Prevent Cancer Through HPV Vaccination: Update for Health Care Personnel

Michigan Physician Peer Education Project on Immunizations

October 2017
Presenter Disclosure

• ACCME Disclosure
• Please fill in your pre-test in your packet
Goals

• Understanding the Human Papillomavirus (HPV) by serotype and disease burden
• Understanding HPV vaccine recommendations, efficacy and safety
• Improving both HPV vaccination rates and communication, regarding HPV, within the office
HPV Infection, Serotypes, & Disease

Understanding the Burden
HPV Infection

• By age 50, at least 4 out of every 5 (at least 80%) women will have been infected with HPV at one point in their lives. HPV is also very common in men¹
  • 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
• Easily spread by intimate skin-to-skin contact during sexual activity
  • Not just sexual intercourse
• Most people will never know they have been infected

¹Centers for Disease Control (CDC): Basic Information about HPV and Cancer: https://www.cdc.gov/cancer/hpv/basic_info/
HPV Serotypes

- Over 120 HPV serotypes
- About 40 types are genital-associated

<table>
<thead>
<tr>
<th>HPV Category</th>
<th>Disease</th>
<th>Risk Level</th>
<th>HPV Serotype</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nongenital/Cutaneous</td>
<td>Common warts, flat warts, plantar warts</td>
<td>Low Risk</td>
<td>1, 2, 3, 4, 7, 8, 10, 22, 63</td>
</tr>
<tr>
<td>Anogenital/Mucosal</td>
<td>Genital Warts</td>
<td>Low Risk</td>
<td>6, 11, 42, 44 (others)</td>
</tr>
<tr>
<td>Anogenital/Mucosal</td>
<td>Anogenital Cancer (including cervical, vaginal, vulvar, anal)</td>
<td>High Risk</td>
<td>16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59</td>
</tr>
<tr>
<td>Anogenital/Mucosal</td>
<td>Anogenital Cancer (as listed above)</td>
<td>Probable High Risk</td>
<td>26, 53, 66, 68, 73, 82</td>
</tr>
<tr>
<td>Mucosal</td>
<td>Oropharyngeal Cancer (including throat, tonsils)</td>
<td>High Risk</td>
<td>16, 18, 31, 33, 35</td>
</tr>
</tbody>
</table>
HPV Attributable Cancers

• Annually in the U.S., an average of 39,800 cases of cancer occur in *parts of the body* where mucosal HPV types are found
  • Cervix, vagina, vulva
  • Anus, penis
  • Oropharynx (including tongue & tonsils)

• Of these, about 31,500 (79%) are attributed to HPV

CDC, United States Cancer Statistics (USCS):
https://www.cdc.gov/cancer/hpv/statistics/cases.htm
## Cancers Caused by HPV in U.S.

<table>
<thead>
<tr>
<th>Cancer Site</th>
<th>Average Number of Cancers per Year Probably Caused by HPV</th>
<th>Percentage per Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Anus</td>
<td>1,600</td>
<td>3,200</td>
</tr>
<tr>
<td>Cervix</td>
<td>0</td>
<td>10,600</td>
</tr>
<tr>
<td>Oropharynx</td>
<td>9,600</td>
<td>2,000</td>
</tr>
<tr>
<td>Penis</td>
<td>700</td>
<td>0</td>
</tr>
<tr>
<td>Rectum</td>
<td>200</td>
<td>500</td>
</tr>
<tr>
<td>Vagina</td>
<td>0</td>
<td>600</td>
</tr>
<tr>
<td>Vulva</td>
<td>0</td>
<td>2,500</td>
</tr>
<tr>
<td>Total</td>
<td>12,100</td>
<td>19,400</td>
</tr>
</tbody>
</table>

CDC, United States Cancer Statistics (USCS): [https://www.cdc.gov/cancer/hpv/statistics/cases.htm](https://www.cdc.gov/cancer/hpv/statistics/cases.htm)
Other 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

Annual Report to the Nation on the Status of Cancer, 1975-2009, Featuring the Burden and Trends in Human Papillomavirus (HPV)-Associated Cancers and HPV Vaccination Coverage Levels:
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3565628/
HPV Vaccine

