In 2013, the World Health Organization (WHO) set a goal to improve human papillomavirus (HPV) vaccine coverage globally. This has led to a united effort to investigate the barriers to vaccine access and uptake and to further understand HPV-related cancer monitoring. Catch up on the current status of HPV including knowledge gaps, areas of needed research, and nursing’s role in clinical care and scientific discovery.

Target Audience: All Levels

Level of Content: Intermediate

Speaker: Electra D. Paskett, PhD
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Ohio State University
Columbus, OH

Full Disclosure: Nothing to Disclose

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Professor and Chair
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Gainesville, FL

Full Disclosure: Nothing to Disclose

Objectives:
At the end of this session, participants will be able to:
1. Describe HPV cancer incidence and vaccination rates globally and in the United States.
2. Discuss the global effort to raise awareness and action on HPV vaccination uptake.
3. Identify barriers to HPV vaccination uptake and current and future research in this area from the perspectives of different stakeholders.
4. Define the role of oncology nurses in research, translation, and clinical care in the area of HPV vaccination uptake.

Bibliography:


Friday, April 24

**Session • 8–9:30 am • West Hall D2**

**Healthy People Vaccinate: Improving HPV Vaccine Uptake**
**Summary**

Stagnant HPV vaccination rates are leaving another cohort of boys and girls vulnerable to devastating HPV cancers. Vaccination could prevent most of these cancers.

Provided in this presentation is up-to-date information on HPV infection, HPV-related disease, and HPV cancers. HPV vaccine information and recommendations, as well as HPV vaccine safety and impact.

The presentation also provides evidence-based suggestions for successful HPV vaccine communication with patients and their parents, as well as the current HPV vaccine communication resources available from CDC.

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**Annual Report to the Nation on the Status of Cancer: HPV-Associated Cancers**

- From 2000 to 2009, oral cancer rates increased
  - 4.9% for Native American men
  - 3.9% for white men
  - 1.7% for white women
  - 1% for Asian men
- Anal cancer rates doubled from 1975 to 2009
- Vulvar cancer rates rose for white and African-American women
- Penile cancer rates increased among Asian men

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**HPV Infection**

- Most females and males will be infected with at least one type of HPV at some point in their lives
  - Estimated 79 million Americans currently infected
  - 14 million new infections/year in the US
  - HPV infection is most common in people in their teens and early 20s
- Most people will never know that they have been infected

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**HPV Prophylactic Vaccines**

- Recombinant L1 capsid proteins that form "virus-like" particles (VLP)
- Non-infectious and non-oncogenic
- Produce higher levels of neutralizing antibody than natural infection

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**HPV Vaccine**

<table>
<thead>
<tr>
<th>Vaccine/HPV4 (Gardasil)</th>
<th>Name</th>
<th>Bivalent/HPV2 (Cervarix)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Merck</td>
<td></td>
<td>GlaxoSmithKline</td>
</tr>
<tr>
<td>6, 11, 16, 18</td>
<td>Types</td>
<td>16, 18</td>
</tr>
</tbody>
</table>

- **Indications**
  - Females: Cervical precancer and cancer
  - Males: Not approved for use in males
- **Contraindications**
  - Hypersensitivity to yeast
- **Schedule (IM)**
  - 3 dose series: 0, 2, 6 months
  - 3 dose series: 0, 1, 6 months

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**Cervical Cancer**

- Cervical cancer is the most common HPV-associated cancer among women
  - 500,000+ new cases and 275,000 attributable deaths world-wide in 2008
  - 11,000+ new cases and 4,000 attributable deaths in 2011 in the U.S.
- 37% cervical cancers occur in women who are between the ages of 20 and 44
  - 13% (or nearly 1 in 8) between 20 and 34
  - 24% (or nearly 1 in 4) between 35 and 44
ACIP Recommendation and AAP Guidelines for HPV Vaccine

- Routine HPV vaccination recommended for both males and females ages 11-12 years
- Also ages 13-21 years for males; 13-26 for females
- Vaccine can be given starting at age 9 years of age for both males and females; vaccine can be given ages 22-26 years for males

HPV Vaccine Is Safe, Effective, and Provides Lasting Protection

- HPV Vaccine is SAFE
  - Safety studies findings for HPV vaccine similar to safety reviews of MCV4 and Tdap vaccines
- HPV Vaccine WORKS
  - High grade cervical lesions decline in Australia (80% of school aged girls vaccinated)
  - Prevalence of vaccine types declines by more than half in United States (33% of teens fully vaccinated)
- HPV Vaccine LASTS
  - Studies suggest that vaccine protection is long-lasting; no evidence of waning immunity

