes- decrease in complications- pneumonia, asthma exacerbations and AOM

# Immunize Kids-Protect the Community

- Several studies have demonstrated that vaccination of children decreases influenza disease burden in high-risk populations.
- Studies suggest that this may be a better public health strategy than targeting the elderly.



# Japanese School Vaccination Program



Reichert TA et al. *N Engl J Med.* 2001;344:889-896.

Ok, let's vaccinate. Which vaccine?

- One thing is on the mind of all of our *patients* in pediatrics...

“Can I get the kind that’s not a shot?”

LAIV has come a long way...but still has limitations





# LAIIV Limitations in Children

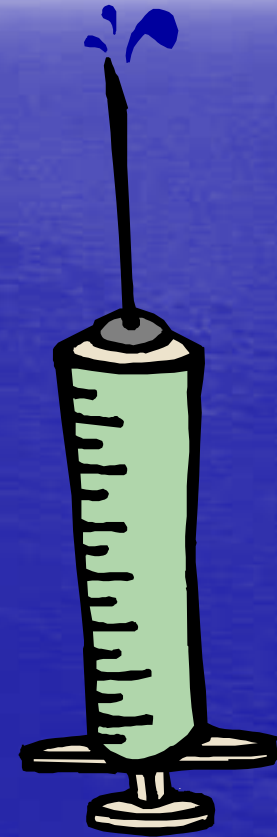
- Not indicated under 2 years due to increase in hospitalizations for wheezing
- Not indicated in kids with asthma or recurrent wheezing because of increased risk of wheezing/hospitalization

# Improvements in LAIV

- Price is down but still higher than TIV
- Fridge not freezer
- Lower volume of vaccine to squirt up the child's nose (.2 ml vs 2ml)
- Age indication is now down to 2 years

# Advantages of LAIV over TIV

- More effective, especially in years of vaccine mismatch
- Likely involves more of the immune system in defense- i.e. secretory immunity
- It's NOT a SHOT



# **Primary Change In Flu Vaccine Recommendations**

The 2008 ACIP recommendations  
include a big change

# New Recommendations

- These recommendations were presented to the full ACIP and approved in February 2008. Modifications were made to the ACIP statement during the subsequent review process at CDC to update and clarify wording in the document. Data presented in this report were current as of July 1, 2008. Further updates, if needed, will be posted at CDC's influenza website (<http://www.cdc.gov/flu>).

# All children should get a flu immunization

- Beginning with the **2008-09** influenza season, annual vaccination of all children aged 5-18 years is recommended. Annual vaccination of all children aged 5-18 years should **begin in September** or as soon as vaccine is available for the 2008-09 influenza season, if feasible, but annual vaccination of all children aged 5-18 years should begin no later than during the 2009-10 influenza season.

# Don't forget the higher risk groups

Annual vaccination of all children aged 6 months-4 years (59 months) and older children with conditions that place them at increased risk for complications from influenza should continue. Children and adolescents at high risk for influenza complications should continue to be a focus of vaccination efforts as providers and programs transition to **routinely vaccinating all children.**

# Current Recommendations on Who Gets What

Either TIV or LAIV can be used when vaccinating healthy people ages 2-49 years. Children ages 6 months-8 years should receive 2 doses of vaccine if they have not been vaccinated previously at any time with either LAIV or TIV (doses separated by  $\geq 4$  weeks); 2 doses are required for protection in these children. Children ages 6 months--8 years who received only 1 dose in their first year of vaccination should receive 2 doses the following year. LAIV should not be administered to children ages  $< 5$  years with possible reactive airways disease, such as those who have had recurrent wheezing or a recent wheezing episode. Children with possible reactive airways disease, people at higher risk for influenza complications because of underlying medical conditions, children ages 6--23 months, and people ages  $> 49$  years should receive TIV.



# Summary of Current Recommendations

- All children 6 months to 18 years should be immunized against influenza- goal is to have this done in the 2008-2009 season, meaning starting now
- 2 doses of vaccine for children who haven't been vaccinated previously or if they only got one dose in the first year of immunization
- Priority for high-risk groups including children 6 months to 59 months and those with chronic disease such as asthma, diabetes and neurological disease that will increase the risk of influenza and its complications.

# Practical Bedside Experience

- Parents who are told that their insurance *may cover* the flu vaccine tend to **WAIT**
- Parents who are told that their insurance *covers* the flu vaccine universally **WANT**

# Barriers to Protection

- Vaccine has to be ordered in the spring for fall administration. Providers need to know the commitment of insurers to pay for the vaccine months in advance to avoid the expense of unused vaccine.
- Not having a uniform benefit for this universally needed vaccine creates uncertainty among providers and parents that leads to decreased immunization rates.

# Summary

- CDC now recommends flu vaccine for ***all*** children
- Flu vaccine is similar to other vaccines in effectiveness
- 2 doses of vaccine are needed in children under eight who are being vaccinated for the first time
- LAIV has advantages over TIV but also has limitations

# Summary

- Providers need to preorder vaccine in the spring for administration in the fall