Understanding the Burden

HPV INFECTION & DISEASE

PRESENTED BY:
CHARLES A. SCOTT, MD, FAAP

SLIDES CREATED BY:
JILL B. ROARK, MPH
HEALTH COMMUNICATION SPECIALIST
HEALTH COMMUNICATION SCIENCE OFFICE
NATIONAL CENTER FOR IMMUNIZATION AND RESPIRATORY DISEASES
CENTERS FOR DISEASE CONTROL AND PREVENTION

Understanding the Burden

HPV Types Differ in their Disease Associations

~40 Types
Mucosal sites of infection

~80 Types
Cutaneous sites of infection

High risk (oncogenic)
HPV 16, 18

Low risk (non-oncogenic)
HPV 6, 11

Cervical Cancer
Anogenital Cancers
Oropharyngeal Cancer
Precursors
Low Grade Cervical Disease

Genital Warts
Laryngeal Papillomas
Low Grade Cervical Disease

“Common”
Hand and Foot Warts

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

Cancers Attributed to HPV, U.S.

HPV-Associated Cervical Cancer Incidence Rates by State, United States, 2006-2010
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

HPV Vaccine is Underutilized

A. Stagnant HPV vaccination rates are leaving another generation vulnerable to devastating HPV cancers

B. HPV vaccination rates are lagging behind the rates of the other vaccines for preteens and teens

C. High HPV vaccination coverage is possible with the current healthcare structure

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

Recommendations for Administration

ACIP Recommendations for HPV Vaccination:

- Males: cHPV Vaccination
- Females: HPV Vaccination

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

Adolescent Vaccination Coverage United States, 2006-2013

HPV Vaccine Series Initiation Girls 13-17 Years, by State, 2013
**Why Vaccinate Early?**

- Younger Adolescents come into offices more often
- Easier to initiate and complete the series
- If delay in completion, pick up where left off (don’t restart)
- Other vaccinations are being done as well (safely given concomitantly with other adolescent vaccines)
- Non-Inferior antibody response (actually more robust)
- Catch them before sexual debut/potential exposure
- Consider starting the discussions about all adolescent vaccines earlier to prepare

**Newly Approved HPV Vaccine**

**GARDASIL 9**

- Current Gardasil with 4 strains covered (2 oncogenic strains, 2 genital wart strains)
- **NEW** GARDASIL 9 with 5 additional oncogenic strains covered (same 2 wart strains)
- HPV Cancer protection now approaching 90%
- Genital wart protection remains > 90%
- Approved for females 9 - 26; males 9 - 21

**Top 5 reasons for not vaccinating daughter, among parents with no intention to vaccinate in the next 12 months, NIS-Teen 2012**

<table>
<thead>
<tr>
<th>Reason</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not sexually active</td>
<td>19%</td>
</tr>
<tr>
<td>Not recommended</td>
<td>19%</td>
</tr>
<tr>
<td>Safety/concern/Side effects</td>
<td>15%</td>
</tr>
<tr>
<td>Not needed or necessary</td>
<td>12%</td>
</tr>
<tr>
<td>Lack of knowledge</td>
<td>11%</td>
</tr>
</tbody>
</table>

**Strength of Clinician Recommendation Influences Intent to Vaccinate**

<table>
<thead>
<tr>
<th>Reason</th>
<th>Strongly rec'd against</th>
<th>Rec'd against</th>
<th>Talked about but did not offer a rec</th>
<th>Rec'd it</th>
<th>Strongly rec'd it</th>
<th>Did not discuss it</th>
</tr>
</thead>
<tbody>
<tr>
<td>Got/will get</td>
<td>3.7%</td>
<td>1.1%</td>
<td>11.8%</td>
<td>36.4%</td>
<td>33.7%</td>
<td>13.4%</td>
</tr>
<tr>
<td>Will not get</td>
<td>5.9%</td>
<td>5.1%</td>
<td>21.2%</td>
<td>15.1%</td>
<td>7.6%</td>
<td>44.9%</td>
</tr>
<tr>
<td>Unsure</td>
<td>0.0%</td>
<td>1.5%</td>
<td>15.7%</td>
<td>20.9%</td>
<td>8.2%</td>
<td>33.7%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>2.0%</td>
<td>0.7%</td>
<td>8.5%</td>
<td>19.6%</td>
<td>5.2%</td>
<td>64.1%</td>
</tr>
</tbody>
</table>
Most clinicians wait too long to make strong recommendations for HPV vaccine

11-12 y.o. Females:
- 51% recommend, but not strongly
- 30% recommend, strongly
- 19% recommend against

13-16 y.o. Females:
- 73% recommend, but not strongly
- 15% recommend, strongly
- 12% recommend against

16-18 y.o. Females:
- 68% recommend, but not strongly
- 10% recommend, strongly
- 2% recommend against