HPV Vaccine Impact: HPV Prevalence Studies

- NHANES Study
  - National Health and Nutrition Examination Survey (NHANES) data used to compare HPV prevalence before the start of the HPV vaccination program with prevalence from the first four years after vaccine introduction
  - In 14-19 year olds, vaccine-type HPV prevalence decreased 56 percent, from 11.5 percent in 2003-2006 to 5.1 percent in 2007-2010
  - Other age groups did not show a statistically significant difference over time
  - The research showed that vaccine effectiveness for prevention of infection was an estimated 82 percent

HPV Vaccination Schedule

- ACIP Recommended schedule is 0, 1-2*, 6 months
  - Following the recommended schedule is preferred
- Minimum intervals
  - 4 weeks between doses 1 and 2
  - 12 weeks between doses 2 and 3
  - 24 weeks between doses 1 and 3
- Administer IM

Monitoring Impact of HPV Vaccine Programs: HPV-associated Outcomes

<table>
<thead>
<tr>
<th>Early Outcomes (years)</th>
<th>Mid Outcomes (years to decades)</th>
<th>Late Outcomes (decades)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPV Prevalence Genital Warts</td>
<td>CIN/Pre-cancers</td>
<td>HPV-associated cancers</td>
</tr>
</tbody>
</table>

Impact of HPV Vaccine on HPV 16/18 Precancers

- CIN2+ cases women 18 to 31 years of age were reported from pathology laboratories in 5 states from 2008 to 2011
  - Of 5083 CIN2+ cases, 3855 had vaccination histories investigated, and 1900 had vaccine history documented
  - Among women with CIN2+ who had started HPV vaccine more than 24 months before their Pap smear, there was a significant reduction in HPV 16/18-related lesions
Impact of Bivalent HPV Vaccine on Oral HPV Infection

- Of 7,466 women 18-25 years of age randomized to receive HPV vaccine or hepatitis A vaccine, 5,840 provided oral specimens at the final 4-year study visit
  - Oral prevalence of identifiable mucosal HPV was relatively low (1.7%)
- There were 15 HPV 16/18 infections in the hepatitis A comparison group and 1 in the HPV vaccine group, for an estimated vaccine efficacy of 93.3%

Top 5 reasons for not vaccinating daughter, among parents with no intention to vaccinate in the next 12 months, NIS-Teen 2013

- Not sexually active
- Not recommended
- Safety concern / side effect
- Not needed or necessary
- Lack of knowledge

HPV Vaccine Communications During the Healthcare Encounter

- HPV vaccine is often presented as ‘optional’ whereas other adolescent vaccines are recommended
- Some expressed mixed or negative opinions about the ‘new vaccine’ and concerns over safety/efficacy
- When parents expressed reluctance, providers were hesitant to engage in discussion
- Some providers shared parents’ views that teen was not at risk for HPV and could delay vaccination until older

Partners

- Institute of Medicine
- National Cancer Institute
- Centers for Disease Control
- World Health Organization

Bundle them up!

- Successful recommendations group all of the adolescent vaccines
  - Recommend HPV vaccine the same way and on the same day you recommend Tdap and meningococcal vaccines.
- A strong recommendation from you is the main reason parents decide to vaccinate
  - Many parents responded that they trusted their child’s doctor and would get the vaccine for their child as long as they received a recommendation from the doctor

An anti-cancer vaccine

- The “HPV vaccine is cancer prevention” message resonates strongly with parents
  - In focus groups and online panels, mothers wanted more information on the types of HPV cancers
  - In focus groups mothers stated they were influenced to vaccinate their child because HPV vaccine prevents cancer, they had a family history of cervical cancers, and/or because they had a personal experience with cervical cancer
If parents ask about prevalence of HPV infection and/or cancer, try saying:

- **Persistent HPV infection can cause cancers of the cervix, vagina, and vulva in women, cancer of the penis in men, and cancers of the anus and the mouth or throat in both women and men.**
- **There are about 27,000 of these cancers each year—and most could be prevented with HPV vaccine.**
- **There are also many more precancerous conditions requiring treatment that can have lasting effects.**

Surely, this kid isn’t going to be having sex anytime soon, right? Guess again.
- **47% of high school students have already engaged in sexual intercourse (vaginal-penile)**
  - 6% of these students had sexual intercourse before age 13 years
  - 1/3 of 9th graders and 2/3 of 12th graders have engaged in sexual intercourse
  - 1 in 7 high school students (all grades) have had sexual intercourse with 4 or more partners

