Increasing HPV Vaccination Rates: What is the Evidence?

Pediatric Grand Rounds
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- Dr. Darden has no disclosures.

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- Peter Szilagyi
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- CDC HPV speakers bureau

September 16, 2015
Republican Presidential Debate

"Vaccines are very important. Certain ones. The ones that would prevent death or crippling. There are others, there are a multitude of vaccines which probably don’t fit in that category, and there should be some discretion in those cases. But, you know, a lot of this—in—-is pushed by big government. And I think that’s one of the things that people so vehemently want to get rid of, big government."

Ophthalmologist – Rand Paul

July 2008

"MY GIRL DIED AS GUNEA PIG FOR GARDASIL"

"I’m all for vaccines, but I’m also for freedom. I’m also concerned with how they’re bunched up."

http://www.huffingtonpost.com/entry/vaccination-does-not-cause-autism_55fc4eb0e4b00310edf6dfa8

Vaccine hesitancy ... 
A new problem?

“The Cow Pock – or – the Wonderful Effects of the New Inoculation!”
J. Gillray, 1802

“The impact of vaccination on the health of the world’s people would be hard to exaggerate. With the exception of safe water, no other modality, not even antibiotics, has had such a major effect on mortality reduction and population growth.”

2013 Plotkin, Orenstein, ORT Vaccines

Learning objectives
1. Explain the importance of HPV vaccination and current vaccination rates.
2. Examine the current evidence for interventions to increase HPV vaccination rates.
3. Evaluate and apply the current evidence to my HPV vaccination practices

HPV and Cancer

<table>
<thead>
<tr>
<th>Cancer</th>
<th>% Associated With Certain HPV Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cervical</td>
<td>≥95%</td>
</tr>
<tr>
<td>Vaginal</td>
<td>50%</td>
</tr>
<tr>
<td>Vulvar</td>
<td>&gt;50%</td>
</tr>
<tr>
<td>Penile</td>
<td>50%</td>
</tr>
<tr>
<td>Anal</td>
<td>&gt;70%</td>
</tr>
<tr>
<td>Oropharyngeal</td>
<td>Up to 70%</td>
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</tbody>
</table>

HPV 16 and 18 are particularly oncogenic

HPV Epidemiology

- Most common sexually transmitted infection
- More than 50% of men and women will be infected with HPV at some point in their lives
  - ~79 million Americans currently infected
  - 14 million new infections/year in the US
  - 38,000 new infections per day
- HPV infection most common in teens and early 20s

Jemal A et al. / Natl Cancer Inst 2013;105:175-201
The Scourge of HPV Infection for Women

Pre-cancerous lesions
- Prolonged medical follow up
- Cervical conization and loop excision procedure
- Adverse obstetric morbidity
- Subsequent pregnancies are at risk:
  - Perinatal mortality
  - Preterm delivery
  - Low birth weight

Cervical Cancer
- One of the most common cancers
- 2nd most common cancer worldwide

Oropharyngeal (OP) Cancer Incidence

11,000 cases annually, 7,000 in men
- 30 cases per day in the US
Will be more common than cervical cancer by 2020

HPV-Associated Cervical Cancer Incidence Rates by State, United States, 2008-2012

4,000 deaths were attributable to cervical cancer in the US in 2012
11 deaths per day

HPV-Associated Oropharyngeal Cancer Incidence Rates in men by State, United States, 2008-2012

5,000 deaths were attributable to oropharyngeal cancer in the US in 2012
16 deaths per day

Numbers of Cancers and Genital Warts Attributed to HPV Infections, U.S.

