Percentage of Females Vaccinated against HPV, by Patient Age and Number of Doses Received

Source: National Health Interview Survey, United States, 2008
Background

• Previous studies have been based on a hypothetical HPV vaccine
  – Does not account for “real world” issues at the practice and policy levels
• More research is needed to understand physician- and practice-level factors affecting physician recommendation
• Need to identify factors that may require intervention to achieve widespread diffusion of HPV vaccination
Background

- Physician recommendation is a key factor in the uptake of vaccinations for a variety of conditions among both children and adults
- Intention to recommend HPV vaccination may be influenced by:
  - Physician factors
  - Practice factors
  - State/policy factors
Theoretical Basis

Physician Factors:
- Physician characteristics
  - Specialty, demographics etc.
- Knowledge about HPV and HPV vaccination
- Attitudes and Beliefs
- Early vs. late adopter
- Experience with vaccination

Practice Factors:
- Practice Characteristics
  - Size, geographic location, group type etc.
- Patient Characteristics
  - Insurance status, race/ethnicity
- Immunization Support
  - Immunization efforts, office reminder systems, vaccine storage capabilities

State/Policy Factors:
- State vaccine purchase process
- Insurance issues
  - Compulsory HPV vaccine insurance reimbursement
  - Proportion of uninsured children & adults
  - HMO penetration rate
- State participation in state immunization registry
- Proportion of vaccines delivered in public settings
- Community Norms related to HPV vaccination
  - School age entry requirements tied to HPV vaccine
  - Opt out policy for childhood vaccination
  - Vaccine acceptability
  - Reported physician recommendation
- Support for the vaccine from the health department
- Support of the state chapters of medical societies such as AAP, AAFP, etc.
- Demographic factors of the state

Physician recommendation to vaccinate and practice of HPV vaccination HPV for females age 9 to 26 at 3 and 5 years post HPV vaccine licensure
Project Aims

• Conduct two serial population-based cross-sectional surveys of 1000 U.S. physicians practicing in the fields of pediatrics, family medicine, and obstetrics/gynecology at 3 and 5 years post-HPV vaccine licensure.

• Determine the prevalence of physician recommendation within the past 12 months to vaccinate female patients ages 11-12, 13-17, and 18-26.
Project Aims (cont.)

• Assess factors independently associated with physician recommendation to vaccinate, including:
  – Physician characteristics
  – Practice characteristics
  – State and policy factors

• Assess changes in physician recommendation to vaccinate females in various age groups over time, and the factors that underlie these changes.
Data Sources

- Physician characteristics (physician survey)
- Practice characteristics (physician survey)
- State and policy factors (immunization program manager survey and analysis of legislative websites)
- Physician recommendation
Physician Survey
Purpose

• Determine the prevalence of physician recommendation of HPV vaccination in
  – early (ages 11-12),
  – middle (ages 13-17), and
  – late adolescent/young adult (ages 18-26) female patients

• Identify factors associated with recommendation of vaccination for early adolescents.
Methods: Sample

- Nationally representative sample
- Sample size:

<table>
<thead>
<tr>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Family Physicians (FPs)</td>
<td>818</td>
<td>746</td>
</tr>
<tr>
<td>Pediatricians (Peds)</td>
<td>393</td>
<td>473</td>
</tr>
<tr>
<td>Obstetricians/Gynecologists (OBYGNs)</td>
<td>327</td>
<td>322</td>
</tr>
</tbody>
</table>
Methods: Instrument

- 38 item survey assessing
  - Demographic and practice characteristics
  - HPV knowledge
  - Perceived barriers related to HPV vaccination
  - Vaccine practices
  - Vaccine recommendation
Methods: Data Collection

• April to August 2009
• April 2011 to present
• Multiphase recruitment approach based on the Dillman method
  – Postcard to inform participants about the upcoming survey
  – Survey sent via Federal Express two weeks later
  – Reminder card mailed one week later, followed by another survey, another reminder card, and a final survey
Results: Response Rate

Overall:
67.8% in 2009
62.8% in 2011
### Results: Time 1

“In the past 12 months, how often did you recommend the HPV vaccine to your female patients?”

