Improving HPV Immunization Rates In Our Community

Human Papillomavirus (HPV) Disease and Prevention

Phil Hardberger Park Urban Ecology Center
8400 Northwest Military Highway

San Antonio
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Human Papillomavirus

>100 types

**mucosal/genital**
(~40 types)

- high-risk types
  - 16, 18, 31, 45
  - 33

  - low grade cervical abnormalities
  - cancer precursors
  - genital cancers

**nonmucosal/cutaneous**
(~60 types)

- low-risk types
  - 6, 11

- skin warts (hands/feet)

- low grade cervical abnormalities
- genital warts
- laryngeal papillomas
Genital HPV Prevalence/Incidence in U.S.A.

- Lifetime risk for sexually active men and women is $\geq 50\%$
- By 50 years of age $\geq 80\%$ of women will have acquired genital HPV infection
- Estimated annual incidence: $\sim 14$ million
- Estimated prevalence: $\sim 79$ million
- In sexually active individuals 15–24 years of age $\sim 10$ million are currently infected
<table>
<thead>
<tr>
<th>RISK FACTOR</th>
<th>WOMEN</th>
<th>MEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young age (20-29 years)</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Number of sexual partners (lifetime)</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Uncircumcised (man/male partner)</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Early age of sexual début</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Partner sexual behavior</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Smoking</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Oral contraceptive use</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>
Why Are We Concerned About HPV?

Because HPV is…

...a necessary causative agent in cervical cancer

One of the most common sexually transmitted infections (STI) in the United States today
Average Number of New HPV-Associated Cancers by Sex, in the United States, 2005-2009

Women (N=20,413)

- Cervix: 55% (n=11,279)
- Vulva: 15% (n=3,039)
- Oropharynx: 11% (n=2,317)
- Anus: 15% (n=3,084)
- Vagina: 4% (n=694)

Men (N=12,002)

- Oropharynx: 78% (n=9,312)
- Penis: 8% (n=1,003)
- Anus: 14% (n=1,687)

Most Common HPV Types in Cervical Cancer: Cumulative Prevalence (Squamous Cell Carcinoma)
Cervical Intraepithelial Neoplasia (CIN)¹

- **CIN Stages²**
  - CIN 1: Mild dysplasia
  - CIN 2: Moderate dysplasia
  - CIN 3: Severe dysplasia; includes carcinoma in situ (CIS)

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Cervical Adenocarcinoma

- Cervical adenocarcinoma:
  - Becoming more common in women born in the last 20 to 30 years
  - Develop from the mucus-producing gland cells of the endocervix

Risk of Cervical Lesions and Cancer in Women Exposed to HPV at a Young Age

Relative risks for CIN and invasive cancer increase with decreasing age of first sexual intercourse.

- **Age at First Intercourse (Years)**
  - ≥23 or Never
  - 18–22
  - ≤17

- **Risk Estimates**
  - ~6-FOLD INCREASE
  - ~3-FOLD INCREASE

*Mantle-Haenszel estimates adjusted for age only

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Genital Warts: An Important Healthcare Issue

Estimated number of new cases per year in the United States: 1 million

Estimated number of sexually active adults with clinically visible genital warts: 1 in 100

Estimated number of people who will develop genital warts in their lifetime: 1 in 10

Estimates include both males and females
Incidence of New Claims for Genital Warts in Young Adults

Cervical Cancer Mortality in the US and Prevalence of High-Risk HPV

Peak HPV infection occurs in young adults (20–24 years).

Before This Occurs

Cervical cancer deaths peak in midlife (35–39 years).

To Reduce This

Immunize Here (11–12 years old)

Age Group, Years: 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79

Percentage: 0, 5, 10, 15, 20, 25, 30

Prevalence of High-Risk HPV

Cervical cancer deaths

15-19: 11-12;
20-24: 11-12;
25-29: 11-12;
30-34: 11-12;
35-39: 11-12;
40-44: 11-12;
45-49: 11-12;
50-54: 11-12;
55-59: 11-12;
60-64: 11-12;
65-69: 11-12;
70-74: 11-12;
75-79: 11-12.
## HPV Vaccine

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

- **CERVARIX® [HPV Bivalent (Types 16 and 18)]**
  - For prevention of cervical cancer and precancerous conditions
  - Administered as three doses (0.5-mL each) by intramuscular injection according to the following schedule: 0, 1, and 6 months
  - Indicated for females aged 9 through 25 years
HPV Quadrivalent Vaccine

- **GARDASIL® [ HPV Quadrivalent (Types 6, 11, 16, and 18)]**
  - For prevention of cervical cancer and precancerous conditions, vulvar cancer and precancerous conditions, vaginal cancer and precancerous conditions, anal cancer and precancerous conditions, and genital warts (female)
  - For prevention of anal cancer and precancerous conditions and genital warts (male)
  - Administered as three doses (0.5-mL each) by intramuscular injection according to the following schedule: 0, 2, and 6 months
  - Indicated for females and males aged 9 through 26 years
HPV Vaccine Safety Monitoring: VAERS

- No new safety concerns have been identified in post-licensure vaccine safety surveillance among male or female recipients of HPV4 vaccine
  - Among the 7.9% of reports coded as “serious”, most frequently cited are headache, nausea, vomiting, fatigue, dizziness, syncope, generalized weakness

- Syncope continues to be a frequently reported adverse event following immunization among adolescents
  - Adherence to a 15-minute observation period after vaccination is encouraged

http://www.cdc.gov/vaccinesafety/vaccines/HPV/Index.html#monitor
ACIP Recommendations: HPV Immunization

- Girls (Bivalent/Quadrivalent HPV Vaccine) and boys (Quadrivalent HPV Vaccine) should be routinely vaccinated at age 11 or 12 years; vaccine may be given starting at age 9 years

- For those who were not vaccinated when they were younger, all girls/young women through age 26 years (Bivalent/Quadrivalent HPV Vaccine) and all boys/young men through age 21 years (Quadrivalent HPV Vaccine) should be vaccinated

- Gay, bisexual, and other men who have sex with men be vaccinated through age 26 years (Quadrivalent HPV Vaccine)

- Ideally, vaccine should be administered before potential exposure to HPV through sexual contact
Summary

- HPV infection is common in both the United States and worldwide.
- HPV is easily transmitted and often asymptomatic.
- Genital HPV is responsible for low-grade and high-grade cervical dysplastic lesions, anal dysplastic lesions, oropharyngeal carcinoma, and anogenital warts.
- Virtually all cases of cervical cancer are linked to high-risk genital HPV types.
Bivalent [Cervarix®] and quadrivalent [Gardasil®] vaccines are now available to prevent HPV infections due to the most common causes of cervical carcinoma (HPV 16/18)

Quadrivalent [Gardasil®] vaccine is now available to prevent HPV infections due to the most common causes of genital warts (HPV 6/11) and anal carcinoma (HPV 16/18)