HPV Vaccine is an Anti-Cancer Vaccine
Timeline of HPV Schedule Change

• On October 7\textsuperscript{th}, 2016
  • FDA approved 9vHPV (Gardasil 9, Merck Co.) to include a 2-dose regimen for individuals 9 through 14 years of age

• On October 19\textsuperscript{th}, 2016
  • ACIP voted to recommend the use of a 2-dose 9vHPV series for persons who initiate the series prior to their 15\textsuperscript{th} birthday

• On December 16\textsuperscript{th}, 2016
  • CDC published recommendations for the “Use of a 2-Dose Schedule for Human Papillomavirus Vaccination” in the MMWR
Updated HPV Vaccine Recommendations

• For persons *initiating* the vaccination series before the 15th birthday
  • 2 doses of HPV vaccine are recommended
  • Dose 2 should be administered 6 to 12 months after the first dose (0, 6-12 month schedule)

• For persons *initiating* the vaccination series on or after the 15th birthday
  • 3 doses of HPV vaccine are recommended
  • Dose 2 should be administered 1-2 months after the first dose, dose 3 should be administered 6 months after the first dose (0, 1-2, 6 month schedule)

MDHHS HPV Quick Look:
Exceptions (1)

• Immunocompromised males and females aged 9 through 26 years need 3 doses of HPV vaccine at 0, 1-2, and 6 months

This includes primary or secondary conditions that might reduce cell-mediated or humoral immunity

Examples:
• B lymphocyte antibody deficiencies
• T lymphocyte complete or partial defects
• HIV infections
• Malignant neoplasm
• Transplantation
• Autoimmune disease
• Immunosuppressive therapy
Exceptions (2)

• This recommendation for a 3-dose schedule of HPV vaccine **does not** apply to children aged <15 years with:

  - Asplenia
  - Asthma
  - Chronic granulomatous disease
  - Chronic disease of liver, lung, kidneys
  - CNS barrier defects (e.g., cochlear implant)
  - Complement deficiency
  - Diabetes
  - Heart Disease
  - Sickle Cell Disease

Can use 2 dose series for those initiating before 15th birthday:
Further HPV Vaccine Points

<table>
<thead>
<tr>
<th>9vHPV Serotypes:</th>
<th>6, 11, 16, 18, 31, 33, 45, 52, 58</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protection against:</td>
<td>Cervical, vaginal, vulvar, anal cancers, genital warts, precancerous or dysplastic lesions</td>
</tr>
<tr>
<td>For Females:</td>
<td>Aged 9-26 years</td>
</tr>
<tr>
<td>For Males:</td>
<td>Aged 9-21 years</td>
</tr>
<tr>
<td></td>
<td>Aged 22-26 years if high risk (immunocompromised or MSM&lt;sup&gt;1&lt;/sup&gt;)</td>
</tr>
<tr>
<td></td>
<td>May give to males aged 22-26 years without a known risk factor</td>
</tr>
<tr>
<td>Routine Age:</td>
<td>Ages 11-12 years</td>
</tr>
</tbody>
</table>

- Start HPV vaccine beginning at age 9 years to children with any history of sexual abuse or assault
- While not contraindicated, HPV is not recommended during pregnancy
- HPV vaccine **must** be given IM; if not dose must be repeated
- If the series is initiated prior to the 27<sup>th</sup> birthday, it may be completed after age 26 years (may not be covered by insurance)

<sup>1</sup>Defined as gay, bisexual and other men who have sex with men; transgender persons are considered high risk for HPV
Persons With Prior HPV Vaccination

• 9vHPV may be used to continue or complete a series started with 4vHPV or 2vHPV

• For persons who have been adequately vaccinated with 2vHPV or 4vHPV, there is no ACIP recommendation for additional vaccination with 9vHPV

• If the vaccine schedule is interrupted, the series does not need to be restarted
HPV 2-Dose Effectiveness

- Trials of all HPV vaccines found antibody response after 2 doses (0, 6 months or 0, 12 months) in 9-14 year olds is non-inferior to the response after 3 doses in the group in which efficacy was demonstrated
  - It was found that a longer interval (0, 6 months) was more effective than a shorter interval
- Data from follow-up of immunogenicity trials suggest duration of protection will be the same after 2-dose and 3-dose schedules
Why at Age 11 or 12 Years?