<table>
<thead>
<tr>
<th>Patient age group</th>
<th>% &quot;Always&quot; recommend.</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-12</td>
<td>25.8</td>
</tr>
<tr>
<td>13-17</td>
<td>36.4</td>
</tr>
<tr>
<td>18-26</td>
<td>52.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>74.5</strong></td>
</tr>
</tbody>
</table>

- **FPs**
- **Peds**
- **OBGYNs**
- **Total**
Results: Time 1

Likelihood of “always” recommending HPV vaccination to females by provider specialty and age group

<table>
<thead>
<tr>
<th>Specialty</th>
<th>11-12 OR (95% CI)</th>
<th>13-17 OR (95% CI)</th>
<th>18-26 OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FP</td>
<td>1.0 (Reference)</td>
<td>1.0 (Reference)</td>
<td>1.0 (Reference)</td>
</tr>
<tr>
<td>Peds</td>
<td>2.6 (1.9-3.7)</td>
<td>4.7 (3.4-6.6)</td>
<td>5.3 (3.6-7.7)</td>
</tr>
<tr>
<td>OBGYN</td>
<td>1.6 (1.0-2.7)</td>
<td>2.7 (1.9-3.8)</td>
<td>2.5 (1.8-3.6)</td>
</tr>
</tbody>
</table>
## Results: Time 1

Logistic regression for HPV vaccine recommendation for early adolescents (“always” vs. other)

<table>
<thead>
<tr>
<th>Predictor</th>
<th>OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Specialty</strong></td>
<td></td>
</tr>
<tr>
<td>FP</td>
<td>1.0 (Reference)</td>
</tr>
<tr>
<td>Peds</td>
<td>2.1 (1.5-3.0)</td>
</tr>
<tr>
<td>OBGYN</td>
<td>1.6 (0.9-2.9)</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
</tr>
<tr>
<td>50+</td>
<td>1.0 (Reference)</td>
</tr>
<tr>
<td>40-49</td>
<td>1.8 (1.3-2.7)</td>
</tr>
<tr>
<td>25-39</td>
<td>1.4 (0.9-2.1)</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
</tr>
<tr>
<td>Not Hispanic or Latino</td>
<td>1.0 (Reference)</td>
</tr>
<tr>
<td>Hispanic or Latino</td>
<td>2.4 (1.3-4.4)</td>
</tr>
<tr>
<td><strong>Perceived barriers related to HPV</strong></td>
<td></td>
</tr>
<tr>
<td>vaccination</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>1.0 (Reference)</td>
</tr>
<tr>
<td>Medium</td>
<td>1.0 (0.7-1.6)</td>
</tr>
<tr>
<td>Low</td>
<td>1.8 (1.2-2.6)</td>
</tr>
<tr>
<td><strong>VFC Provider</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1.0 (Reference)</td>
</tr>
<tr>
<td>No</td>
<td>0.5 (0.4-0.8)</td>
</tr>
<tr>
<td>Don’t know</td>
<td>0.7 (0.4-1.2)</td>
</tr>
</tbody>
</table>
Preliminary Results:
Time 1 vs. Time 2

Note: Time 1 n = 1008; Time 2 n = 627
Conclusions from Physician Survey

• Despite national guidelines recommending vaccination to all females 11-26 years of age, the proportion of physicians who reported they always recommended HPV vaccination to this population ranged between 25.8% and 74.5%, depending on age group and physician specialty.

• Our findings suggest there are numerous missed clinical opportunities for HPV vaccination, particularly for early adolescent females, and perceived barriers to vaccination may drive decisions about recommending the vaccine.
Conclusions from Physician Survey

• Physician recommendation is an important and consistent predictor of vaccine uptake. Thus, interventions are needed to address barriers to vaccination and promote HPV vaccination of early adolescents. Our findings suggest these interventions may need to be targeted by provider age and specialty.
Methods

• Sent to immunization program managers from all U.S. states, territories, cities, and metropolitan areas (n=64)
Methods: Survey

- 5-item web-based survey
- Asked participants to indicate the ages between 9 and 18 years for which their program supplies HPV vaccine for
  - VFC-eligible children,
  - underinsured children in the *private* setting, using any funding source,
  - underinsured children in the *public* setting, using any funding source, and
  - insured children, using any funding source
Methods