Impact of Reminder/Recall on Vaccination Rates among Adolescents

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tet</td>
<td>46.5%</td>
</tr>
<tr>
<td>MCV</td>
<td>44.3%</td>
</tr>
<tr>
<td>HPV</td>
<td>26.5%</td>
</tr>
</tbody>
</table>

*p<0.05

HPV Vaccine is Cancer Prevention

#WeCanStopHPV

For more information, visit:
- cdc.gov/vaccines/YouAreTheKey
- cdc.gov/vaccines/teens

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

HPV AND ITS ROLE IN HEAD AND NECK CANCER

Saba Afral, MD, FACS
Adovcare ENT Specialty Center
406 Lippincott Drive, Suite F, Marlton, NJ 08053
www.AdovcareENTSpecialtyCenter.com

Human Papilloma Virus
Lifetime risk of acquiring HPV is 80%
- 95% of people have transient infection
- 10% likely to clear and develop chronic infection
- There are over 100 subtypes of HPV
- 60 cutaneous subtypes → common wart
- 40 mucosal types
  - HPV 16 and 18 → high risk → cervical and oropharyngeal cancer
  - HPV 6 and 11 → low risk → low grade dysplasia in larynx and cervix

1% of the US population carry HPV 16. It is 3 times more common in men than women.

It is thought that Oral and oropharyngeal HPV is acquired through oral sex and open mouth kissing (French kissing)
HPV related cancer in the head and neck is found in the oropharynx, namely in the lymphoid tissue of the palatine tonsils and the lingual tonsils in the base of the tongue.

RISING INCIDENCE OF OROPHARYNGEAL CANCER

Annually in the US, over 10,000 new cases of oropharyngeal cancer can be attributed to HPV. HPV is now the leading cause of oropharyngeal cancer worldwide (versus smoking/alcohol). In the US, over 80% of cases are attributed to HPV infection. Incidence is projected to rise dramatically and also dramatically surpass that of cervical cancer in women.


Rates of all other head and neck cancers are decreasing, reflecting the decline in smoking behaviors.

Risk factor Relative risk of developing oropharyngeal cancer
Alcohol 5.5x
Smoking 19.5x
Smoking + alcohol 56.5x
Chronic HPV infection 230x

WHY THE INCREASE?

Rising number of people choosing to have oral sex in the era of HIV
5 fold risk of acquiring oropharyngeal cancer in patients with a history of 5 or more oral sexual partners
Increase in rates of high risk HPV subtypes

The new normal patient with oropharyngeal cancer:
- Middle aged (40-59) married white male
- History of multiple sexual partners with inconsistent barrier use.
- Higher socio-economic status
- Likely non smoker or minimal smoker, nondrinker

Typical HPV oropharynx cancer:
- Not painful, soft, fleshy
- Developing in tonsil crypts or metastasizes early
- 95% present already with neck metastasis

Non-HPV related cancer:
- Firm, indurated and painful
- Bleeds easily, friable
- Causes symptoms early

PRESENTATION

SYMPTOMS

Neck mass
Persistent sore throat
Difficulty swallowing
Painful swallowing
Ear pain
Voice change
Weight loss

PROGNOSIS

HPV related oropharyngeal cancer has significantly better survival:
- HPV pos. + <10 pack year tobacco → 90% survival
- HPV neg. + significant tobacco history → 30% survival

Clinical trials underway to see if treatment can be modified for the HPV positive cancer patient.

PREVENTION

Education, Education, Education
- Patients
- Physicians

Modify sexual behavior?

Vaccination?
- Vaccine efficacy in preventing oral HPV infection has not been investigated, although numerous studies have shown decreased HPV infection in other sub-sites – anal, genital, cervical
- Screening Tests – research ongoing. Not currently available.

THANK YOU.

QUESTIONS?

SABA AFNAB, MD, FACS
Advocate ENT Specialty Center
406 Lippincott Drive, Suite F, Marlton, NJ 08053
www.AdvocateENTSpecialtyCenter.com

REFERENCES


Human Papilloma Virus (HPV) and Oropharyngeal cancer fact sheet. Centers for Disease Control and Prevention. www.cdc.gov/std/hpv/stdfact-hpvandoralcancer.htm

HPV: Trends in the GYN Office

Eric B. Grossman, MD, FACOG

What do we really want to do?
- Prevent cervical cancer
  - Easiest GYN cancer to prevent
  - Screening PAP
  - HPV co-testing
  - Management of CIN
- CDC: 12,000 women in US
  - HPV main cause of cervical cancer
- Vaccine – to prevent the virus that causes the cells to transition to CIN and cancer
Cancer

