Human Papillomavirus (HPV): Vaccine-Preventable Disease

Texas Department of State Health Services (DSHS)
Immunization Program, Health Service Region 6/5S

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Learning Objectives

During this course you will:
- Obtain an understanding of HPV infection and transmission
- Gain knowledge related to HPV vaccines
- Learn about disease surveillance and CDC recommendations
- Learn about DSHS services and vaccine programs
- Obtain tools for discussing HPV and HPV prevention in your communities
What is HPV?

- Genital human papillomavirus (HPV) is the most common sexually transmitted infection
  - There are over 150 HPV types.
- More than 40 HPV types can infect human mucosal surfaces
  - High risk types (particularly 16 and 18)
    - cervical cancers (~70%)
    - cervical cell abnormalities
    - certain anogenital cancers
- Named for the warts (papillomas) some HPV types can cause
  - Low risk types (particularly 6 and 11)
    - Genital warts (~90%)
    - Cervical cell abnormalities
    - respiratory papillomatosis (tumors from HPV infection in the throat)
- HPV is transmitted easily during sexual activity
  - HPV is so common that nearly all sexually-active men and women get it at some point in their lives.
- There is no cure, only supportive treatment
  - Vaccine - Preventable
Transmission Activity

- Index card interaction (10 Min)
  - talk with 3 different partners about the questions provided below
  - after each question, you should sign your partner’s card and find a new partner from across the room

1. What have you heard about HPV? What questions do you have?
2. What is a vaccine? What are some vaccines you know about?
3. What are some ways people can protect themselves from HPV?

- Discussion (10 min)
HPV and HPV-related diseases are common
In 2014, there were an estimated 12,360 new cases of cervical cancer, 14,410 new cases of oropharyngeal cancer, and 7,210 new cases of anal cancer in the United States.
Myth vs Fact

HPV can ONLY be transmitted through sexual intercourse
Intercourse **IS NOT** required to contract the infection.

- HPV can be transmitted through various forms of skin-to-skin contact
- HPV can be found on skin and mucosal surfaces throughout the body, such as the oropharynx
Myth vs. Fact

*HPV is easily detected*
Many people have HPV infections but don't know it.

To detect HPV, health care providers look for dysplasia (abnormal cell development) or genital warts.

A Pap test (or smear) is used to check a woman’s cervix. In rare circumstances, anal swabbing can also be used to check the anus of men and women at high-risk.

- A swab of the region is smeared on a glass slide or mixed into liquid and examined under a microscope. The cells are examined for abnormalities that may indicate abnormal cell changes, such as dysplasia or cervical cancer.
Myth vs Fact

*Treating diseases caused by HPV is expensive*
Yes, in Texas, annual HPV-related disease costs for men and women approach $170 million

There is no direct treatment for HPV infection. Some people are able to "clear" an HPV infection (are "cured") on their own. However, they can be infected with HPV again. Dysplasia and warts can be removed/treated but often come back. There are several ways to do this:

- Burning them with an electric needle (electrocautery) or a laser
- Freezing them with liquid nitrogen
- Surgical removal
- Treating them with chemicals. Trichloroacetic acid (TCA) is effective for some people.

HPV vaccines are covered by insurance under the Affordable Care Act and other DSHS programs, for those eligible

- Texas Vaccines for Children (TVFC)
- Adult Safety Net (ASN)
Myth vs Fact

HPV is preventable
Yes! 3 vaccines have been approved for use by men and women ages 9 to 26. The vaccine is given as a series of 3 injections over 6 months. They work best in people who have not yet been sexually active, but can be given to those who are already sexually active. HPV vaccine can be administered to those already infected with HPV, but are not curative for existing HPV infections.

- For more information on HPV vaccination, see www.immunize.org/vis/hpv.pdf. In 2011, the US Centers for Disease Control recommended that all boys be vaccinated against HPV at the age of 11 years (in addition to girls).
- **Condoms do not totally prevent transmission of HPV.** HPV can be transmitted by direct contact with infected areas that aren’t covered by a condom.
Myth vs Fact

*HPV vaccine is safe and it works*
**Safety:** the vaccine is made from an inactive protein that does not contain the virus, so you cannot become infected from getting the vaccine.

**Efficacy:** In an *unexposed* population, the quadrivalent vaccine, which prevents four HPV types (16, 18, 6 and 11), was found to be 100% effective in reducing the risk of HPV-related high-grade cervical, vulvar and vaginal lesions and HPV-related genital warts.

