Logistics of Universal Childhood Influenza Vaccination

2009 National Influenza Vaccine Summit
July 1, 2009

Matthew F. Daley, MD
Assoc. Professor, Pediatrics
Univ. Colorado Denver

Disclosures

No relevant financial relationships with any commercial interests are present

No reference will be made to the use of medications in manners not licensed by the Food and Drug Administration
Expansion of Childhood Influenza Vaccination Recommendations

<table>
<thead>
<tr>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaccination encouraged, 6-23 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Universal vaccination, 6-23 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Universal vaccination, 6-59 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Universal vaccination, 6 mos-18 yrs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Additional Children Needing Vaccination

- **Children recommended** for vaccination:
  - 2007-08 season: ~40 million children
  - 2008-09 season and beyond: ~74 million children

- **Less than one-third of recommended children actually vaccinated**

- **Immunizing 6 month-18 year olds:**
  - 50% coverage rate: ~300% increase in number of children vaccinated
  - 90% coverage rate: ~500% increase

Several Implications

- New strategies for influenza vaccine delivery in primary care
- New vaccination settings (schools)
- Improved financial incentives for influenza vaccination
- Influenza vaccination efforts need to be broad, community-based, collaborative

Influenza Vaccination in Primary Care

Percent of U.S. Children with Usual Source of Care (MEPS, 2002)

Ref: Modified from Szilagyi, Universal Vaccination Workshop, www.medicine.emory.edu/id/ecirve/areweready, 2005
Percent of U.S. Children with ≥ 1 Visit to Primary Care During Oct-Dec (2002 MEPS)

Age (years)

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

At Least 1 Preventive Visit At Least 1 Other Visit

Ref: Modified from Szilagyi, Universal Vaccination Workshop, www.medicine.emory.edu/id/ecirve/areweready, 2005

How Much Time Does Vaccination Take?

- Influenza vaccination-only visits, pediatric patients in primary care offices, 2000-2001

<table>
<thead>
<tr>
<th></th>
<th>Median time in minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Urban</td>
</tr>
<tr>
<td>Waiting room</td>
<td>7.5</td>
</tr>
<tr>
<td>Exam room</td>
<td>14.3</td>
</tr>
<tr>
<td>Total</td>
<td>21.8</td>
</tr>
</tbody>
</table>

- Vaccination time short (2.3 min urban, 1.4 min suburban)

How to Increase Capacity Within Primary Care

- Add visits during regular hours:
  - Ties up rooms
  - Impairs clinic flow
  - Other activities deferred
- Extending vaccination “season”
- Dedicated influenza vaccination clinics outside of regular hours

Rationale for Extending Vaccination Window

Data source: Electronic claims to Medicare, Medicaid, commercial insurance, 2004 to 2007

Children: Extending Vaccination Window

Percent of U.S. Children 9-18 Years Old With at Least 1 Visit, By Length of Vaccination Window (2003-04 MEPS)


Influenza Vaccination Clinics Outside of Regular Office Hours

- **Potential advantages:**
  - Less interference with other routine office functions
  - Better processes, increased efficiency
  - Can be linked to reminder calls and letters

- **However:**
  - Staff flexibility (weekends, evenings), overtime pay
  - Administrative costs different compared with delivering vaccine during regular visits
  - Advanced planning required (vaccine supplies)

Studies of Influenza Vaccination Clinics

- Efficient influenza vaccination strategies, 5 pediatric practices:
  - Large-volume weekend clinics
  - Medical records not pulled for these clinics
- Influenza clinics vs. routine visits (adults):
  - Influenza clinics more efficient, but poorer documentation of vaccines given
  - Administrative costs similar ($9.33 vs. $10.01/dose)

Ref: Kempe, Pediatrics, 2005; Fontanesi, J Med Pract Manag, 2006

School-based Influenza Vaccination

- Campaign to vaccinate entire Knox County, Tennessee public school system, 2005
- 76 schools participated, with an enrollment of 53,420 students
- Free intranasal vaccine (LAIV) provided, billing was not done
- Overall influenza immunization rate = 45%

Ref: Carpenter, Pediatrics, 2007
Knox County Influenza Vaccination Project

- Resources expended:
  - Health department staff: 4200 person-hours
  - School nursing staff: 2700 person-hours

- Temporary closure of other clinics:
  - Adult preventive care, indigent care
  - 84 half-days (9900 visits) during 5-week campaign

"Even with donated vaccine, the demands on health department and school system personnel...made the vaccine campaign an expensive and disruptive endeavor."


