

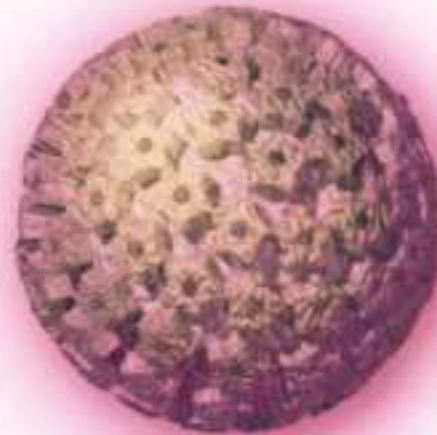
Online Learning Module: HPV Vaccine

Learning Objectives

- Describe the available HPV vaccines and their recommended use
- Describe HPV vaccine efficacy and safety
- Discuss the potential use of the HPV vaccine in HIV-infected individuals
- Discuss the potential use of and barriers to the HPV vaccine in Africa



HPV



HPV



HPV



HPV

Review of HPV - 1

- HPV is a virus (DNA) that infects the lining of the cervix, vagina, vulva and penis
- HPV is transmitted through sexual contact
- Most infections are asymptomatic and self-limiting
- Persistent HPV can cause precancer and cancer

Review of HPV -2

- There are over 100 different types of HPV, at least 13 of which can cause cancer of the cervix
- The two most common HPV types are 16 and 18, which cause 70% of cancers of the cervix
- HPV types 6 and 11 can cause genital warts

Review of HPV - 3

- Eight most common cancer-causing HPV types: 16, 18, 31, 33, 35, 45, 52, 58
- HPV types 16, 18 account for 70% of cancers – each other type responsible for 5% of cases

Risk factors for progression of HPV to cancer

- Early sexual intercourse
- Immune suppression
- Cigarette smoking
- Multiparity
- Early age at first delivery
- Long term use of oral contraceptives



HPV vaccine

- Produced from virus-like particles
- Purpose is prevention of infection and not treatment
- Two HPV vaccines have been developed
 - Quadrivalent (Merck & Co, Inc) – 6, 11, 16, 18
 - Bivalent (Glaxo Smith Kline) – 16, 18
- Goal – reduce the incidence of HPV-related genital disease

How the HPV Vaccine Works

- Prepared from virus-like particles (VLPs) produced by recombinant technology
- Do not contain any live biological product or DNA, so they are non-infectious

HPV Vaccine Efficacy - 1

- HPV vaccines are designed to be prophylactic not therapeutic
- Lower protection among women already infected with vaccine-related HPV genotypes
- Efficacy depends on epidemiology of HPV in the population
- Safety and effectiveness not yet evaluated in Africa or in populations with high prevalence of immunosuppression

HPV vaccine Efficacy - 2

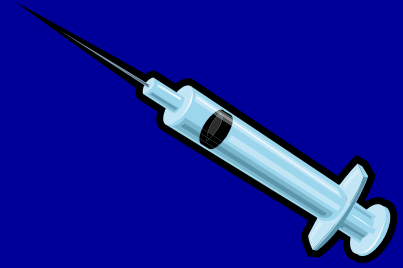
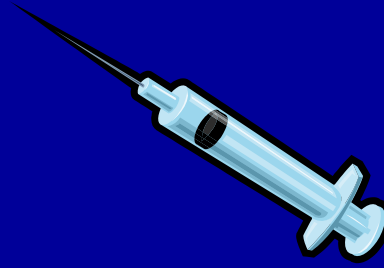
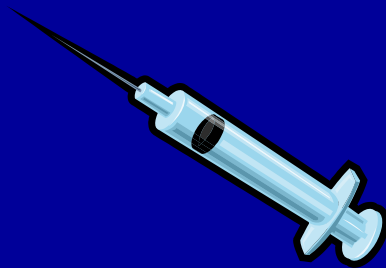
- Both vaccines showed high efficacy
- No efficacy data available to support use of vaccine in males.
- Duration of vaccine protection – at least 5 years and likely longer
- Cross-protection - Possible

Screening after HPV vaccination

- HPV vaccine reduces but doesn't eliminate risk of cervical cancer
- Cancer can still be caused by other HPV types not in the vaccine
- Screening still required after vaccination
- Screening also required for women already infected with HPV

HPV Vaccine Administration

- 3 intra-muscular injections over a 6-month period
- 15-minute waiting period after vaccination.



Quadrivalent

- Gardasil ® or Silgard ®
- HPV 16, 18, 6, 11
- United States recommendations
 - Routinely recommended for 11 and 12 year old girls
 - Vaccine series can be started at 9 years of age.
 - Catch-up vaccination for females ages 13 to 26.

Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
Dose 1		Dose 2			Dose 3

Bivalent

- Cervarix ®
- HPV 16, 18

Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
Dose 1	Dose 2				Dose 3

WHO recommendations

- Routine HPV 16/18 vaccination should be included in immunization programmes of all countries where
 - Prevention of cervical cancer and other HPV-related diseases is a public health priority
 - Vaccine introduction is programmatically feasible
 - Sustainable financing can be secured
- Primary target – Young adolescent girl before onset of sexual activity

Who can be given the vaccine?

- HPV vaccine can be given to females who:
 - Are lactating
 - Have minor acute illness
 - Have abnormal Pap test, +HPV test or genital warts
 - Are immunocompromised

Who cannot be given the vaccine?

- HPV vaccine can not be given to females who:
 - Are pregnant
 - History of immediate hypersensitivity to yeast or any vaccine component
 - Moderate or severe acute illnesses

HPV Vaccine Safety

- HPV vaccine is safe
- Most common adverse event – Pain at injection site
- Providers should consider a 15-minute waiting period for vaccine recipients following vaccination.

Counseling messages for patients

- Important to give all three doses of the vaccine to get its full benefits
- Women still need regular cervical cancer screening
- Continue to practice abstinence or protective sexual behaviors

The Potential of HPV Vaccine in Africa

Factors influencing benefits from HPV vaccination

- Burden of HPV disease attributable to the genotypes against which the vaccines protect
- Vaccine efficacy
- Availability of screening services
- Achievable vaccine coverage**
- Duration of protection
- Effect on cervical cancer screening

Cost-Effectiveness of the HPV Vaccine in Developing Countries

- Price needs to be reduced to make vaccination cost-effective
- Brazil study - Vaccination alone is likely to be more cost-effective than screening 2 or 3 times per lifetime in developing countries
- Higher delivery costs because will need to implement adolescent vaccination program.

HPV Vaccine in HIV+ women - 1

- Efficacy unknown
- HIV+ women have
 - A high HPV infection prevalence
 - Co-infection with multiple oncogenic HPV types
- Vaccine impact questionable if predominant HPV types are not 16 or 18
- Safety must also be assessed

HPV Vaccine in Africa? - 1

- Data not yet available on safety and efficacy of HPV vaccines in Africa or in populations with high HIV prevalence.
- HPV types other than types 16 and 18 are more common in populations in Africa, such as HIV+ women.
- Vaccines may not induce protective immunity in these populations
- More investigations are needed worldwide

HPV Vaccine in Africa? - 2

- Successful vaccination programs in Africa will likely require broader polyvalence, lower costs, and community and provider education and acceptance.

Questions to be answered before vaccine implementation

- What is the best delivery strategy?
- What is the best age for community-based delivery?
- Vaccination of girls only or girls & boys?
- Integration with other interventions?
- Monitoring of HPV vaccination program?
- Patient, parent and community education?

Conclusions

- In developing countries, HPV-induced cervical is leading cause of cancer death in women
- HPV vaccines very effective in preventing disease caused by vaccine-related HPV genotypes
- Additional data is needed on the safety, efficacy and cost-effectiveness of HPV vaccines in Africa
- Successful vaccination programs in Africa will likely require broader polyvalence, lower costs, and community and provider education and acceptance.

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Evaluation – Page 1 of 2

1. The HPV vaccine is an example of:
 - (a) Primary prevention against HPV infection
 - (b) Secondary prevention against HPV infection
 - (c) Treatment for HPV infection
 - (d) Cure for HPV infection

2. The HPV vaccine is prepared from:
 - (a) Virus-like particles (VLPs) and is therefore infectious
 - (b) VLPs and is therefore uninfected
 - (C) Live, attenuated HPV virus
 - (d) None of the above

Evaluation – Page 2 of 2

3. HPV vaccines currently on the market protect primarily against
 - (a) HPV-16 and HPV-18 infection
 - (b) HSV-1 and HSV-2 infection
 - (c) HIV infection
 - (d) None of the above

4. Following HPV vaccination, cervical cancer screening remains important because:
 - (a) HPV vaccination reduces but does not eliminate the risk of HPV infection
 - (b) Women may have been infected with HPV prior to vaccination
 - (c) Cervical cancer may be caused by an HPV type that is not contained in the vaccine
 - (d) All of the above

Evaluation Score

- Congratulations!
- You passed this evaluation with a score of

- Please click on the CERTIFICATE button below to print your certificate. Be sure to print & sign your name before submitting the certificate to your supervisor.

CERTIFICATE

“Every woman has the right to live
a life free from cervical cancer”

