School-located influenza vaccination

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DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL AND PREVENTION

What can school located vaccination accomplish?

- Do/can school-located vaccination programs achieve high levels of coverage?
- Does achieving high levels of vaccination in school aged children reduce the community impact of influenza?
  - Has a study been done, or can it be done, to definitively answer this question?

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Influenza and school-aged children

- School-aged children have the highest rates of infection[1]
- Routine vaccination of school-aged children would benefit children, but could reduce burden among their contacts and the community at large[2]
- 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[3]

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

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Why consider school-located vaccination?

- Providers may not be able to accommodate so many new patient visits
- Convenient for parents
  - Taking time off work for a provider visit is challenging
- 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

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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

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Challenges (2)

- Participation rates are consistently low (typically <50%, less with older children) – could we improve?
  - Seeking provider support for school-located vaccination
  - 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?

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Past experience with school vaccination

- 4 state study (King JC et al, NEJM 2006)
  - 24 public elementary schools in MD, TX, MN and WA
  - 47% vaccinated (30-56%)
- 3 Minnesota counties (Hull et al, Vaccine 2008)
  - K - 12: 33%, 54%, 58% by county -- 41% combined
  - Elementary: 47%, middle and high school 33%
- Hawaii (Effler et al , EID 2010)
  - Children 5-13 yrs: 46%; highest in 6 year olds (54%) and lowest for 13 year olds (30%)
- Knoxville, TN (Poehling et al, Vaccine2009)
  - Children 5-12 yrs: 44%

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SLV Clinics, October 19-23, 2009 (n=45 project areas)

- Status of school clinics
  - Held small number of school clinics (n=13; 29%)
  - Postponed or cancelled school clinics (n=20; 44%)
  - Holding doses for school clinics (n=15; 33%)
  - Waiting to schedule school clinics when more vaccine is available (n=16; 36%)

University of Michigan/CDC unpublished data

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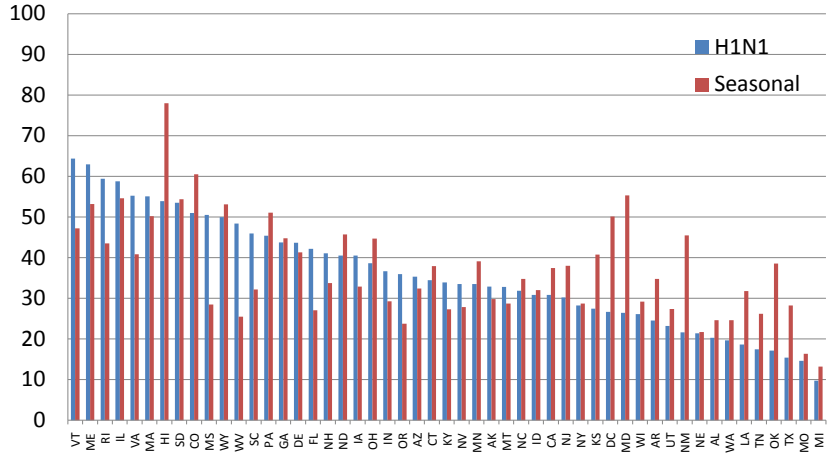
Cumulative H1N1 and Seasonal Vaccination Coverage among School-Aged Children (5-17 years), by State, NHFS January 2010 interviews



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School vaccination: main models

- During school
- Afternoon, evening, weekend clinics at school
- Students transported to central sites

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Variation in coverage, H1N1 school-located vaccination

Rhode Island : 421 schools:

~73% (range 33% to 100%)

Maine, 4 counties, 133 schools: (k-8)

~53% (range 21% to 80%)

Arkansas, 1100 public schools:

~36% (preliminary estimate)

Note: reported April/May 2010; reproducibility for seasonal vaccine is unknown

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Indirect protection from school-located vaccination efforts

Central Texas Trial

- Vaccination in schools to:
  - Provide direct protection and improved vaccination coverage in school-aged children
  - Provide indirect protection to others in intervention communities.
- Impact is measured by comparison to neighboring control communities.
- Multi-year trial in school-aged children
  - Clinic-based from 1998 – 2002
  - Outreach-based from 2003 – 2006
  - School-based from 2007 to present.
- Investigator-initiated trial funded by MedImmune (DMID/NIAID/NIH funded from 1998-2007).