Additional Data from Schools

- Middle school hepatitis B vaccination program ("catch-up"):
  - 85% with consent completed 3-dose series
  - Billing private insurance challenging (staff time, incorrect information, denials)

- National survey of school-based health centers:
  - 62% not billing private insurance
  - Obtaining parental consent also reported as barrier to immunization

Denver Public Health: School Influenza Immunization Project (PI Shlay)

- School nurses: spread thin, competing priorities, assignments may change
- Billing: contracts needed, managed care a potential barrier, time-consuming, denials
- FERPA: no public health exemption
  - Can't give student roster to community vaccinator
  - School RN needs to manage consent process
- School administration buy-in:
  - Educational mission highest priority
  - Perceived costs high, perceived benefits less tangible

Ref: personal communication, Judith Shlay MD, MSPH, June 2009

Influenza Immunization, Other Settings

<table>
<thead>
<tr>
<th>Pharmacies</th>
<th>Emergency Depts.</th>
<th>Public Immuniz. Clinics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Convenient</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Low cost</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Capacity</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Vaccinate children</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Vaccine tracking</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Adverse events</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Bill private insurance</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
Immunization in Multiple Settings: Record Scatter

- 50-64 y.o., location immunized (36% immunized overall)

- Physician's office 44.6%
- Store 6.5%
- Health department 6.8%
- Hospital/ED 6.7%
- Other clinic 9.2%
- Workplace 20.1%
- Other 6.1%


Problems with Scattered Immunization Records

- Compromises ability of primary care to implement strategies to improve rates:
  - Reminders
  - Assessment of clinic rates
- Difficult to estimate vaccine needs
- Record scatter minimized when vaccination sites enter data into community-based immunization registries

Vaccination Administration Fees

- Actual costs measured for all vaccination-related activities, routine infant vaccines
- Excluded costs of vaccines

<table>
<thead>
<tr>
<th></th>
<th>Total costs, administration (per shot)</th>
<th>Reimbursement for admin. (per shot)</th>
<th>Difference (per shot)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family practices/Community health</td>
<td>$7.57</td>
<td>$6.68</td>
<td>-$0.89</td>
</tr>
<tr>
<td>Pediatric practices</td>
<td>$10.67</td>
<td>$8.27</td>
<td>-$2.40</td>
</tr>
</tbody>
</table>

Ref: Glazner, Pediatrics, 2004

Many Challenges for Universal Childhood Influenza Immunization

- Current strategies ? high immunization rates
- Many more will need annual vaccination
- An H1N1 vaccine could complicate matters tremendously
- Current capacity in primary care limited, vaccination time-consuming
- Schools lack resources and infrastructure, billing private insurance difficult
- Other settings have substantial limitations
- Vaccine administration fees do not provide much incentive to vaccinate
Barriers and Solutions: Primary Care

- Limited vaccination capacity ➔ Influenza immunization clinics
- Competing clinical priorities ➔ Influenza immunization clinics
- Concern about vaccine supplies ➔ Adequate and early vaccine
- Limited financial incentive to vaccinate ➔ Improve reimbursement for vaccine administration; vaccines on consignment

Barriers and Solutions: Schools

- Parental consent ➔ Systematically obtaining parental consent at school registration
- Billing for vaccines and admin. fees ➔ Centralized billing; universal influenza vaccine purchase
- Resources and infrastructure ➔ Engage community vaccinators; improve reimbursement
Influenza Immunization: A Community Cooperative Effort

Coordinate clinics
Run immunization registry
Send reminders
Track supplies
Redistribute vaccine

Primary Care Offices ↔ Public Health Department ↔ Schools

Immunize Children and Adolescents in Community

Conclusions

- “Tinkering” with current approaches will fail to achieve adequate vaccination coverage
- Transformational change is needed:
  - Immunization “silos” broken down
  - Close cooperation between primary care, public health, schools
- Health care system must place a higher value on influenza vaccination
Provider-Identified Barriers to Late Season Vaccination

- Unable to give 2nd dose if 1st dose given late
- Compromises patient care
- Providers/patients forgetting
- Concern about having unused vaccine
- Difficulty persuading patients to vaccinate
- High patient volumes in winter
- Not clinically beneficial

Ref: McQuillan, National Immunization Conference, 2008
Vaccinating for Five Months

- Potential advantages:
  - Vaccination better matched to delivery patterns
  - Reduce problems of unused vaccine
  - More vaccination opportunities (?)

- However:
  - Expectations need to change (providers, patients)
  - Competing clinical priorities
  - May have only minimal impact unless directly linked to interventions to bring patients in