

You are the Key to HPV Cancer Prevention

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{April 2016}

Objectives:

1. Explain in plain language, the importance of HPV vaccination for cancer prevention and the rationale for vaccinating at ages 11 or 12.
2. Provide an effective recommendation for HPV vaccination.
3. Describe useful and compelling information about HPV vaccination to succinctly answer questions from parents and aid parents in making the decision to vaccinate their children.
4. Implement disease detection and prevention health care services (e.g., smoking cessation, weight reduction, diabetes screening, blood pressure screening, immunization services) to prevent health problems and maintain health.

Continuing Education is Available CE Expiration Date: April 21, 2018

Course information is located at:

www.cdc.gov/vaccines/ed/hpv/default.htm

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CDC did not accept commercial support for this continuing education activity.

The first section will focus on HPV infection and disease prevalence.

HPV types differ in their tendency to infect cutaneous and mucosal or genital epithelium. More than 150 HPV types have been identified, including approximately 40 that infect the genital area. Genital HPV types are categorized according to their epidemiologic association with cervical cancer. High-risk types (e.g., types 16 and 18) can cause low-grade cervical cell abnormalities, high-grade cervical cell abnormalities that are precursors to cancer, and cancers. In addition to cervical cancer, HPV infection also is the cause of some cancers of the vulva, vagina, penis, and anus, as well as cancer of the oropharynx.

Low-risk types like 6 and 11 can cause benign or low-grade cervical cell changes, genital warts, and recurrent respiratory papillomatosis.

Most HPV infections happen during the teen and college-aged years because HPV infection usually occurs soon after sexual debut.

Most people never know that they have been infected. Women may find out they are infected because of an abnormal pap test with a positive HPV test or a diagnosis of genital warts. Men may find out because of a genital warts diagnosis as well.

Persistent HPV infection causes 27,000 cases of cancer in both men and women every year in the United States.

Here you can see the distribution of HPV cancers at the various anatomic sites.

This is another way of looking at the same information, and we can clearly see that the predominant HPV cancer in women is cervical cancer and the predominant HPV cancer in males is oropharyngeal.

Cervical cancer was once the leading cause of cancer death for women in the United States. Now it is the most preventable of all of the female cancers. The Pap test has helped decrease the number of women in the U.S. with cervical cancer by about 75% in the past 50 years. However even with an excellent cervical cancer screening program in the U.S., there are still over 11,000 cases of cervical cancer each year in this country.

Many people think of gynecological cancers as just affecting older women, but cervical cancer affects 1 in 3 women who are of reproductive age. Cervical cancer is treated at minimum with the removal of the cervix but may also include radical hysterectomy, radiation, and/or chemotherapy. For women who have not yet started, or finished, having babies, this can be devastating. While there are fertility persevering methods, often they are not an option for most women.

This map displays HPV-associated cervical cancer incidence rates by state. As you can see, there are geographical disparities with the highest rates of cervical cancer clustered in the southern and Appalachian states.

Cervical cancer affects women of color and their communities more than their white counterparts. Women of color are often diagnosed with cervical cancer at a later stage than white women. Black women are more likely to die from cervical cancer than women of other races or ethnicities, possibly because of decreased access to Pap testing or follow-up treatment.

Hispanic women have the highest rates of cervical cancer in the United States. For example, for every 100,000 women living in the U.S., about 11 Hispanic women are diagnosed with cervical cancer, compared to only seven non-Hispanic women.

When we talk about HPV disease the focus is usually on the 11,000 cases and 4,000 deaths by cervical cancer. But as you can see in this slide, that is only the tip of the iceberg. Every year more than 300,000 women in the United States are diagnosed with high grade cervical dysplasia, or precancer. To receive this diagnosis each of these women have undergone a colposcopy with biopsies. After receiving the diagnosis many will go on to have a LEEP procedure or a cold-knife cone biopsy of the cervix.

Nearly half of a million US women each year have an outbreak of genital warts, which are caused by HPV 6 or 11. While genital warts do not cause additional morbidity, they can be stigmatizing, which can affect mental health status, especially in young women.

