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Many cancer cases have been [directly linked to the Human Papilloma Virus (HPV).](https://www.cdc.gov/cancer/hpv/statistics/cases.htm)

* 91% of cervical cancer
* 91% of anal cancers
* 75% of vaginal cancers
* 70% of oropharyngeal (head and neck) cancers
* 69% of vulvar cancers
* 63% of penile cancers

Due to the direct connection of HPV to cancer, scientists and public health authorities have a vested interest in protecting individuals from contracting HPV. One of the best ways to prevent the spread of HPV is through vaccination.

The HPV vaccine is relatively recent and has made huge strides toward decreasing the incidence of HPV. Since its introduction in 2006, new HPV [cases have decreased](https://www.cdc.gov/vaccines/pubs/pinkbook/hpv.html) by 86% in women aged 14 to 19 and 71% in women between the ages of 20 and 24. The HPV vaccine not only helps prevent the contraction of HPV but also helps decrease the occurrence of cervical, vulvar, vaginal, penile, head and neck, and anal cancer cases.

**A Quick History of Vaccines**

The earliest attempt to prevent the spread of deadly viruses was recorded in the [15th century](https://www.who.int/news-room/spotlight/history-of-vaccination/a-brief-history-of-vaccination#:~:text=Dr%20Edward%20Jenner%20created%20the,cowpox%20were%20immune%20to%20smallpox.&text=In%20May%201796%2C%20English%20physician,the%20hand%20of%20a%20milkmaid.) by intentionally exposing individuals to diseases like smallpox. As time and centuries passed, the need to prevent illness grew, and curiosities turned into groundbreaking discoveries.

In 1774, [Benjamin Jetsy](https://www.who.int/news-room/spotlight/history-of-vaccination/a-brief-history-of-vaccination#:~:text=Dr%20Edward%20Jenner%20created%20the,cowpox%20were%20immune%20to%20smallpox.&text=In%20May%201796%2C%20English%20physician,the%20hand%20of%20a%20milkmaid.) discovered that individuals exposed to cowpox were immune to the smallpox virus. Building on this discovery, [Dr. Edward Jenner](https://www.who.int/news-room/spotlight/history-of-vaccination/a-brief-history-of-vaccination#:~:text=Dr%20Edward%20Jenner%20created%20the,cowpox%20were%20immune%20to%20smallpox.&text=In%20May%201796%2C%20English%20physician,the%20hand%20of%20a%20milkmaid.), an 18th Century physician, created a vaccine that successfully helped prevent the spread of smallpox using the cowpox virus. Thus, vaccines were born.

With his discovery in 1796, Dr. Jenner paved the way for the continued study and development of vaccinations. Vaccinations have been developed to help combat viruses like smallpox, polio, the flu, HPV, and many other viruses.

**The HPV Vaccine: Gardisil-9**

There are nearly [40 known strains](https://www.cdc.gov/vaccines/pubs/pinkbook/hpv.html#safety) of HPV that specifically affect the genital areas of men and women. Not all of them lead to cancer. Most of the HPV strands are not harmful and are generally cleared from the body quickly with the help of our immune system.

There are, however, 14 strains directly linked to pre-cancer and cancerous cell changes: [HPV 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 66 and 68](https://www.cancer.gov/about-cancer/causes-prevention/risk/infectious-agents/hpv-and-cancer). HPV 16 has been shown to be the culprit in nearly [50 percent](https://www.cdc.gov/vaccines/pubs/pinkbook/hpv.html#:~:text=Type%2016%20is%20the%20cause,of%20all%20HPV%2Dassociated%20cancers.) of diagnosed cervical cancer cases and [90 percent](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6162868/) of head and neck cancer cases.

While screenings for cervical cancer are well developed and implemented into cancer prevention practices, there are no screening protocols specific to head and neck cancer detection.

Due to the direct connection of HPV to cancer and the lack of early screening tools for head and neck cancer, the HPV vaccine is imperative in HPV and cancer prevention.