• HPV vaccine works best when the entire series has been given before exposure

• Youth behavioral risk surveillance:
  • 3.9% 9th-12th graders reported having sex before age 13 years
  • 41.2% 9th-12th graders report having had sexual intercourse
    • By 9th grade, 24.1%; by 12th grade, 58.1%
  • 19.2% of high school seniors have had sexual intercourse with four or more partners

• Data from follow-up of immunogenicity trials suggest duration of protection will be the same after 2-dose and 3-dose schedules

Youth Risk Behavior Surveillance-U.S. 2015:
A Parent’s Guide to HPV Vaccine

What is HPV?
HPV vaccines are licensed by the Food and Drug Administration (FDA) and recommended by the Centers for Disease Control and Prevention (CDC). The HPV vaccine is made from one protein from the HPV virus that cannot cause infection and does not cause cancer.

When should my child get the HPV vaccine?
HPV vaccination is recommended for preteen girls and boys at age 11 or 12 years. Teens and young adults who didn’t start or finish the HPV vaccine series also need HPV vaccination. HPV vaccines are given in a series of shots over several months. Depending on when your child started the series, he or she may only need two doses to be fully protected.

Is the HPV vaccine safe?
Yes, HPV vaccines have been studied very carefully and continue to be monitored by the CDC and FDA. No serious safety concerns have been linked to HPV vaccination. Studies continue to show that HPV vaccines are safe. Common, mild side effects include pain and redness in the area of the arm where the shot was given, fever, dizziness, and nausea.

Does it work?
Yes. HPV vaccines work extremely well. Since the first HPV vaccine was recommended in 2006, there has been a 65 percent reduction in vaccine-type HPV infections among teen girls in the United States. Research has also shown that fewer teens are getting genital warts since the HPV vaccines have been in use. Protection provided by HPV vaccine is long-lasting. Currently, it is known that HPV vaccine works in the body for at least 10 years without becoming less effective. Data suggest that the protection provided by the vaccine will continue beyond 10 years.

DON’T DELAY
Talk to your health care provider today about protecting your child from cancers caused by HPV.

www.aimtoolkit.org
www.michigan.gov/teenvaccines
Vaccine Effectiveness at Early Ages

• A cohort study in Sweden\(^1\) demonstrated vaccine effectiveness in preventing genital warts was:
  
  • 93% among girls vaccinated between ages 10-13 years
  • 48% between ages 20-22 years
  • 21% between ages 23-26 years

• Underscores the importance of vaccination at target age (11-12 years) & before the onset of sexual activity

\(^{1}\text{Quadrivalent Human Papillomavirus Vaccine Effectiveness: A Swedish National Cohort Study: }\)
HPV Vaccine Does Not Increase Sexual Activity or Age of 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

“Sexual Activity-Related Outcomes After Human Papillomavirus Vaccination of 11 to 12 Year Olds”: http://pediatrics.aappublications.org/content/pediatrics/130/5/798.full.pdf
HPV Vaccine Impact

Monitoring the Impact of HPV Vaccine
HPV Vaccine: Duration of Immunity

• Studies suggest that vaccine protection is long-lasting; no evidence of waning immunity
  • Available evidence indicates protection for at least 10 years
  • Multiple cohort studies are in progress to monitor for at least 10 years

CDC Human Papillomavirus (HPV) Questions and Answers: https://www.cdc.gov/hpv/parents/questions-answers.html
Monitoring Impact of HPV Vaccine Programs: HPV-Associated Outcomes