But she’s too young!
- **Parents might believe their child won’t be exposed to HPV because they aren’t sexually active or may not be for a long time**
  - In focus groups, some moms couldn’t understand how their child could become infected even if they waited until marriage to have sex
  - Some moms stated that they didn’t think HPV infection was very common because they had never heard that it was or didn’t know anyone who had an HPV infection or HPV disease

If parents don’t think that their child will be exposed, try saying:

- **HPV is so common that almost everyone will be infected at some point. It is estimated that 79 million Americans are currently infected with 14 million new HPV infections each year.**
- **Most people infected will never know. Even if your child waits until marriage to have sex, or only has one partner in the future, he/she could still be exposed, if their partner has already been exposed.**

Why at 11 or 12 years old?
- **Parents want a concrete reason why 11-12 year olds should receive HPV vaccine**
  - In audience research with moms, almost all respondents were unaware of the correct age range the vaccine was recommended
  - Respondents also missed the concept of vaccinating before sexual activity

If parents ask why HPV vaccine is given at ages 11 or 12 years, try saying:

- **We don’t wait until exposure occurs to give any other routinely recommended vaccine. We want your child to be protected before they are at risk for exposure to HPV infection.**
- **HPV vaccine produces a more robust immune response in preteens than in older teens.**
- That’s why it is so important to start the shots now and finish them in the next 6 months.
A green light for sexual activity?

- Parents may be concerned that vaccinating may be perceived by the child as permission to have sex
  - In focus groups, some parents expressed concern that in getting HPV vaccine for their child, they would be giving their child permission to have sex
  - This was one of the top four reasons respondents gave when asked why they would not vaccinate their daughter
  - A few parents expressed that while they wanted their child to "wait to have sex" they understood that might not be the case

Receipt of HPV vaccine does not increase sexual activity or decrease age of sexual debut

- Kaiser Permanente Center for Health Research
- 1,398 girls who were 11 or 12 in 2006, 30% of whom were vaccinated, followed through 2010
- No difference in markers of sexual activity, including
  - Pregnancies
  - Counseling on contraceptives
  - Testing for, or diagnoses of, sexually transmitted infections

If parents are concerned that HPV vaccine will be perceived by their child as permission to have sex, try saying:

Multiple research studies have shown that getting the HPV vaccine does not make kids more likely to be sexually active.

These studies have also shown that getting the HPV vaccine does not make kids more likely to start having sex a younger age.

Would you give it to your child?

- Emphasizing your personal belief in the importance of HPV vaccine helps parents feel secure in their decision
  - Some respondents in focus groups stated that they would feel more comfortable knowing that the doctor had vaccinated their own child or was planning to (if the child was <11)
  - Respondents in an online survey stated that knowing that oncologists supported the recommendation made them more likely to get their child vaccinated

If parents ask if you think HPV vaccine is important, try saying:

I strongly believe in the importance of this cancer-preventing vaccine.

I have given HPV vaccine to my son/daughter (or grandchild/niece/nephew/friend’s children).

Experts, such as the American Academy of Pediatrics, cancer doctors, and the CDC, also agree that getting the HPV vaccine is very important for your child.

Scared of side effects

- Understanding that the side effects are minor and emphasizing the extensive research that vaccines must undergo can help parents feel reassured
  - Moms in focus groups stated concerns about both short term and long term vaccine safety as a reason that they would not vaccinate their child
  - Respondents were not aware that HPV vaccine was tested in adolescents and adults and were concerned that their child's fertility could be affected by the vaccine
Friday, April 24

If parents state concerns about side effects, try saying:

HPV vaccine has been very carefully studied by scientific experts and its safety is continually monitored.

This is not a new vaccine and for years HPV vaccine has been shown to be very effective and very safe. HPV vaccine has a similar safety profile to the meningococcal and Tdap vaccines.

Like other shots, side effects can happen, but most are mild, primarily pain or redness in the arm. This should go away quickly, and HPV vaccine has not been associated with any long-term side effects.

If parents have specific concerns about long-term side effects, try saying:

Since 2006, about 67 million doses of HPV vaccine have been distributed in the U.S., and in the years of HPV vaccine safety studies and monitoring, no serious safety concerns have been identified.

There is no data to suggest that getting HPV vaccine will have an effect on future fertility. However, persistent HPV infection can cause cervical cancer and the treatment of cervical cancer can leave women unable to have children.

Even treatment for cervical pre-cancer can put a woman at risk for problems with her cervix during pregnancy which could cause preterm delivery or problems.