1.4 million women will be diagnosed with low grade cervical dysplasia. This brings the total number of women annually with cervical HPV disease to just under 1.75 million. Each of these women was faced with the emotionally trying news of an abnormal pap test, a colposcopy with biopsy that are done without local or general anesthesia, waiting to hear whether or not they have cancer and even if they don't have cancer, finding out that at least one third of their cervix will have to be removed, which may have consequences for carrying a pregnancy to term.

The cost of \$7 billion dollars does not extend to the potential costs of neonatal intensive care should a women have cervical instability causing preterm labor and birth.

All types of HPV cancers are on the rise, some disproportionately affecting different racial/ethnic minorities. Unfortunately, there is no routine screening recommended for these other HPV-associated cancers, so vaccination is the best and only prevention strategy.

This next section will focus on HPV vaccine recommendations.

All available prophylactic HPV vaccines are made from virus-like particles. The vaccine does not contain any virus DNA and therefore it is non-infectious and cannot cause actual disease or cancer. HPV vaccines produce a better immune response than an HPV infection.

Here is a side-by-side comparison of the currently available vaccines.

Currently there are three available HPV vaccines, each are listed here. Each are administered as a 3 dose series.

This chart demonstrates the HPV types included in each vaccine. The bivalent vaccine targets cancer causing HPV types 16 and 18, which cause approximately 66% of cervical cancers. Quadrivalent vaccine, targets types 16 and 18, as well as types 6 and 11 that can cause genital warts. The 9-valent HPV

vaccine, targets the same 4 types as the quadrivalent and 5 additional cancer causing types the cause approximately 15% of cervical cancers.

No clinical trial data are currently available to demonstrate efficacy for prevention of oropharyngeal or penile cancers. However, because many of these are attributable to HPV16, the HPV vaccine is likely to offer protection against these cancers as well.

Now we will discuss the current HPV vaccine recommendations

Both girls and boys can start the HPV vaccine series at age 9

Ideally, preteens should finish the series by their 13th birthday

Girls age 13-26 years old and boys age 13-21 years old who haven't started or finished HPV vaccine series should also be vaccinated.

HPV vaccination is routinely recommended by the ACIP for both females and males at ages 11-12 years.

Females:

Either bivalent HPV vaccine (Cervarix) or quadrivalent HPV vaccine (Gardasil) recommended for girls at age 11 or 12 years for prevention of cervical cancer and precancer

Also for girls 13 through 26 who haven't started or completed series

Quadrivalent HPV vaccine (Gardasil) also for prevention of vaginal, vulvar, and anal cancers, as well as genital warts.

Males:

Quadrivalent HPV vaccine (Gardasil) recommended for boys at age 11 or 12 years for prevention of anal cancer and genital warts

Also for boys 13 through 21 who haven't started or completed series

Young men, 22 through 26 years of age, may get the vaccine

Teen boys through age 26 who identify as gay or bisexual and haven't started or completed series should be vaccinated

Concerning interchangeability, ACIP states that:

This next section will focus on HPV vaccine safety.

Vaccines continue to be monitored for safety after they are licensed. Following licensure, CDC and FDA primarily use two systems to monitor and evaluate the safety of vaccines, including HPV vaccines.

The Vaccine Adverse Event Reporting System, or VAERS, collects and analyzes reports of adverse events that happen after vaccination, including HPV vaccination

The Vaccine Safety Datalink or VSD is a network of healthcare organizations across the United States that scientists use to conduct studies evaluating the safety of vaccines, including HPV vaccines. These studies determine if possible side effects are actually associated with vaccination

These systems can detect rare adverse events that were not identified during pre-licensure clinical trials. Vaccine safety monitoring and other vaccine safety activities help ensure that

U.S. vaccines are held to very high standards of safety.

80 million doses of HPV vaccine distributed in US between June 2006 through September 2015

Most commonly reported non-serious possible side effects are:

Pain, redness, or swelling in the arm where the shot was given

Fever

Headache or feeling tired

Nausea

Fatigue

Dizziness

Brief fainting spells and related symptoms (such as jerking movements) can happen after any medical procedure, including vaccination. Sitting or lying down for about 15 minutes after a vaccination can help prevent fainting and injuries caused by falls.