- **Early Outcomes (Years)**
  - HPV Prevalence
  - Genital warts

- **Mid Outcomes (Years to Decades)**
  - CIN/Precancers

- **Late Outcomes (Decades)**
  - HPV-associated cancers
Studies on HPV Vaccines

- Decrease in prevalence of HPV in 6 years of 4vHPV vaccine use in females:
  - Aged 14-19 years, 64% reduction (from 11.5% to 4.3%)
  - Aged 20-24 years, 34% reduction (from 18.5% to 12.1%)
  - 1st national evidence of impact among females in their 20s

- In clinical trials of 9vHPV, efficacy with 3 doses for HPV serotype 31, 33, 45, 52, & 58 = 96.7%

“Prevalence of HPV After Introduction of the Vaccination Program in the United States”:
http://pediatrics.aappublications.org/content/pediatrics/early/2016/02/19/peds.2015-1968.full.pdf
HPV Vaccine Safety

Is the HPV Vaccine Safe?
VAERS: HPV Vaccine Safety Monitoring

• Ongoing safety monitoring has shown most reports are non-serious

• Among the 7.6% of reports coded as “serious,” most frequently cited possible side effects are headache, nausea, vomiting and fever

• Syncope (fainting) continues to be reported following vaccination among adolescents
  • Adherence to a 15-minute waiting observation period after vaccination is encouraged

“Human Papillomavirus Vaccination Recommendations of the Advisory Committee on Immunization Practices (ACIP)” MMWR: https://www.cdc.gov/mmwr/preview/mmwrhtml/rr6305a1.htm
9vHPV Vaccine Safety: Clinical Studies

- Approximately 15,000 persons in 9vHPV-clinical development program & 13,000 persons in 6 studies included with initial application to FDA
  - Safety profiles similar to 4vHPV

- Vaccine is well tolerated. Adverse events include: pain at the injection site, swelling & erythema
  - Overall, mild to moderate intensity
  - Females 9-26 years, more events reported with 9vHPV vs 4vHPV
    - Swelling: 40.3% vs 29.1%; erythema: 34.0% vs 25.8%
  - Males 9-15 years, fewer injection site adverse events
    - 9vHPV: swelling 26.9%; erythema 24.9%
  - Rate of injection site swelling and erythema both increased with each successive dose of 9vHPV

“Use of 9-Valent Human Papillomavirus (HPV) Vaccine: Updated HPV Vaccination Recommendations of the Advisory Committee on Immunization Practices” MMWR March 27, 2015 Vol 64(11); 300-304:
https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6411a3.htm
Key Findings-CDC and Non-CDC

- Venous thromboembolism (VTE)\(^1\)
  - Study evaluating the risk of VTE in vaccinated persons age 9-26 years
  - **Found no increased risk of VTE following 4vHPV**

- Autoimmune and neurologic conditions\(^2\)
  - Study addressing concerns about autoimmune and neurologic disease following 4vHPV vaccination
  - **Found no association between 4vHPV vaccination and 16 autoimmune conditions**

- Injection site reactions and syncope\(^3\)
  - 4vHPV vaccination may be associated with skin infections where the shot is given during the two weeks after vaccination and fainting on the day the shot is received
  - **No major safety concerns found**

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\(^1\) Gee, J, June 2016, Human Vaccines Immunotherapeutics Vol. 12(6):
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4964727/


\(^3\) Klein NP, December 2012, Arch Pediatric Adolescent Medicine Vol. 166(12):
HPV Vaccine Coverage
What are Our Vaccination Rates?
HPV Vaccination Rates in Michigan by Age Group and Sex, August 2017

Prepared by the Michigan Department of Health and Human Services using data from the Michigan Care Improvement Registry for the numerator and 2016 US Census Population estimates for the denominator.