>26,000 cancers per year

>340,000 genital warts per year
**Good News**

- Prevalence of vaccine types declined by more than half in U.S. (33% of teens fully vaccinated)
- High grade cervical lesions declined in Australia (80% of school aged girls vaccinated)

**HPV Vaccines Work**

- 14-19 Year old females:
  - 64% decrease in quadrivalent HPV types (6, 11, 16, 18) prevalence
  - 20-24 Year old females
  - 34% decrease

**Hot Off the Press**

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**How are we doing?**

**Estimated vaccination coverage, 13-17 years, NIS-Teen, 2006-2015**

<table>
<thead>
<tr>
<th>Year</th>
<th>MenACWY</th>
<th>HPV female</th>
<th>HPV male</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>63%</td>
<td>42%</td>
<td>28%</td>
</tr>
<tr>
<td>2006</td>
<td>86%</td>
<td>81%</td>
<td>63%</td>
</tr>
<tr>
<td>2007</td>
<td>50%</td>
<td>42%</td>
<td>33%</td>
</tr>
<tr>
<td>2008</td>
<td>36%</td>
<td>28%</td>
<td>28%</td>
</tr>
</tbody>
</table>

**HPV Vaccine Series Initiation Girls 13-17 Years, by State, 2013**

- 2 dose HPV vaccine schedule for 11-12 year olds
- 2 doses at least 6 months apart
- Applies to adolescents < 15 years when starting the immunization
- 3 dose HPV vaccine schedule continues for adolescents 15 years and older

ACIP October 19, 2016

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The Perfect Storm
Special Challenges for HPV Vaccine

- Involves adolescents who have few WCC visits
- Was approved ~2 other new adolescent vaccines
- Is related to sex (activity and gender)
- Multiple doses required
- Pediatricians do not see the consequences
- The vaccine is expensive
- Parents have far more concerns than other vaccines
- Vaccines has been politicized

What can Pediatricians do?

1. Understand the importance of HPV vaccination

2. Learn strategies to raise HPV vaccination rates:
   - Adopt effective communication skills
   - Implement practice-based changes

3. Locate resources and tools for HPV vaccination

Caveat: No good studies

Parent-reported provider recommendation for adolescent vaccines by year

- NIS Teen 2008-2013

Two Silly Examples

Accessed 12/14/2016

Give a strong recommendation for HPV vaccine to increase uptake!

Dear Colleagues:
The American Academy of Family Physicians (AAFP), American Academy of Pediatrics (AAP), American College of Obstetricians and Gynecologists (ACOG), American College of Physicians (ACP), the Centers for Disease Control and Prevention (CDC), and the Immunization Action Coalition (IAC) are urging you to urge your patients to get vaccinated against human papilloma virus (HPV).

HPV vaccine is cancer prevention. However, HPV vaccine is undervalued in our country, despite:

- HPV is the most common sexually transmitted infection
- 80% of HPV infections are not treated
- By age 50, about half of all women have HPV
- 70% of cervical cancers are caused by HPV

http://www.health.state.mn.us/divs/idepc/immunize/hcp/adol/hpvvideos.html
Accessed 12/14/2016

Up-to-date Rates among females by vaccine with and without a recommendation

- UTU: per strong adolescent females whose parents report provider recommendation
- UTU: per among adolescent females whose parents do not report provider recommendation

2016 Thursday, April 28, 2016
How Strongly do we Recommend HPV Vaccine?
National survey of pediatricians and family physicians

Pediatricians

A randomized trial of communication training: The intervention

Recommend
Clearly state your recommendation for the immunizations that are due today.

Treat HPV just like the other routinely recommended adolescent immunizations (bundle).

Try Saying:
Today, Michelle should have 3 shots. They’re designed to protect her from the cancers caused by HPV, meningitis, whooping cough, tetanus, & diphtheria.

“Normalize” HPV vaccination

If a parent declines...

• Declination is not final. The conversation can be revisited.
• End the conversation with at least 1 action you both agree on.
• Because waiting to vaccinate is the risky choice, many pediatricians ask the parent to sign a Declination Form
ANSWERING PARENTS’ MOST FREQUENTLY ASKED QUESTIONS

Top 5 reasons for not giving adolescents
HPV vaccine — NIS-Teen, US, 2013

FAQ #1: Why vaccinate at ages 11-12 years rather than waiting?

Because it works better!

FAQ #2: Why does it work better at a younger age?

- Antibody responses – higher at ages 9-15 years than later in adolescence
- Risk of exposure –
  - The vaccine is inactive against previously acquired HPV types
  - Exposure increases with age

http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6329a3.htm#tab2


Higher effectiveness with vaccination at younger ages

An 11-12 year old is more likely than a late adolescent to be seen for a primary care visit.
FAQ #5: Is HPV vaccine safe?

