School-located influenza vaccination

National Influenza Vaccine Summit
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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?
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\(^3\)


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
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 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?
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, Vaccine 2009)
  – Children 5-12 yrs: 44%

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

School vaccination: main models

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

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
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

H1N1 Illness In Intervention and Comparison Cities

*Pandemic Vaccination Period Sep 23 – Dec 12, 2009*

<table>
<thead>
<tr>
<th>Age</th>
<th>Temple-Belton (intervention cities)</th>
<th>Waco, Bryan &amp; College Station (comparison cities)</th>
<th>Chi square with Yates correction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total No.</td>
<td>No. of H1N1 Infections (%)</td>
<td>Total No.</td>
</tr>
<tr>
<td>&lt; 4</td>
<td>103</td>
<td>33 (32%)</td>
<td>62</td>
</tr>
<tr>
<td>4 - 9</td>
<td>147</td>
<td>57 (38.8%)</td>
<td>99</td>
</tr>
<tr>
<td>10 - 18</td>
<td>131</td>
<td>61 (46.6%)</td>
<td>95</td>
</tr>
<tr>
<td>19 - 49</td>
<td>118</td>
<td>21 (17.8%)</td>
<td>157</td>
</tr>
<tr>
<td>50 - 64</td>
<td>30</td>
<td>9 (30%)</td>
<td>27</td>
</tr>
<tr>
<td>≥ 65</td>
<td>7</td>
<td>0 (0%)</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>536</td>
<td>181 (33.8%)</td>
<td>446</td>
</tr>
</tbody>
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Piedra, Glezen and Gaglani, unpublished data; slide courtesy of MedImmune
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

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
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

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/
- Journal of School Nursing supplement - February 2009 issue
- Public local health department and education colleagues
Thank you