<table>
<thead>
<tr>
<th>Rank</th>
<th>Cancer</th>
<th>New Cases 2014</th>
<th>Estimated Deaths 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Prostate</td>
<td>233,000</td>
<td>29,480</td>
</tr>
<tr>
<td>2</td>
<td>Breast (Female)</td>
<td>232,670</td>
<td>40,000</td>
</tr>
<tr>
<td>3</td>
<td>Lung</td>
<td>224,210</td>
<td>159,260</td>
</tr>
<tr>
<td>4</td>
<td>Colon</td>
<td>136,830</td>
<td>50,310</td>
</tr>
<tr>
<td>5</td>
<td>Melanoma</td>
<td>76,100</td>
<td>9,710</td>
</tr>
<tr>
<td>6</td>
<td>Bladder</td>
<td>74,690</td>
<td>15,580</td>
</tr>
<tr>
<td>7</td>
<td>Non-Hodgkin Lymphoma</td>
<td>70,800</td>
<td>18,990</td>
</tr>
<tr>
<td>8</td>
<td>Kidney</td>
<td>63,920</td>
<td>13,860</td>
</tr>
<tr>
<td>9</td>
<td>Thyroid</td>
<td>52,630</td>
<td>8,590</td>
</tr>
<tr>
<td>10</td>
<td>Endometrial</td>
<td>52,630</td>
<td>8,590</td>
</tr>
<tr>
<td>21</td>
<td>Cervix</td>
<td>12,360</td>
<td>4,020</td>
</tr>
</tbody>
</table>

Ideal Time for Vaccination

- Recommended age 11-12yo
- “Catch Up” vaccination up to age 26
- Lower rate of HPV vaccination completion on catch-up schedule
  - 56% finished the vaccine series within 2 years
  - Pregnancy associated with non-completion
  - HPV vaccination on a catch-up schedule may be improved by pregnancy prevention/contraception
- Importance of completing vaccination schedule early

Cervical Cancer

- **Radiation therapy**
  - Long term pelvic damage to vagina, bowel, bladder
  - Can be debilitating
- Surgical – conization, hysterectomy, radical hysterectomy
- Chemotherapy
- Pregnancy – special considerations
Preventing Cervical Cancer

- HPV increasingly important in screening protocols
- 2004 survey: 99% clinicians knew that HPV was associated w/cervical cancer
- 91% knew of HPV tests available
- 21% "ever used" HPV testing
- Many reported "inappropriate use" of testing strategies

2004 survey:
- 99% knew that HPV was associated w/cervical cancer
- 91% knew of HPV tests available
- 21% "ever used" HPV testing
- Many reported "inappropriate use" of testing strategies


High Risk HPV Types:
- Type 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 68, 69, 73, 82
- Type 16 is associated with 50% of cervical cancers
- Types 16 & 18 together account for 70%
- (also 70% of anal cancers)

Low risk:
- 6 & 11 covered by Gardisil (not by Cervarix)
- Associated with condyloma, not cancers
- Not part of screening protocols

Changing Strategies...

2006 study: “Adolescents with abnormal cytology have a high incidence of CIN2/3 and high rates of abnormal cytology after LEEP”
- No cases of cancer identified
- “majority of HPV infection are transient”


Changing Strategies

- Current ASCCP Guidelines (2013)
  - PAP’s starting at age 21
  - b/t 21-24, ASCUS or LGSIL – OK to observe and repeat cytology 12 months
  - Co-testing HPV for all women ≥30
    - Negative PAP but Positive HPV 16/18 → colposcopy
- Adolescent management –
  - Not even getting PAP’s at this age
  - Not enough time for HPV effects
  - High risk for exposure due to risky behaviors

E6 and E7 proteins are expressed at much higher levels than found in benign lesions
- HR HPV testing w reflex E6/E7mRNA

Considering New Guidelines (again)

- “A negative HR-HPV test provides greater reassurance of low CIN3 risk than a negative cytology result”
- “primary HR-HPV screening can be considered as an alternative to current US cytology-based cervical cancer screening methods.”
  - but...
- Current guidelines DO NOT include HR-HPV testing alone (i.e. without cytology)
Summary

- Goal of vaccines is to prevent cervical damage and subsequent cancer due to HR-HPV strains
- Screening protocols increasingly leaning on HR-HPV status
- Protocols will ease follow up testing for women who remain HR-HPV negative
- Best time to start HPV vaccine series is 11-12 yo

Thank you

Eric B. Grossman, MD, FACOG

Kristen Zeleny, MS, LCSW

Personal Statement

HPV Vaccine is Cancer Prevention

Contact:
New Jersey Immunization Network
Phone: (609) 842-0014
Immunizenj.org

For more information, visit:
cdc.gov/vaccines/YouAreTheKey
cdc.gov/vaccines/teens

This webinar is part of the Adolescent Vaccinations and Wellness Project through a grant provided by the American Academy of Pediatrics with funding from Merck.