Cervical Cancer
The Role of Primary Care in Reducing Cancer Disparities
March 28, 2015
Electra D. Paskett, Ph.D.
Cervical Cancer in 2015

- Annually in the US:
  - 12,900 new cases
  - 4,100 deaths
- Disparities in rates:
  - Race
  - Place
Cervical Cancer Worldwide

- Cervical cancer is the most common HPV-associated cancer among women
  - 500,000+ new cases and 275,000 attributable deaths world-wide in 2008
- 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
Cervical Cancer Prevention

HPV Vaccine
- Females ages 9 to 26
- 3 dose series administered over a 6 month period
- Prevents cervical, vaginal, and vulvar cancer and genital warts

Pap Test
- Females ages 21 to 65
- Every 3 years
- HPV co-testing is recommended beginning at age 30
- Diagnosis of pre-cancer-cells
The Facts

HPV AND HPV VACCINATION
26 million: number of girls under 13 years of age in the United States

168,400: number who will develop cervical cancer if none are vaccinated

54,100: number who will die from cervical cancer if none are vaccinated

Adapted from Chesson HW et al, Vaccine 2011;29:8443-50
For each year we stay at 30% coverage instead of achieving 80%...

4,400: number of future cervical cases we will not prevent

1,400: number of cervical cancer deaths we will not prevent
HPV Types Differ in their Disease Associations

~40 Types

Mucosal sites of infection

High risk (oncogenic)
HPV 16, 18

Cervical Cancer
Anogenital Cancers
Oropharyngeal Cancer
Cancer Precursors
Low Grade Cervical Disease

Low risk (non-oncogenic)
HPV 6, 11

Genital Warts
Laryngeal Papillomas
Low Grade Cervical Disease

~80 Types

Cutaneous sites of infection

“Common” Hand and Foot Warts

~40 Types

Common Types

Hand and Foot Warts

~80 Types

Common Types

Anogenital Cancers
Oropharyngeal Cancer
Cancer Precursors
Low Grade Cervical Disease
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
Without vaccination, annual burden of genital HPV-related disease in U.S. females:

- 4,000 cervical cancer deaths
- 10,846 new cases of cervical cancer
- 330,000 new cases of HSIL: CIN2/3 (high grade cervical dysplasia)
- 1 million new cases of genital warts
- 1.4 million new cases of LSIL: CIN1 (low grade cervical dysplasia)
- 3 million cases and $7 billion
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
# HPV Vaccine

<table>
<thead>
<tr>
<th>Quadrivalent/HPV4 (Gardasil)</th>
<th>Name</th>
<th>Bivalent/HPV2 (Cervarix)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Merck</strong></td>
<td><strong>Manufacturer</strong></td>
<td><strong>GlaxoSmithKline</strong></td>
</tr>
<tr>
<td><strong>6, 11, 16, 18</strong></td>
<td><strong>Types</strong></td>
<td><strong>16, 18</strong></td>
</tr>
<tr>
<td><strong>Females:</strong> Anal, cervical, vaginal and vulvar precancer and cancer; Genital warts</td>
<td><strong>Indications</strong></td>
<td><strong>Females:</strong> Cervical precancer and cancer</td>
</tr>
<tr>
<td><strong>Males:</strong> Anal precancer and cancer; Genital warts</td>
<td></td>
<td><strong>Males:</strong> Not approved for use in males</td>
</tr>
<tr>
<td>Hypersensitivity to yeast</td>
<td><strong>Contraindications</strong></td>
<td>Hypersensitivity to latex (latex only contained in pre-filled syringes, not single-dose vials)</td>
</tr>
<tr>
<td>3 dose series: 0, 2, 6 months</td>
<td><strong>Schedule (IM)</strong></td>
<td>3 dose series: 0, 1, 6 months</td>
</tr>
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</table>
Evolution of recommendations for HPV vaccination in the United States

**Quadrivalent**
- Routine, females 11 or 12 yrs* and 13-26 yrs not previously vaccinated
- May be given, males 9-26 yrs*

**Quadrivalent or Bivalent**
- Routine, females 11 or 12 yrs* and 13-26 yrs not previously vaccinated

**Quadrivalent**
- May be given, 22-26 yrs**

*Quadrivalent (HPV 6,11,16,18) vaccine; Bivalent (HPV 16,18) vaccine

Can be given starting at 9 years of age;
** For MSM and immunocompromised males, quadrivalent HPV vaccine through 26 years of age
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 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

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 Vaccine Three-Dose Coverage Among Girls in High-Income Countries

- Australia: 71.2%
- United Kingdom: 60.4%
- United States: 33.4%
HPV Vaccine Impact: HPV Prevalence Studies

- **NHANES Study**
  - NHANES data were 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 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.
  - Vaccine effectiveness for prevention of infection was an estimated 82 percent.