*Complete with 2 or 3 HPV doses
Impact of Eliminating Missed Opportunities by Age 13 Years in Girls Born in 2000

Evidence-Based Strategies

Increasing HPV Vaccination Coverage
Michigan Care Improvement Registry (MCIR)

• As of September 2016:
  • 9,747,963 individual records
    • 2,637,191 are children less than 18 years of age
    • 7,110,202 are adults 18 years of age and older
  • 122,330,635 total “shot” records

• MCIR capabilities include:
  • Record of all vaccine doses administered
    • Prevents over-vaccination and missed opportunities to vaccinate
  • Forecasts date of next dose due
  • Generates notices targeted to patients/parents when recommended vaccines will be due soon (reminders) or past due (recalls)
  • Accepts data transfer from EMR/EHR

• Provider access and training available at www.mcir.org
Michigan AFIX Program

• Immunization Quality Improvement Program

• Uses MCIR data within your practice to identify:
  • Coverage levels, missed opportunities, patients not up-to-date with recommended vaccines

• Quality Improvement Strategies focus on:
  • Increasing staff knowledge and comfort of vaccine recommendations
  • Reducing barriers to immunizations
  • Increasing vaccination of patients at the office

• If interested, contact Stephanie Sanchez at sanchezs@michigan.gov or 517-284-4890
Other Improvement Strategies

• Standing orders
  • Allows RNs and Pharmacists to vaccinate without direct physician oversight
  • Opportunity to provide “Vaccination Only” visits

• Chart reminders
  • Provider prompts to assess status

• Patient reminders
  • Targeted messages using phone calls, letters, postcards

• Reduce financial barriers
  • Participate in VFC program

Tips for Immunizing Pre-Teens and Adolescents

1. Recommend vaccines!
   Your professional recommendation matters to patients and has a positive impact on their decision to receive vaccines. Use reminders, such as chart notes, stickers and flags, to prompt you to recommend vaccines to your patients and their parents.

2. Reduce financial barriers
   Participate in the Vaccines for Children (VFC) program which offers low or no cost vaccines to eligible children birth through 18 years of age. Find out more at www.michigan.gov/vfc.

3. Use standing orders
   Templates for standing orders are available from the Immunization Action Coalition (www.immunize.org) and the AIM Toolkit (www.aimtoolkit.org).

4. Provide multiple vaccines in a single visit
   Simultaneous administration of needed vaccines is recommended; use separate sites.

5. Do not miss an opportunity to administer vaccines
   Assess immunization status and vaccinate at every visit – well, sick, sports, and camp physicals.

6. Use reminder and recall tools to get patients into the office
   The Michigan Care Improvement Registry (MCIR) can help create lists and reminder notices. Contact the regional MCIR office for more information or www.mcr.org

7. Assess your vaccination efforts and provide feedback to those who can affect change
   Without periodic assessment, you can’t know how you are doing. MCIR can help determine the adolescent immunization rates in your office.

www.michigan.gov/teenvaccines
Framing the Conversation
Talking About HPV Vaccine
Best Strategy For Vaccination

• Provider Recommendation is the strongest predictor of vaccination

• Adults who are initially reluctant, are likely to receive an HPV vaccine when the health care provider has a positive opinion of the vaccine
A Case of Vaccine Hesitancy

- Parents may be interested in vaccinating, yet still have questions
- A question from a parent does not mean they are refusing or delaying
- Taking the time to listen to parents’ questions helps you save time and give an effective response

Unpublished CDC data, 2013
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

“Vaccine Counseling: A Content Analysis of Patient-Physician Discussions Regarding Human Papillomavirus Vaccine.”:

“HPV Vaccine Decision Making in Pediatric Primary Care: A Semi-structured Interview Study”:
Just Another Adolescent Vaccine

• A successful recommendation groups all of the recommended adolescent vaccines together
  • Don’t treat HPV vaccine different
    • Recommend the HPV vaccine series the same way you recommend all other adolescent vaccines
  • Moms in focus groups who had not received a doctor’s recommendation
    • Questioned if the vaccine was truly necessary
  • Remember your recommendation matters
    • Parents responded that they trusted their child’s doctor and would get the vaccines if it was recommended

Unpublished CDC data, 2013
Most Family Physicians Wait too Long to Recommend HPV Vaccine