Piedra, Glezen and Gaglani, unpublished data; slide courtesy of MedImmune

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Vaccination Coverage in School-Aged Children in Intervention Cities

- Seasonal Vaccines: 55% coverage (59% elementary, 51% middles & 40% high schools)
  - 13,107 children were vaccinated
    - ➢72% received LAIV
    - ➢28% received TIV
- Pandemic Vaccines: 36% coverage (42% elementary, 32% middles & 19% high schools)
  - 8,670 children were vaccinated
    - ➢90% received mLAIV
    - ➢10% received mTIV

Piedra, Glezen and Gaglani, unpublished data; slide courtesy of MedImmune 13

H1N1 Illness In Intervention and Comparison Cities

Pandemic Vaccination Period Sep 23 – Dec 12, 2009

	Temple-Belton (intervention cities)		Waco, Bryan & College Station (comparison cities)		Chi square with Yates correction	
Age	Total No.	No. of H1N1 Infections (%)	Total No.	No. of H1N1 Infections (%)	*P* value	RR (95% CI)
< 4	103	33 (32%)	62	25 (40.3%)	0.36	0.87 (0.67-1.13)
4 - 9	147	57 (38.8%)	99	68 (68.7%)	<0.001	0.61 (0.49-0.76)
10 - 18	131	61 (46.6%)	95	57 (60%)	0.06	0.8 (0.64-1.0)
19 - 49	118	21 (17.8%)	157	54 (34.4%)	0.004	0.58 (0.39-0.85)
50 - 64	30	9 (30%)	27	3 (11.1%)	0.11	NA
≥ 65	7	0 (0%)	6	1 (16.7%)	1.0	NA
Total	536	181 (33.8%)	446	208 (46.6%)	<0.001	0.78 (0.69-0.88)

Piedra, Glezen and Gaglani, unpublished data; slide courtesy of MedImmune 14

School-Located Influenza Vaccination Evaluation Goals

- To determine the coverage achieved in selected school-located vaccination sites
- To determine the extent to which and how selected sites implemented specific vaccine administration elements
- To identify strengths and areas of improvement associated with implementing specific vaccine administration elements across selected SLV sites

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Evaluation Topics

- Consent Forms
  - Process; Return rates
- Staffing
  - Source of staff (DOH, School, Comm. Vaccinator)
  - Use /number of staff/volunteers
- Vaccine
  - Type of vaccine offered (LAIV, Inactivated, both)
  - Vaccine offered to non-students (parents, staff, etc)
  - Number vaccinated
  - Storage and handling practices
  - Plans for 2nd doses
- Communications with stakeholders
- Billing processes
  - fees charged

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2010-2011 seasonal flu vaccination – school-located vaccination plans

- Survey of Immunization programs (n=53)
  - 31 planning school-located seasonal flu vaccination
  - Vaccine prebooked for school-located vaccination
  - Additional resources requested

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SLV resources

- CDC's "2009 H1N1 Influenza School-Located Vaccination (SLV): Information for Planners": http://www.cdc.gov/h1n1flu/vaccination/slv/planners.htm
- Department of Education's 2009 H1N1 influenza website: http://www.ed.gov/h1n1flu/
- National Association of School Nurses' "Don't get sidelined by the flu: Influenza prevention and treatment education program" : http://www.nasn.org/Default.aspx?tabid=316
- *Journal of School Nursing* supplement - February 2009 issue
- Public local health department and education colleagues

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Thank you

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