

# School-located influenza vaccination

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# Seasonal influenza in the United States

- Each year, 5-20% of the US population contracts influenza<sup>1</sup>
- Influenza results in an estimated average of 226,000 hospitalizations and 36,000 deaths annually<sup>2</sup>
- Persons aged  $\geq 65$  years, children aged  $< 2$  years, and persons who have certain chronic medical conditions, are at highest risk for complications<sup>2</sup>
- Vaccination is the most effective strategy for preventing influenza and its complications, yet coverage among most groups remains well below 50% for most age groups<sup>2</sup>

1 - <http://www.cdc.gov/flu/>

2 - Fiore AE et al. Prevention and Control of Influenza Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 57(RR07);1-60, 2008

# Influenza and school-aged children

- School-aged children have the highest rates of infection<sup>1</sup>
- Routine vaccination of school-aged children would benefit children, but could also reduce burden among their contacts and the community at large (herd immunity)<sup>2</sup>
- Disease models have shown that, if vaccine supply were limited such as during a pandemic, vaccinating school children would be the most efficient disease control approach<sup>3</sup>

1 - Fiore AE et al. Prevention and Control of Influenza Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 57(RR07);1-60, 2008

2 - King JC et al. Effectiveness of school-based influenza vaccination. N Eng J Med 14:2523-32, 2006

3 - Germann TC et al. Mitigation strategies for pandemic influenza in the United States. Proc Natl Acad Sci 103:5935-40

# February 2008 ACIP meeting

- Voted to recommend routine, annual influenza vaccination for all school-aged children, 5 years through 18 years<sup>1</sup>
  - Children aged <9 years receiving influenza vaccine for the first time or who were vaccinated for the first time during the previous season but only received one dose should receive 2 doses of vaccine at least 4 weeks apart
  - Healthy, non-pregnant children may receive either live attenuated influenza vaccine (LAIV) or trivalent inactivated vaccine (TIV)
  - Children with asthma and other medical conditions should receive TIV
- Full implementation beginning in the 2009-2010 season
- This recommendations adds an estimated 30 million children to the ranks of those already recommended for vaccination<sup>1</sup>
  - Expected to be a challenge since coverage among high risk children for whom vaccination is already recommended is low (<40%)<sup>2</sup>

1 - <http://www.cdc.gov/media/pressrel/2008/r080227.htm>

2 - GL Euler et al. Estimated Influenza Vaccination Coverage Among Adults and Children --- United States, September 1, 2004--January 31, 2005 MMWR 54: 304-307, 2005

# School-located influenza vaccination (SLIV)\*

## What is it?

- Influenza vaccination administered on school grounds
- Targets students (others may also be offered vaccine)
- Held during or after school hours
- Typically involves collaboration between public health and the schools

\* AKA “school-based”, “school-associated”, “school-placed”

# Why consider SLIV?

- Providers may not be able to accommodate so many new patient visits
- SLIV may be convenient for parents
  - Taking time off work for a provider visit is challenging
- SLIV may be convenient/practical for vaccinators (e.g., public health departments)
  - Many children are found in schools
  - Schools can usually accommodate mass vaccination clinics
  - Schools have some pre-existing infrastructure
  - School nurses can be supportive and assist

# Recent US experience with SLIV

## Examples

- Hawaii (statewide)
- Knox County, Tennessee
- 3 counties in Minnesota
- Milford, Connecticut (coming up next!)

# Hawaii – statewide program

- Grades K-8 statewide
- Parents given a choice of LAIV or TIV
- Vaccine funding source: state, manufacturer donation, VFC
- 63,153 students vaccinated
- Participation: 43% (higher in the younger grades)
- Parental preference for LAIV vs. TIV
  - 26% LAIV
  - 56% TIV
  - 18% either
- Cost per dose administered
  - ~\$24 including the cost of vaccine
  - ~\$16 excluding the cost of vaccine

Presented at a NACCHO Influenza Meeting, July 2008, Atlanta, GA

# Knox County, TN

- K-12 throughout the county
- LAIV only
- Vaccine funding source: manufacturer donation and VFC
- 24,198 students vaccinated
- Participation: 45%
  - 56% in elementary schools
  - 45% in middle schools
  - 30% in high schools
- Labor and opportunity cost
  - 6900 person-hours expended during the campaign
  - Health department clinics were closed for a total of 84 half days