- Countries administering the HPV vaccine are already seeing a decrease in HPV infection.
  - Like all vaccines, the HPV vaccine is most effective if it is given **BEFORE** a person is exposed to the disease.
The vaccine will likely increase a person’s desire for sexual activity
Studies have shown that in girls and women aged 11-24 years, those who received the HPV vaccine were not more likely to become sexually active than those who did not receive the vaccine.
What is HPV’s Impact on Disease?
### Cancers Attributed to HPV (U.S.)

<table>
<thead>
<tr>
<th>Cancer site</th>
<th>Average number of cancers per year in sites where HPV is often found</th>
<th>Percentage of cancers per year probably caused by HPV</th>
<th>Average number of cancers per year probably caused by HPV†</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Both Sexes</td>
</tr>
<tr>
<td>Anus</td>
<td>1,549</td>
<td>2,821</td>
<td>4,370</td>
</tr>
<tr>
<td>Cervix</td>
<td>0</td>
<td>11,422</td>
<td>11,422</td>
</tr>
<tr>
<td>Oropharynx</td>
<td>9,974</td>
<td>2,443</td>
<td>12,417</td>
</tr>
<tr>
<td>Penis</td>
<td>1,048</td>
<td>0</td>
<td>1,048</td>
</tr>
<tr>
<td>Vagina</td>
<td>0</td>
<td>735</td>
<td>735</td>
</tr>
<tr>
<td>Vulva</td>
<td>0</td>
<td>3,168</td>
<td>3,168</td>
</tr>
<tr>
<td>TOTAL</td>
<td>12,571</td>
<td>20,589</td>
<td>33,160</td>
</tr>
</tbody>
</table>

† CDC, United States Cancer Statistics (USCS), 2006-2010
## Meanwhile in Texas...2011

### HPV: Numbers & Statistics

<table>
<thead>
<tr>
<th>Cancer Type</th>
<th>New Cases</th>
<th>Deaths</th>
<th>New Cases</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oropharyngeal (Throat/Tonsil)*</td>
<td>14,410</td>
<td>2,540</td>
<td>902</td>
<td>204</td>
</tr>
<tr>
<td>Cervical (Cervix Uteri)**</td>
<td>12,360</td>
<td>4,030</td>
<td>1,130</td>
<td>357</td>
</tr>
<tr>
<td>Vulvar (Vulva)**</td>
<td>4,850</td>
<td>1,030</td>
<td>243</td>
<td>53</td>
</tr>
<tr>
<td>Vagina**</td>
<td>3,170</td>
<td>880</td>
<td>90</td>
<td>33</td>
</tr>
<tr>
<td>Anus, Anal Canal and Anorectum**</td>
<td>7,210</td>
<td>880</td>
<td>354</td>
<td>63</td>
</tr>
<tr>
<td>Penile**</td>
<td>1,640</td>
<td>320</td>
<td>104</td>
<td>23</td>
</tr>
</tbody>
</table>

**Total Estimated Cancer Deaths**

<table>
<thead>
<tr>
<th></th>
<th>US, 2014 $^{12,13}$</th>
<th>TX, 2011 $^{14}$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9,680</td>
<td><strong>733</strong></td>
</tr>
</tbody>
</table>

*Estimated number of cases occurring at HPV-related subsites of the pharynx (base of tongue and tonsil/oropharynx)*

**In general, HPV is thought to be responsible for more than 90% of anal and cervical cancers, about 70% of vaginal vulva and oropharyngeal cancers, and more than 60% of penile cancers. [http://www.cdc.gov/cancer/hpv/statistics/](http://www.cdc.gov/cancer/hpv/statistics/).
Meanwhile in Texas...2015

**HPV: Numbers & Statistics**

<table>
<thead>
<tr>
<th>Cancer Type</th>
<th>in US, 2015</th>
<th>in TX, 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>New Cases</td>
<td>Deaths</td>
</tr>
<tr>
<td>Oropharyngeal (Throat/Tonsil)*</td>
<td>15,520</td>
<td>2,660</td>
</tr>
<tr>
<td>Cervical (Cervix Uteri)**</td>
<td>12,900</td>
<td>4,100</td>
</tr>
<tr>
<td>Vulvar (Vulva)**</td>
<td>5,150</td>
<td>1,080</td>
</tr>
<tr>
<td>Vagina**</td>
<td>4,070</td>
<td>910</td>
</tr>
<tr>
<td>Anus, Anal Canal and Anorectum**</td>
<td>7,270</td>
<td>1,010</td>
</tr>
<tr>
<td>Penile**</td>
<td>1,820</td>
<td>310</td>
</tr>
</tbody>
</table>

| Total Estimated Cancer Deaths      | 10,070      | 1,273       |

*Estimated number of cases occurring at HPV-related subsites of the pharynx (base of tongue and tonsil/oropharynx) **In general, HPV is thought to be responsible for more than 90% of anal and cervical cancers, about 70% of vaginal vulva and oropharyngeal cancers, and more than 60% of penile cancers. [http://www.cdc.gov/cancer/hpv/statistics/](http://www.cdc.gov/cancer/hpv/statistics/)
Vaccine Recommendations are