A VSD RCA study found elevated non-significant risk of Venous Thromboembolism (VTE) among females ages 9-17 years¹

Follow-up VSD study; preliminary study results using self-controlled case series method found no increased risk of VTE following 4vHPV among persons aged 9-26 years

A non-CDC study found no association between 4vHPV vaccination and autoimmune diseases

Study conducted at two health plans among 189, 629 vaccinated females aged 9-26 years in the US

The VSD is conducting a study looking more in-depth at autoimmune disease following HPV4. This study will include longer follow-up of exposed cases than previously published studies on this topic

A non-CDC study found HPV vaccination may be associated with syncope on the day of vaccination and skin infections 1-14 days after vaccination

In 2011, the Institute of Medicine (IOM) reviewed published and unpublished studies of the safety of eight vaccines, including HPV vaccine, and published a report, Adverse Effects of Vaccines: Evidence and Causality. This report concluded that:

Anaphylaxis can be causally related to HPV vaccine, but HPV is one of many vaccines for which a causal relationship to anaphylaxis exists.

Syncope can be associated w/ any injected vaccine, including HPV vaccine

Before it was licensed by the FDA, the safety of 9vHPV was evaluated in more than 15,000 male and female volunteers in seven pre-licensure studies. The safety findings for 9vHPV from pre-licensure studies show it has a similar safety profile to 4vHPV.

The main findings from these studies are:

The most common side effect reported was pain, swelling, and redness in the arm where the shot was given.

These mild side effects may occur more often after 9vHPV vaccination than after 4vHPV. Women and girls who received 9vHPV reported higher rates of swelling and redness where the shot was given than those who received 4vHPV. Reports of swelling and redness also increased with each following dose for those receiving 9vHPV.

This next section will focus on the impact of HPV vaccine.

HPV vaccine impact

Post licensure evaluations are important to evaluate real world effectiveness of vaccines Population impact against early and mid outcomes have been reported:

HPV prevalence

Australia, Norway, Denmark, Sweden, UK, US

Genital warts

Australia, New Zealand, Denmark, Sweden, Germany, Quebec, US

Cervical lesions

Australia, British Columbia, Denmark, Sweden, US ct monitoring The CDC used data collected from the National Health and Nutrition Examination Survey (NHANES) to determine prevalence of HPV infection before and after HPV vaccine introduction. HPV prevalence declined by 64% after vaccine introduction in 14-19 year olds. This is the first age group we'd expect to see an impact with. HPV prevalence declined by 34% among women age 20 to 24. The study also showed that the vaccine is very effective which is what was seen during the prelicensure clinical trials.

Since the HPV vaccine debut in 2006, prevalence of vaccine-targeted types of HPV dropped from 11.5 percent to 4.3 percent among girls age 14 to 19, and from 18.5 percent to 12.1 percent among women age 20 to 24 Impact of HPV vaccination in Australia

Proportion of Australian born females and males diagnosed as having genital warts at first visit, by age group, 2004-11

Systematic Review and Meta Review of 20 studies in 9 high income countries In countries with >50% coverage, among 13-19 year olds

HPV 16/18 prevalence decreased at least 68%

Anogenital warts decreased by ~61%

Evidence of herd effects

Some evidence of cross protection against other types

-Analysis: Population-Level Impact of HPV Vaccination

A question we are asked often is, “how long will the protection provided by the HPV vaccine last?” Studies suggest that vaccine protection is long-lasting.

In 2010, a review of HPV vaccines was conducted regarding the long-term protection against cervical infection with the human papillomavirus. At that time the vaccines were shown to provide protection against persistent cervical HPV 16/18 infections for up to 8 years, which was the maximum time of research follow-up at that point. More will be known about the total duration of protection as research continues but at this time there is no evidence of waning immunity such has been seen with the meningococcal conjugate vaccine which now requires a second dose.

This information will be updated as additional data regarding duration of protection become available.

Romanowski B. Long term protection against cervical infection with the human papillomavirus: review of currently available vaccines. *Hum Vaccin.* 2011 Feb;7(2):161-9.

This next section will focus on HPV vaccine coverage.

The strong coverage rates for Tdap vaccine demonstrate that not only are most preteens and teens getting to the doctor, but they are also getting at least one of the recommended adolescent vaccines.

Had HPV vaccine been administered during health care visits when another vaccine was administered, vaccination coverage for at least one 1 dose could have reached 91.3% by age 13 years for adolescent girls born in 2000.