Impact of HPV vaccination in Australia

Proportion of Australian born females and males diagnosed as having genital warts at first visit, by age group, 2004-11

Females

Males

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

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
HPV VACCINE COVERAGE IN THE US
Adolescent Vaccination Coverage
United States, 2006-2013
HPV Vaccine Series Initiation
Girls 13-17 Years, by State, 2013
BARRIERS TO UPTAKE AND STRATEGIES TO REDUCE BARRIERS
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: 13%
- Safety concern/Side effects
- Not needed or necessary
- Lack of knowledge

CDC. National and State Vaccination Coverage Among Adolescents Aged 13–17 Years — United States, 2012
MMWR 2014; 63(29);625-633.
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

Goff S et al. Vaccine 2011;10:7343-9
Hughes C et al. BMC Pediatrics 2011;11:74
Institute of Medicine
National Cancer Institute
Centers for Disease Control
World Health Organization

CALL FOR ACTION ON VACCINE UPTAKE
HOW TO ACCELERATE HPV VACCINE UPTAKE IN THE U.S.

Providers

Strong recommendation for HPV vaccination

Use of electronic office systems to support HPV vaccination

Parents, Caregivers, and Adolescents

Communication strategies to increase knowledge regarding cancer prevention benefits, efficacy, and safety of HPV vaccines
GOAL 1: Reduce Missed Clinical Opportunities to Recommend and Administer HPV Vaccines

Objective 1.2:
Providers should strongly encourage HPV vaccination of age-eligible males and females whenever other vaccines are administered.
Talking about HPV vaccine

FRAMING THE CONVERSATION
Is she really too young? Take 1 (a conversation you may be familiar with)

Provider: Meghan is due for some shots today: Tdap and the meningococcal vaccine. There is also the HPV vaccine…

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

Provider: We want to make sure she gets the shots before she becomes sexually active.

Parent: Well I can assure you Meghan is not like other girls- she’s a long way off from that!

Provider: We can certainly wait if that would make you feel more comfortable.

The James
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

Unpublished CDC data, 2013.
Clinicians can give a strong HPV vaccine recommendation by saying:

Your child needs three shots today: meningococcal vaccine, HPV vaccine, and Tdap vaccine.

Your preteen needs three vaccines to protect against meningitis, HPV cancers, and pertussis.
Top Issues Parents Need to Know

- Anti-cancer vaccine – cancer prevention message
- HPV infection is very common
- My child is NOT going to have sex soon
- Too young for the shot
- Would you give it to your child?
- Side effects
When do we come back?

- Many parents do not know that the full vaccine series requires more than one shot.
- Your reminder will help them to complete the series.
  - In focus groups, most respondents did not know the dosing schedule for HPV vaccine.

Unpublished CDC data, 2013.
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 US 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.
High-Impact Statements

❖ HPV cancers are devastating to men and women:
  ▪ Cancers of the anus, mouth/throat, penis, vagina, and vulva 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 and fewer boys

❖ How often do we really get the chance to prevent cancer?
  ▪ *HPV vaccine is cancer prevention*
CONCLUSIONS
HPV Vaccine is an Anti-Cancer Vaccine

Reduction in prevalence of vaccine-type HPV by 56% in girls age 14-19 with vaccination rate of just ~30%

Our low vaccination rates will lead to 50,000 girls developing cervical cancer – that would be prevented if we reach 80% vaccination rates

For every year we delay increasing vaccination rates to this level, another 4,400 women will develop cervical cancer

Markowitz et al. JID 2013;208:385-393. CDC unpublished model – H. Chesson et al - for girls in US <13 at present, diff. betw 30% vs. 80% 3-dose coverage, lifetime cerv. ca. risk
HPV VACCINE IS PREVENTION

And YOU are the key!

#WeCanStopHPV
Posters

All posters are currently available in the following sizes: 8.5x11 / 11x17 / 18x24
Questions