Addressing all concerns in 45 seconds

Provider: Meghan is due for some shots today: HPV, meningococcal vaccine, and Tdap.

Parent: Why does she need an HPV vaccine? She’s only 11!

Provider: The HPV vaccine will help protect Meghan from cancer caused by HPV infection. We know that HPV infection is dangerous—33,000 people in the U.S. get cancer from HPV every year. And we know that the HPV vaccine is safe—over 100 million doses have been given and there haven’t been any serious side effects.

Parent: But it just seems so young...

Provider: Vaccines only work if they’re given before exposure—we never wait until a child is at risk to give any recommended vaccines. HPV vaccine is also given when kids are 11 or 12 years old because it produces a better immune response at that age. That’s why it is so important to start the shots now and finish all 3 of them in the next 6 months.

HPV Vaccination is Important

• Let parents know that:
  – You feel strongly about protecting your patients from cancer
  – HPV vaccine needs to be given now, before age 13
  – HPV vaccination is especially important for preventing cancers for which there isn’t routine screening

High-Impact Statements

✓ HPV cancers are devastating to men and women
  – This is especially true for the cancers that are not routinely screened (cancers of the anus, mouth/throat, penis, vagina, and vulva); these cancers are difficult to treat and can result in tremendous pain, disfigurement, and even death

✓ We finally have a vaccine for cancer
  – Yet only one third of girls have finished the HPV vaccine series

✓ How often do we really get the chance to prevent cancer?
  – HPV vaccine is cancer prevention.

Review

1. Give a STRONG recommendation
   – Ask yourself, how often do you get a chance to prevent cancer?

2. Start conversation early and focus on cancer prevention
   – Vaccination given well before sexual experimentation begins
   – Better antibody response in preteens

3. Offer a personal story
   – Own children/Grandchildren/Close friends’ children
   – HPV-related cancer case

4. Welcome questions from parents, especially about safety
   – Remind parents that the HPV vaccine is safe and not associated with increased sexual activity

Oncology Nursing Society 40th Annual Congress
April 23–26, 2015
Evidence-based strategies to improve vaccination coverage

- Reminder/recall system
  - Provider level (e.g., EMR prompts)
  - Parent/patient level (e.g., postcards, telephone calls, text messaging)
- Standing orders
- Provider assessment and feedback
  - Assessment of vaccination coverage levels within the practice and discussion of strategies to improve vaccine delivery
- Utilizing immunization information systems

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

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

What is Implementation Science?

- ‘To see far is one thing, going there is another’
  – Constantin Brancusi, 1876–1957
- Estimated that 2/3rds of organization’s efforts to implement change fail
- Implementation research is ‘the scientific study of methods to promote the systematic uptake of clinical research findings and other evidence-based practice into routine practice, and hence improve the quality. . . of healthcare’

Implementation Science and Stakeholder Engagement: Adolescent Health Risk Assessment

- Initial study to engage stakeholders in increasing evidence-based adolescent health risk assessments in primary care
  - Adolescents and Parents
  - Providers and Workflow
- Led to HPV vaccine implementation science study

What is Important to Adolescents?

- Confidential, trusting relationship with clinician
- Longevity of relationship with clinician and frequency of contact facilitates trust
- Stating the provision and limits of confidentiality is important
- Importance of non-judgmental concern from clinician
- Concerned about familial/other’s judgment/reaction
Do Boys and Girls Differ in Perceptions....

- Males more likely to think clinicians discuss what they say with parents
- Males emphasized professional appearance and liked “objectivity” of using tablets to answer questions
- Females valued face-to-face interactions and discussion with someone who cares

What is Important to Clinicians and Office Staff?

- Time
- Concern about parent perceptions
- Disruption to routine and workflow
- Reimbursement

Uptake of HPV Vaccine

- Focus groups also used to create ResearchACTS
  - Child/adolescent version
    - Tablet-based tool to screen for health risks
  - Clinician version
    - Risks summarized
    - Resources to address risks geocoded to adolescent address
    - Motivational Interviewing prompts and HPV vaccine reminders built into clinician version
  - Resources can be scanned into smart phone using QR codes, emailed, or printed

Uptake of HPV Vaccine

- Community Practice Facilitators
- Parent reminders mailed out on behalf of practice
- Interactive portal to track recruitment progress and results
- Update vaccine information from multiple sources to supplement health record
  - Claims data
  - Registry data

Implementation Science & Uptake of HPV Vaccine

- Vary interactions with practice facilitators
- Vary face-to-face and virtual support
- Data visualization tools
- Sustainability strategies