- HPV vaccines protect against certain high risk types of HPV that cause cancers such as cervical, oropharyngeal, vulvar, vaginal, penile, and anal
- HPV vaccination is recommended for routine vaccination of boys and girls at age 11-12 years, although the vaccine can be administered to children as young as 9 years
  - 3-dose schedule (0, 1-2 and 6 months)
    - for girls and women through age 26
    - for boys and men through age 21 who have not been vaccinated previously
    - for immunocompromised persons (including persons HIV-infected) and for men who have sex with men through age 26
    - Men aged 22-26 who have not been vaccinated previously or who have not completed the vaccine series may also be vaccinated
- Not required for school enrollment
### Available HPV vaccines

<table>
<thead>
<tr>
<th></th>
<th>Bivalent 2vHPV (Cervarix)</th>
<th>Quadrivalent 4vHPV (Gardasil)</th>
<th>9-valent 9vHPV (Gardasil 9)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>L1 VLP types</strong></td>
<td>16, 18</td>
<td>6, 11, 16, 18</td>
<td>6, 11, 16, 18, 31, 33, 45, 52, 58</td>
</tr>
<tr>
<td><strong>Manufacturer</strong></td>
<td>GlaxoSmithKline</td>
<td>Merck</td>
<td>Merck</td>
</tr>
<tr>
<td><strong>Adjuvant</strong></td>
<td>AS04: 500 µg aluminum hydroxide, 50 µg 3-O-desacyl-4'-monophosphoryl lipid A</td>
<td>AAHS: 225 µg amorphous aluminum hydroxyphosphate sulfate</td>
<td>AAHS: 500 µg amorphous aluminum hydroxyphosphate sulfate</td>
</tr>
</tbody>
</table>
Percentage of cervical cancers attributed to high risk HPV types, worldwide

- HPV 16: 60.6%
- HPV 18: 10.2%
- HPV 45: 5.9%
- HPV 33: 3.8%
- HPV 31: 3.7%
- HPV 52: 2.8%
- HPV 58: 2.3%
- HPV 35: 1.9%
- HPV 39: 1.6%
- HPV 51: 1.3%
- HPV 59: 1.1%
- HPV 56: 0.8%

de Sanjose et al. Lancet 2010  % of HPV positives and are based on the upper estimate attribution of multiple HPV types
HPV Vaccine Coverage Levels

Vaccination Coverage Among Adolescents Aged 13-17 Years, Texas, 2013

- Tdap: 86.1%
- Meningococcal: 87.6%
- 3-dose series completion HPV (Females): 38.9%
- 3-dose series completion HPV (Males): 15%

www.texascancer.info
Table 2. Vaccine Coverage Levels among Texas Adolescents 13-17 Years of age by Selected Vaccines, National Immunization Survey-Teen, 2013.

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Texas 2012</th>
<th>Texas 2013</th>
<th>U.S. National Average 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>1+ dose Tdap</td>
<td>82.5%</td>
<td>86.1%</td>
<td>86.0%</td>
</tr>
<tr>
<td>1+ dose MenACWY</td>
<td>84.6%</td>
<td>87.6%</td>
<td>77.8%</td>
</tr>
<tr>
<td>1+ dose HPV vaccine, Females</td>
<td>51.2%</td>
<td>56.2%</td>
<td>57.3%</td>
</tr>
<tr>
<td>1+ dose HPV vaccine, Males</td>
<td>24.0%</td>
<td>34.1%</td>
<td>34.6%</td>
</tr>
<tr>
<td>3+ doses HPV vaccine, Females</td>
<td>30.3%</td>
<td>38.9%</td>
<td>37.6%</td>
</tr>
</tbody>
</table>

Graph 3. Estimated Vaccination Coverage among Adolescents 13 to 17 Years of Age, Texas, National Immunization Survey, 2013.
Challenges to Vaccine Uptake

- Social stigma regarding sex & sexually transmitted infections

- Busy immunization schedule
  - 1st dose can be started when child comes in for Tdap and MCV4

- HPV currently a recommendation but not a school requirement

- 16.7% of Texas children (0-18) are UNINSURED

- Missed opportunities:
  - Lack of provider recommendation
  - Delays in scheduling appointments
  - Inability to pay the office visit fee for a well-care visit
  - Transportation & long waiting periods in the office (missing work)
  - Lack of culturally and age-appropriate educational materials

Note: 40,997 or 0.76 % of students enrolled in Texas schools were reported as having an exemption
Top 5 Reasons...