High HPV vaccination coverage with existing infrastructure and health-care utilization is possible in the United States. Taking advantage of every health-care encounter, including acute-care visits, to assess every adolescent’s vaccination status can help minimize missed opportunities. Potential strategies include using vaccination prompts available through electronic health records or checking local and state immunization information systems to assess vaccination needs at every encounter. Series completion also can be promoted through scheduling appointments for second and third doses before patients leave providers’ offices after receipt of their first HPV vaccine doses and with automated reminder-recall systems.

This next section focuses on strategies to improve HPV vaccine recommendations and conversations with patients and their parents

Why is this happening? Providers don't think that parents consider HPV vaccine to be as important as other vaccines. But parents rate HPV vaccine importance just as high as all of the other vaccines for children and adolescents.

Studies consistently show that a strong recommendation from you is the single best predictor of vaccination for any vaccine, including HPV vaccine. In the 2014 NIS-Teen

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 a barrier by mothers

Successful recommendations group all of the adolescent vaccines Recommend the HPV vaccine series the same way you recommend the other adolescent vaccines Moms in focus groups who had not received a doctor's recommendation stated that they questioned why they had not been told or if the vaccine was truly necessary Many parents responded that they trusted their child's doctor and would get the vaccine for their child as long as they received a recommendation from the doctor

Clinicians can give a strong and effective

Sophia is due for three vaccines today. These will help protect her from meningitis, HPV cancers, and pertussis. We'll give those shots at the end of the visit.

HPV vaccine recommendation by announcing:

Parents may be interested in vaccinating, yet still have questions However, many parents didn't have questions or concerns about HPV vaccine A question from a parents 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 If main concern is "Why does my child need this vaccine" try saying:

HPV vaccine is very important because it prevents cancer.

I know we'd like to protect Maureen from cancer and I'd feel better if she got her first dose of the HPV vaccine series today.

A few parents will be hesitant. Here's a detailed approach to the hesitant parent, based on childhood vaccination work by Vax Northwest. The steps include: Ask Acknowledge Advise

In short... Ask about their concern Acknowledge that you know they want to keep their child safe and healthy in every way....and so do you. And then advise them on why you recommend getting HPV vaccination now

If they still refuse the vaccine, REMEMBER:

Declination is not final. The conversation can be revisited

End the conversation with at least 1 action you both agree on.

Because waiting to vaccinate is the risky choice, many pediatricians ask the parent to sign a Declination Form

If main concern is "My daughter will wait for marriage/won't be exposed", try saying:

HPV is so common that almost everyone will be infected at some time.

When your daughter marries, she could catch HPV from her husband. He might have been infected before he ever met her.

If main concern is "why now, let's wait until child is older," try saying:

HPV vaccination provides the best protection when given at age 11 or 12, which is why I recommend starting the HPV vaccine series today.

If main concern is "HPV vaccine will be a green light for sex," try saying:

Studies have shown that getting the HPV vaccine doesn't make kids more likely have sex, or to have sex at a younger age.

If main concern is "would you give it to your child," try saying:

Yes, I gave it to my child (or grandchild, etc) because I think preventing cancer is very important.

If main concern is “side effects,” try saying: Vaccines, like any medication, can cause side effects. With HPV vaccine most are mild, primarily pain or redness in the arm. This should go away quickly.

HPV vaccine has not been linked with any serious or long-term side effects.

If main concern is “possible effects on fertility,” try saying:

There is no data to suggest that getting HPV vaccine will have an effect on future fertility.

However, persistent HPV infection can cause cervical cancer and the treatment of cervical cancer can leave women unable to have children.

Even treatment for cervical pre-cancer can put a woman at risk for problems with her cervix during pregnancy causing preterm delivery or problems.

Before leaving the exam room, remind parents when t

To work, Robert needs the full HPV vaccine series, so . . .

When you check out, please make sure to make an appointment for about 6 weeks from now for the next shot, and put that appointment on your calendar before you leave the office today!

These prompts may come from nursing personnel –and can come in many forms.

Another alternative is to have the EHR give you a pop-up message, but these are easy to click through, so it’s usually better to combine an EHR prompt with some other form of nagging.

If your office does not want to use standing orders, you should have something in place to remind the person who is supposed to order the vaccine.

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The verification code for this course is Key2HPV

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HPV VACCINE IS CANCER PREVENTION And YOU are the key!