- Conducted September-November 2009
- Follow-up survey in August 2010
  - E-mail with the survey included a document containing four U.S. maps with the states, territories, cities, and metropolitan areas colored in based on responses to four survey items
  - Non-responders were asked to help complete the map by providing information about their program, and previous responders were asked to confirm their prior responses
Results: Response Rate

September 2009
n = 25

August 2010
n = 34

Total Unique Responses
n = 44

72% response rate
## Results

### Ages for Which Immunization Programs Supply HPV Vaccine, by Population (n = 44)

<table>
<thead>
<tr>
<th>Population</th>
<th>Ages</th>
<th></th>
<th></th>
<th>None of these ages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9-18</td>
<td>11-12</td>
<td>11-18</td>
<td>n (%)</td>
</tr>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>VFC-eligible children</td>
<td>41 (93.18)</td>
<td>0 (0.00)</td>
<td>3 (6.82)</td>
<td>0 (0.00)</td>
</tr>
<tr>
<td>Underinsured children, private setting</td>
<td>25 (56.82)</td>
<td>0 (0.00)</td>
<td>3 (6.82)</td>
<td>16 (36.36)</td>
</tr>
<tr>
<td>Underinsured children, public setting</td>
<td>39 (88.64)</td>
<td>1 (2.27)</td>
<td>3 (6.82)</td>
<td>1 (2.27)</td>
</tr>
<tr>
<td>Insured children</td>
<td>12 (27.27)</td>
<td>1 (2.27)</td>
<td>2 (4.55)</td>
<td>28 (63.64)</td>
</tr>
</tbody>
</table>

Ages 9-18, 11-12, 11-18, and None of these ages.
Conclusions from Immunization Program Manager Survey

- Immunization manager survey data indicate HPV vaccine is generally available for uninsured and underinsured children in the public setting; however, national data suggest suboptimal levels of vaccine uptake among children. Thus, a policy level approach that focuses exclusively on cost may not be sufficient to achieve high levels of HPV vaccination.
HPV Legislation
Introduced and Passed
Legislative Sessions 2006/7 – 2010/11

Tina Proveaux
Neal Halsey, MD
Institute for Vaccine Safety
Johns Hopkins Bloomberg School of Public Health
Methods

• The legislative pages of websites for each state and DC were searched for bills that contained the words:
  – HPV or papilloma and
  – immunization or vaccine

• Categories:
  – requirements for school entry
  – educational information regarding the vaccine
  – who should cover the costs of HPV vaccines
# Bills 2006-2011

<table>
<thead>
<tr>
<th>Category</th>
<th>Introduced</th>
<th>Passed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>177</td>
<td>26</td>
</tr>
<tr>
<td>Mandate/Encourage for School Entry</td>
<td>46 (14)</td>
<td>3 (0)</td>
</tr>
<tr>
<td>Education/ Information</td>
<td>64</td>
<td>14</td>
</tr>
<tr>
<td>HPV Vaccine Funding</td>
<td>77</td>
<td>9</td>
</tr>
</tbody>
</table>
Proportion of Introduced HPV-related Bills That Passed into Law 2006-2011 Sessions
Proportion of Introduced HPV-related Bills That Passed into Law by Year
2006-2011 Sessions
States Adopting Legislation Mandating Who Pays for HPV Vaccination
2006-2011 Sessions
States Mandating for or against HPV Vaccine for Females Entering Grade 6 2007-2011 Sessions
States with Legislation Mandating HPV Information/Education 2006-2011 Sessions
States with Any HPV Legislation Passed
2006 - 2011 Sessions


• Quinn, G. P., Murphy, D., Malo, T. L., Christie, J., & Vadaparampil, S. T. A national survey about HPV vaccination: What we didn’t ask, but physicians wanted us to know. *Journal of Pediatric and Adolescent Gynecology* (under review)
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Publications


- Quinn, G. P., Murphy, D., Malo, T. L., Christie, J., & Vadaparampil, S. T. A national survey about HPV vaccination: What we didn’t ask, but physicians wanted us to know. *Journal of Pediatric and Adolescent Gynecology* (under review)
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