- Not sexually active
- Not recommended
- Safety concerns/Side effects
- Not needed or necessary
- Lost of knowledge

Moms in focus groups
- Stated concerns about both short- & long-term safety
- Not aware that HPV vaccine was tested
- Concerned their child's fertility could be affected by the vaccine

HPV Vaccine Safety

- 67 million doses of HPV vaccine distributed in US from 2006 – 2014 (many more abroad)
- The most common adverse events reported were considered mild (e.g., sore arm)
- For serious adverse events reported, no unusual pattern or clustering that would suggest that the events were caused by the HPV vaccine
- These findings are similar to the safety reviews of MCV4 and Tdap vaccines

Safety studies HPV4 vaccine
Females 19-26 years

<table>
<thead>
<tr>
<th>Organization</th>
<th># of doses</th>
<th>Methods</th>
<th>Monitored Outcomes</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. CDC – Vaccine Safety Datalink</td>
<td>600,559</td>
<td>Large database, 7 MCO</td>
<td>GBS, stroke, appendicitis, VTE, anaphylaxis, seizures, syncope</td>
<td>No increased risk</td>
</tr>
<tr>
<td>2. Merck – Postmarketing</td>
<td>346,972</td>
<td>Within patient</td>
<td>Additional health encounters</td>
<td>Syncope, skin infections</td>
</tr>
<tr>
<td>3. Merck – Postmarketing</td>
<td>346,972</td>
<td>Within patient</td>
<td>Autoimmune conditions</td>
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A STRONG PROVIDER RECOMMENDATION IS CRITICAL

YOUR OFFICE SYSTEMS CAN BOLSTER SERIES COMPLETION

Provider Prompts: QI

- 13 CORNET (Residency site) Practices
- Monthly learning collaborative calls with QI experts
- Monthly data collection (10 charts/month/practice)
- Focus on integrating resident QI, strong recommendations, consistency in practice change
Proportion of Eligible Teens Receiving HPV Vaccinations

Get your whole team involved
1. Be sure that everyone who has patient contact gets educated on HPV vaccination.
2. Be sure that each office staff group knows their role in HPV immunization and what they should say.
3. Have everyone encourage questions; interpret as natural caution, not refusal.
4. Systematically arrange for the next dose (schedule before patient leaves)

Front Office - Michael

Nurse’s play a major role

Standing Orders
- Standing orders can be effective
  - We found impact in some (not all) practices as a QI program
- Not always easy to implement in practices
  - Require some sort of prompt (or nurse look-up)
  - Require buy-in by BOTH physicians and nurses

HPV VACCINATION RESOURCES
For More Information

- **Shot by Shot**
  [http://shotbyshot.org/story-gallery](http://shotbyshot.org/story-gallery)

- **AAP**
  Info for parents ([healthychildren.org](http://healthychildren.org))
  Info for clinicians ([http://www2.aap.org/immunization/filinesses/hpv/hpv.html](http://www2.aap.org/immunization/filinesses/hpv/hpv.html))

- **Immunization Action Coalition**

- **CHOP Vaccine Education Center**
  [http://vec.chop.edu/](http://vec.chop.edu/)

- **EZ IZ**

- **CDC**

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**HPV-9 Resource**

Supplemental information and guidance for vaccination providers regarding use of 9-valent HPV vaccine

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**HPV Vaccine Resources in Spanish**

For more information, including free resources for yourself and your patients/clients, visit: cdc.gov/vaccines/YouAreTheKey

Email questions or comments to CDC Vaccines for Preteens and Teens: PreteenVaccines@cdc.gov

Summary

1. HPV vaccination is important for cancer prevention but current vaccination rates are low
2. Start vaccinating at ages 11-12; including males
3. Recommend HPV vaccine strongly, normalize it, involve the whole office
4. Plan to increase your office HPV vaccination rates!
   - Reduce missed opportunities by using:
     - Nurse/EMR prompts, standing orders and QI
     - Try to use reminder-recall
5. Use some great HPV vaccination resources

Acknowledgement