LR Carpenter, et al. Mass distribution of free, intranasally administered influenza vaccine in a public school system. Pediatrics 120: e172-8, 2007

# Three counties in Minnesota

- K-12 throughout 3 counties
- LAIV only
- Vaccine funding source: manufacturer donation and VFC
- 15,453 students vaccinated
- Participation: 41%
  - 47%
  - 33% middle and high
- Cost per dose administered:
  - ~\$10 excluding vaccine
  - Administrative costs were not fully quantified and included

# Challenges

- Vaccinating outside of the medical home may reduce the incentive to see provider
- Burden and opportunity costs can be high
  - School nurses – often overworked and understaffed
  - Health department staff – often overworked and understaffed
  - Teachers and school administrators – concerned about the disruption and time away from class
- Finding the time and know-how to start a program can be intimidating

# Challenges (2)

- Participation rates are consistently low (typically <50%, less with older children) – could we improve?
  - Seeking provider support for SLIV
  - Raising parental awareness of the new recommendations for children
  - Recognizing that parents may need time to get used to the idea of vaccination occurring in schools
  - Improving consent form return rate (e.g., crumpled-in-bottom-of-backpack syndrome)
- Same challenges as exist with influenza vaccination in general
  - Belief that the vaccine “causes” influenza
  - Belief that the vaccine is ineffective
  - General anti-vaccine sentiment
- SUSTAINABILITY!!!
  - Donated vaccine may be time-limited
  - Billing for vaccine and administration fee?

# Other relevant activities

- CDC-funded SLIV pilot projects
- NACCHO-led toolkit
- *Journal of School Nursing* February issue
- *Pediatrics* supplement
- National Immunization Conference

# School-located vaccination project

## Denver, CO

- 2 year, CDC-funded project
- Led by Denver Health (local health department)
  - University of Colorado – evaluation
  - Denver Community Health Services – community vaccinator
- Objectives:
  - Conduct SLIV in 20 Denver elementary schools
  - Bill public and private insurance for vaccine and administration fee
  - Conduct an evaluation and cost analysis of both SLIV implementation and the billing process

# School-located vaccination projects

## Rochester, NY

- 2 year, CDC-funded project
- Led by Monroe County Department of Health
  - University of Rochester – evaluation
  - CNE – community vaccinator
- Objectives:
  - Conduct SLIV in 24 elementary schools
  - Examine the effectiveness of varying approaches to promoting the clinics and seeking consent
  - Bill public and private insurance for vaccine and administration fee
  - Conduct an evaluation and cost analysis of both SLIV implementation and the billing process

# NACCHO-led SLIV toolkit

- Objective: Reduce the burden to local health departments of starting a SLIV program from scratch by providing:
  - Suggested processes (e.g., timelines, checklists, who to engage)
  - Sample materials (e.g., sample consent forms, letters soliciting principal support)
- ~10 local health departments, CDC, and other partners formed the workgroup to help design the toolkit
- It is still in draft form, but will be described and hopefully available by the 2009 National Immunization Conference

# *Journal of School Nursing*

## February 2009 issue

- Features a toolkit similar to what NACCHO has been developing, although it will be written specifically for school nurses

# *Pediatrics* supplement

- Supplement is being finalized now
- It will be devoted to articles on SLIV demonstration projects and research related to SLIV

# National Immunization Conference

## Dallas, TX, March 30-April 2, 2009

- Two SLIV workshops
  - “No Child Left Unimmunized – Influenza Vaccination in Schools”
    - Monday, March 30th, 3:30-4:30PM
  - “School-located Influenza Vaccination Programs”
    - Thursday, April 2nd, 9:00-10:00AM
- Lunch roundtable discussion on SLIV
  - Tuesday, March 31st, 12:00-1:00PM

NIC website: <http://cdc.confex.com/cdc/nic2009/webprogram/meeting.html>

**Thank you!**

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# Questions / comments?

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