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Human Papillomavirus (HPV) is a common sexually transmitted infection (STI). It is estimated that, because the virus is easily transmitted by skin-to-skin genital contact, 80% of sexually-active college students will become infected with it before graduation.

The good news is that, for most people, HPV infection occurs without symptoms or complications, and most (9 out of 10) HPV infections are cleared by the body's own immune system within two years (much as your immune system clears a common cold). However, in a some people, the viral infection persists and can cause problems.

### Risks associated with infection

Over 40 different subtypes of HPV (including over 150 strains) infect the human genitalia. These are divided into two main groups, low-risk and high-risk. In this case, "risk" refers to the likelihood that the virus will predispose someone to developing pre-cancerous changes within the infected tissues.

**Low-risk HPV subtypes** (6 and 11 are most common) tend to infect the scrotum, penis, anal area, and vulva. If these subtypes cause symptoms, they are typically in the form of genital warts or "papillomas," which are non-cancerous tumors. The warts are fleshy, painless growths that may be small or large, single or multiple. Warts are not dangerous but they can be potentially uncomfortable and/or unsightly.

**High-risk HPV subtypes** (16 and 18 are most common) tend to infect the cervix and occasionally the anal area. If not cleared by the body's immune system, they can cause pre-cancerous changes of these tissues. Usually the infected person has no symptoms at all, so regular check-ups are important. If left undetected, changes within the cells can cause cancer. 90% of cervical cancers are caused by HPV, as are most cancers of the vulva, vagina, anus, penis and oropharynx (which includes the back of the throat, base of the tongue, and tonsils)

### Detection

Because most sexually-active people will become infected with at least one strain of HPV at some point and not experience any problems as a result, routine testing for the presence of HPV is not recommended. It is, however, important to watch for the rare problems that the HPV can cause (i.e., warts and/or cell changes).

For women, routine gynecological check ups, with Pap smears every three years are the best way to detect changes to the cervix that may result



*HPV is easily transmitted during unprotected oral, anal, or vaginal sex*

from persistent HPV infection. In fact, regular Pap tests are extremely effective in preventing cervical cancer, for they detect changes early on before the disease can progress.

For men, a clinician can look for the presence of genital warts. Unfortunately, there is no routinely-recommended screening test for men, but current studies are evaluating the efficacy of Pap tests of the anal area to look for high-risk HPV in those who engage in receptive anal intercourse.

Remember, most people infected with HPV will have no symptoms and no abnormalities on the Pap tests. Of those who do have symptoms or an abnormal test, the vast majority will resolve (heal) on their own within two years.

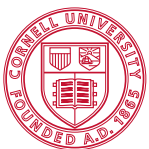
### Treatment

Genital warts can be treated by a variety of methods, including the use of special medications, the application of a prescription cream, or freezing. All of these treatments are available at Cornell Health and can be discussed with your clinician.

Cervical changes from HPV may require more frequent monitoring with Pap tests and colposcopy. Colposcopy is a way to more thoroughly evaluate the cervix by looking at it through a magnifier and taking small tissue samples for closer analysis.

### Prevention

**Safer sex practices:** Because HPV is transmitted by skin-to-skin contact of the genitals and not exclusively through penetration, prevention can be challenging. Condom use can significantly decrease the likelihood of infection of the cervix or anus, but it does not fully protect other genital areas (e.g., the labia, scrotum, perineum, etc.) that may experience skin-to-skin contact. Condom use may reduce your risk of acquiring additional types of HPV.



**Vaccination:** Gardasil-9 is a vaccine that protects against nine different strains of HPV, including the strains most likely to cause cancer and genital warts. The U.S. Centers for Disease Control and Prevention (CDC) has stated unequivocally that Gardasil-9 is effective and safe.

Who should be vaccinated? While the HPV vaccine is commonly known to prevent cervical cancer, everyone can benefit from its protection, regardless of their biological sex or the sex of their partners.

Vaccinated heterosexual and bisexual men can help protect female partners from exposure to the strains of HPV linked with cervical cancer. However, the vaccine can help all men protect partner of any sex from anal and oral cancers.

Women who get vaccinated not only reduce their own risk of HPV infection but also reduce the risk of exposure for partners of any sex with whom they have sexual contact. HPV does not discriminate, and vaccination is a safe and effective way to protect yourself, as well as your current, and future partners.

Cost and timing of vaccination: Gardasil-9 is available to all students and is given in a 3-shot regimen over several months. Cornell's Student Health Plan (SHP) covers the cost of vaccination for those 26 years of age and younger. Most private insurance plans cover the HPV vaccine as well. Contact your insurance provider to be certain of your coverage. Additional information about the HPV vaccine is available at: [health.cornell.edu](http://health.cornell.edu) [search Gardasil].