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Strongly Recommend</th>
<th>Recommend But Not Strongly</th>
<th>No Recommendation</th>
<th>Recommend Against</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-12 Y.O. FEMALE</td>
<td>59%</td>
<td>34%</td>
<td>5%</td>
<td>2%</td>
</tr>
<tr>
<td>11-12 Y.O. MALE</td>
<td>41%</td>
<td>45%</td>
<td>11%</td>
<td>3%</td>
</tr>
<tr>
<td>13-15 Y.O. FEMALE</td>
<td>79%</td>
<td>17%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>13-15 Y.O. MALE</td>
<td>61%</td>
<td>30%</td>
<td>7%</td>
<td>2%</td>
</tr>
<tr>
<td>16-18 Y.O. FEMALE</td>
<td>82%</td>
<td>15%</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>16-18 Y.O. MALE</td>
<td>64%</td>
<td>26%</td>
<td>7%</td>
<td>3%</td>
</tr>
</tbody>
</table>

"Primary Care Physicians’ Perspectives About HPV Vaccine":
http://pediatrics.aappublications.org/content/early/2016/01/02/peds.2015-2488
Providers Underestimate the Value Parents Place on HPV Vaccine

An Anti-Cancer Vaccine

• The “HPV vaccine is cancer prevention” message resonates strongly with parents

• In focus groups & online panels, mothers:
  • Wanted more information on the types of HPV cancers
  • Were influenced to vaccinate their child because:
    • HPV vaccine prevents cancer
    • They had a family history of cervical cancers
    • Because they had a personal experience with cervical cancer

Unpublished CDC data, 2013
What’s in a Recommendation?

• Studies consistently show that a strong recommendation from you is the single best predictor of vaccination
  • In focus groups and surveys with moms, having a doctor recommend or not recommend the vaccine was an important factor in parents’ decision to vaccinate their child with the HPV vaccine
  • Not receiving a recommendation for HPV vaccine was listed as a barrier by mothers

• Emphasizing your personal belief in the importance of HPV vaccine helps parents feel secure in their decision
Addressing all Concerns in 45 Seconds (1)

**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 76 million doses have been given in the U.S. alone and there haven’t been any serious side effects.
Addressing all Concerns in 45 Seconds (2)

**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 the series in 6 months.
Communication Tools & Training Opportunities

Resources for HPV Vaccine Conversations
Info for Parents

Info for Older Teens & Young Adults

Order Free Copies for Your Practice:
www.healthymichigan.com
Key Messages to Remember

• HPV vaccine is Safe!
  • No serious side effects
  • HPV vaccine safety similar to MCV4 and Tdap vaccine safety

• HPV vaccine Works!
  • 64% decrease in disease prevalence (4vHPV serotypes) in women ages 14-19 years
  • 34% decrease in women ages 20-24 years

• HPV vaccine Lasts!
  • No evidence of waning immunity

• HPV is Cancer Prevention
  • Protects against most cancers caused by HPV infection

“Prevalence of HPV After Introduction of the Vaccination Program in the United States”:

Sites for Additional Information

- CDC HPV sites:
  - https://www.cdc.gov/vaccines/pubs/pinkbook/hpv.html
  - https://www.cdc.gov/cancer/hpv/statistics/cases.htm
  - https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6411a3.htm

- ACOG HPV Toolkit:

- MDHHS Adolescent Vaccination:
  - WWW.MICHIGAN.GOV/TEENVACCINES

- Children's Hospital of Philadelphia (CHOP):
MI Educational Resources for Health Care Personnel

• Immunization Nurse Education Program (INE)
  • In-office education on variety of immunization topics
  • Contact Carlene Lockwood at lockwoodc@michigan.gov

• Physician Peer Education Program on Immunizations (PPEPI)
  • Grand-rounds, conferences, large medical offices
  • Contact Connie Demars at demars@anr.msu.edu

• Michigan Regional Fall Immunization Conferences (8)
  • Visit www.michigan.gov/immunize for information

• Stay up-to-date by signing up for our listserv announcements
  • To subscribe e-mail cmarkzon@msms.org with SUBSCRIBE in subject
Remember...
They are counting on you!
Ensure that **ALL** your patients are protected against Vaccine Preventable Diseases

Please Complete Post-Lecture Survey