Understanding Human Papillomavirus Infections and Why We Vaccinate

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• Minnesota Department of Health Immunization Program presentation slides are included and have been adapted with MDH permission
• CDC slides for clinician presentations included
Learning Objectives

• Human papillomavirus (HPV) infection facts

• HPV vaccination is cancer prevention

• Explain why there is a critical age window for initiating and completing HPV vaccination series
WHAT is HPV?
WHAT is Human Papillomavirus?

• Virus with >150 types
• Each type is assigned a number
• ~75% of HPV types infect skin surfaces
• ~25% of HPV types infect mucosal surfaces
HPV Types Differ in their Disease Associations

Mucosal sites of infection:
- High risk (oncogenic)
  - HPV 16, 18 most common
- Cervical Cancer
- Anogenital Cancers
- Oropharyngeal Cancer
- Cancer Precursors
- Low Grade Cervical Disease

Cutaneous sites of infection:
- Low risk (non-oncogenic)
  - HPV 6, 11 most common
- Genital Warts
- Laryngeal Papillomas

“Common” sites of infection:
- Hand and Foot Warts
HOW is mucosal HPV transmitted?

• Sexually transmitted infection
• Vaginal or anal sexual activity most often
• Oral-genital and hand-genital spread reported
• NOT spread from toilet seats, hugging or holding hands, swimming in pools or hot tubs, sharing food or utensils
HOW common is HPV infection?

• HPV is the most common STI in the US
  • 14 million new infections/year
  • Almost 80 million currently infected

• Most sexually active people will be infected

• The good news...HPV usually clears from a lab detectable & clinically significant standpoint
  • 70% cleared in 1 year
  • 90% cleared in 2 years

• The concern...persistent high risk HPV may cause pre-cancer and cancer
WHY is HPV Vaccination Important?
HPV vaccine is cancer prevention.

Talk to the doctor about vaccinating your 11–12 year old sons and daughters against HPV.

#UCanStopHPV

Why is HPV vaccination important?

1 in 4 people are currently infected with HPV in the U.S.

That’s nearly 80 million people!

32,500 people are diagnosed with a cancer caused by HPV each year in the U.S.

About 30,000 of those cases could be prevented with HPV vaccination!


Annual Cancer Cases = 20,300

- Cervical 10,800
- Anal 4,000
- Vulvar 2,700
- Oropharynx 2,200
- Vaginal 600

HPV-Attributable Cancer in Men in the US 2011-2015

Annual Cancer Cases = 13,400

- Oropharynx: 10,700
- Anal: 1900
- Penile: 800

WHAT protection does HPV vaccination provide?

• 9-valent human papillomavirus vaccine (9vHPV vaccine, Brand name Gardasil®9)
  • 7 high risk HPV types
  • 2 low risk HPV types

• 9vHPV vaccine protects against HPV types that cause
  • 90% of genital warts
  • 90% of HPV-related cancers
WHO should be vaccinated (ACIP)?

• All females ages 9-26
• All males ages 9-21
• Males ages 22-26 with risk factors
  • Immunocompromised
  • MSM
  • Or based on clinician recommendation
• What about new FDA approval for 27-45 year olds? Hold that thought…
WHAT are the dosing recommendations?

• Immunocompetent patients starting the series at ages 9 to 14 years old
  • 2 doses given 6-12 months apart

• Immunocompetent patients starting the series at age ≥ 15 years OR for patients age 9-26 who are immunocompromised
  • 3 doses at 0, 1-2 and 6 months
WHEN should HPV vaccine be given?

- Advisory Committee on Immunization Practices
- Start at age 11-12
- Goal is to complete the series by age 13

- Strong presumptive recommendation is most effective for 3 routine vaccines given at this visit
  - Same way, same day

- 9vHPV vaccine at age 9-10 is acceptable

WHY should HPV vaccination be given at younger ages?

• **More robust immune response to vaccination series in younger adolescence**
  • 2 doses adequate if <15 years old when starting series

• **Greater reduction of pre-cancers if vaccinated at younger ages**
  • Vaccine effectiveness against CIN2+ was 75% in patients vaccinated before age 17 years compared to 46% for patients vaccinated at or after 17 years.
  • Odds of testing positive for HPV 16/18 at ages 20–21 years increased with later age of vaccination.
  • 86% reduction in CIN3+ those vaccinated at age 12-13 compared with 51% for those vaccinated at age 17.

• **Duration of protection is good**

• **More likely to see a 12 year old for a well child exam than older teenagers**

HOW are we doing in MN with HPV vaccination rates?

• Healthy People 2020 goal is 80% HPV vaccine series completion for 13 to 15 year olds
Missing the Opportunity to Prevent Cancer

HPV Series Initiation Among Minnesota Adolescents Aged 13-17 Years
Minnesota Immunization Information Connection, April 2018

HPV Series Completion Among Minnesota Adolescents Aged 13-17 Years
Minnesota Immunization Information Connection, April 2018

1 HPV series completion reflects adolescents who completed either the 2-dose or 3-dose HPV series depending on when they received their first dose.
2 The Minnesota state average for HPV series completion among adolescents aged 13-17 years is 50 percent.
3 Healthy People 2020 is a set of science-based public health goals established by the U.S. Department of Health and Human Services. The Healthy People 2020 goal for HPV vaccination is 80 percent HPV series completion among adolescents aged 13-15 years.
## WHAT are rates in SE Minnesota?

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Missing the Opportunity to Prevent Cancer

Minnesota vaccination coverage among adolescents age 13 through 17 years, Minnesota Immunization Information Connection (MIIC) data, July 2018

≥1 Tdap: 78.9%
≥1 MenACWY: 77.4%
≥1 HPV: 56.8%
HPV Series Completion*: 38.7%

*HPV Series Completion: 3 or more doses of HPV vaccine, or 2 or more doses of HPV vaccine when the first dose was initiated prior to age 15 years and there were at least five months minus 4 days between the first and second doses.
HPV Vaccination is Safe

• >270 million doses given worldwide and >100 million doses in US since 2006

• Common side effects are mild and the same as TdaP and meningococcal vaccines
  • Arm pain, redness, swelling at injection site
  • Headache
  • Nausea
  • Lightheadedness

HPV Vaccination is Safe

• HPV Vaccination does NOT cause
  • Infertility
  • Autoimmune conditions
  • Neurologic conditions
  • Blood clots

What about FDA approval for HPV vaccination of 27 to 45 year olds?

• FDA approval ≠ ACIP recommendation
• Most HPV exposures occur before age 27
• The vaccine will not provide the same protection once HPV infection has occurred
• We must not lose sight of the importance of initiating the 9vHPV vaccine series at age 11-12
• This is when it will make the most difference in preventing pre-cancer and cancer!

Key Points

• HPV infection is a common STI and most often clears without complications
• Persistent high risk HPV infection can cause pre-cancer and cancer in women and men
• HPV vaccination is cancer prevention
• 9vHPV vaccine has greatest benefit when given at younger age (pre-HPV exposure)
• ACIP recommends initiating at age 11-12 and completing the 9vHPV vaccine series by age 13
Thank you!
Questions?
References

1. CDC: https://www.cdc.gov/hpv/hcp/index.html