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

**Percent**

- Not sexually active
- Not recommended - 13%
- Safety concern/Side effects
- Not needed or necessary
- Lack of knowledge

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CDC. National and State Vaccination Coverage Among Adolescents Aged 13-17 Years — United States, 2012

MMWR 2014; 63(29):625-633.
The Value Parents Place on HPV Vaccine

Department of State Health Services (DSHS) Goals

- Improve adolescent vaccine coverage levels
- Improve adult vaccine coverage levels
- Prevent and reduce cases of vaccine-preventable disease
Vaccine Assistance Programs

Alternative options for providing certain vaccinations to qualified individuals:

1. Texas Vaccines for Children (TVFC) birth - 18 years of age
   - more than 500 providers enrolled in TVFC in Houston/Harris County
   - helps provide vaccines to children whose parents or guardians may not be able to afford them
     - uninsured or underinsured children
     - children who are covered by CHIP
     - children on Medicaid
     - children who are of Native American or Native Alaskan heritage

2. Adult Safety Net (ASN)
   - Supplies publicly-purchased vaccines to providers (i.e. DSHS clinics, LHDs, FQHCs, RHCs, STD/HIV clinics)
   - Uninsured adults (19+ years old) are eligible to receive the vaccines at little to no cost
     - Individuals who are 19 years of age and previously initiated a vaccination series under the TVFC Program may complete the series using ASN vaccines (regardless of their insurance status) until their 20th birthday
       - Must be administered at DSHS or LHD clinic
Texas Immunization Registry

- No cost service offered by the Texas Department of State Health Services (DSHS)
- Available to all Texans
- Safely consolidates and stores immunization information from multiple sources electronically in one centralized system
- Secure and confidential:
  - Texas law requires written consent for ImmTrac participation and limits access to the registry to only those individuals who have been authorized by law
  - Only authorized professionals such as doctors, nurses, and public health providers can access clients’ vaccination histories
CDC’s Call To Action

1. Know the Facts
2. Be a Champion
3. Lead the Conversation
Someone You Love: The HPV Epidemic

- Collaborate with DSHS Immunization staff to schedule a screening in your community
  - Documentary Trailer: https://www.youtube.com/watch?v=w0dN2fuq-zQ
  - For more information: http://www.hpvepidemic.com/

Crystal Thomas, MPH
Adolescent/Adult Immunization Coordinator
713-767-3416
crystal.thomas@dshs.state.tx.us

or

Sabrina Stanley, CHES
Immunization Health Educator
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sabrina.stanley@dshs.state.tx.us
What next?

- Encourage universal HPV vaccine coverage of male and female adolescents
- Encourage school-based vaccination programs (especially in middle school)
- Provide HPV education and immunization promotion
Additional Information

Texas Department of State Health Services (DSHS)
  Websites: www.immunizetexas.org
            www.vaccinesforeveryone.net
  Phone: 800-252-9152 (Immunization Branch)

National Cervical Cancer Coalition (NCCC)
  Website: www.nccc-online.org
  Phone: 800-685-5531

Centers for Disease Control and Prevention (CDC)
  Website: www.cdc.gov/hpv
  Phone: 800-CDC-INFO

Cervical Cancer-Free Texas
  Website: www.cervicalcancerfreecoalition.org

The Immunization Partnership
  Website: www.immunizeusa.org
  Phone: 281-400-3689
I) Please answer or circle a response for each of the questions below:

A) HPV (human papillomavirus) is sexually transmitted from direct skin-to-skin genital contact with an infected person.
   TRUE  FALSE

B) Most types of HPV are harmless and go away on their own.
   TRUE  FALSE

C) A person with HPV can only pass HPV to a partner if she or he has symptoms.
   TRUE  FALSE

D) There are steps people can take to minimize their risk for HPV infection.
   TRUE  FALSE

II) Please answer each of the questions below:

A) Regarding HPV, community professionals can impact the health and wellness of their community.
   Strongly Agree  Agree  Disagree  Strongly Disagree

B) As a professional, I’m prepared to provide basic information about HPV to others.
   Strongly Agree  Agree  Disagree  Strongly Disagree

C) I can identify resources and services in my community
   Strongly Agree  Agree  Disagree  Strongly Disagree

III) Please describe what was most helpful about today’s training.

________________________________________________________________________________________________________________

IV) Please describe one action you will take as a result of today’s training.

________________________________________________________________________________________________________________

V) What additional information or resources do you need regarding HPV?

___________________________________________________________________________________________________________________