The HPV vaccine was specifically developed to prevent the contraction of seven HPV strains identified as High-Risk types: [HPV 16, 18, 31, 33, 45, 52, and 58.](https://www.merckvaccines.com/gardasil9/?utm_source=google&utm_medium=cpc&utm_campaign=Gardasil%20HCP_Branded_BRND_NA_Core%20OVLP_EDUC_EXCT_MULTI_2023&utm_term=gardasil%20vaccine&utm_content=Brand%20Name&gclsrc=aw.ds)  The vaccine also includes protection against HPV strains [6 and 11](https://www.merckvaccines.com/gardasil9/?utm_source=google&utm_medium=cpc&utm_campaign=Gardasil%20HCP_Branded_BRND_NA_Core%20OVLP_EDUC_EXCT_MULTI_2023&utm_term=gardasil%20vaccine&utm_content=Brand%20Name&gclsrc=aw.ds). Both strains are considered Low-Risk but are linked to genital warts and abnormal changes in cervical cells. Altogether, there are nine HPV strains that the vaccine targets, hence the name, [Gardasil-9](https://www.merckvaccines.com/gardasil9/?utm_source=google&utm_medium=cpc&utm_campaign=Gardasil%20HCP_Branded_BRND_NA_Core%20OVLP_EDUC_EXCT_MULTI_2023&utm_term=gardasil%20vaccine&utm_content=Brand%20Name&gclsrc=aw.ds) (aka nine-valent Gardasil).

[Gardasil-9](https://www.immunize.org/askexperts/experts_hpv.asp) is the only HPV vaccine currently being made and distributed for use in the United States.

**Who Should Receive the Vaccine**

According to the [Food and Drug Association (FDA)](https://www.fda.gov/media/90070/download), Gardasil-9 is recommended and approved for use in ages nine through 45. Nine years old seems exceptionally young to begin HPV vaccinations. However, the older you are, the more likely you have already been exposed to certain strains of HPV. Therefore, vaccination prior to exposure (before sexual activity) is the most effective way to help protect against the most dangerous strains of HPV. Receiving the HPV vaccine AFTER exposure to the virus decreases your chances of being fully covered.

Despite the FDA’s approval of Gardasil-9 for ages nine through 45, the vaccine is not necessarily recommended for everyone over the age of 26. Sexual behavior and sexual orientation are often considered when deciding to be vaccinated over the age of 26. It will be up to you and your healthcare provider to determine if receiving the HPV vaccine over 26 benefits you.

Gardasil-9 is given as a series. The number of vaccines given to complete the series varies among age groups. The Advisory Committee on Immunization Practices (ACIP) recommends the following age-based vaccine schedule.

* [***11-14 year-olds***](https://www.cdc.gov/vaccines/vpd/hpv/public/)***:*** It is recommended that pre-teens and teens start their HPV series between the ages of 11 and 14. Only two vaccines are needed for this age group to complete the series. After the first vaccine is given, the second dose should be given no earlier than five months.
* [*15-26 year-old****s***](https://www.cdc.gov/vaccines/vpd/hpv/public/)***:*** Three vaccinations are required to finish the series for those between the ages of 15 and 26.

**HPV Vaccine Safety**

The HPV vaccine is [considered very safe,](https://www.cdc.gov/vaccines/pubs/pinkbook/hpv.html#safety) and severe reactions or events following the vaccine are rare. Reactions and adverse events reported to healthcare providers must be documented in the Vaccine Adverse Event Reporting System (VAERS). VAERS is an online database that tracks the adverse effects of vaccines to monitor the vaccine's safety. The most common side effects of the HPV vaccine are redness, swelling, and mild pain around the site where the vaccine was given. Severe allergic reactions (aka [anaphylaxis](https://www.ncbi.nlm.nih.gov/books/NBK482124/)) from the HPV vaccine have been reported but are rare.

**Who Should Not Receive the Vaccine**

Anyone with a [previous severe allergic reaction to the HPV vaccine](https://www.cdc.gov/vaccines/pubs/pinkbook/hpv.html#safety) should not receive any other doses. Signs and symptoms of a severe allergic reaction are generally an itchy throat, trouble breathing, and hives all over the body. Anaphylaxis is an emergency and should be treated immediately in the Emergency Room (ER).

Individuals should not receive the vaccine if they have had a previous anaphylactic reaction to the following:

* Yeast (baker’s yeast)
* Latex
* Other components of the HPV vaccine

While redness, swelling, and pain around the injection site are uncomfortable, they are not considered severe allergic reactions. They can be managed at home with a cool pack to the area and Tylenol for pain or fever. Always consult your doctor to determine the best way to manage pain following your vaccines.

It is recommended that [pregnant women](https://www.cdc.gov/vaccines/pubs/pinkbook/hpv.html#safety) wait until after delivery to start or finish the HPV vaccine series. The vaccine is considered safe to take while breastfeeding. However, it is best to discuss with your doctor to decide when to receive the vaccine while breastfeeding.

**Things to keep in mind**

Remember that the HPV vaccine does not replace the need for annual exams and [regular HPV/pap smear screening](https://www.cdc.gov/vaccines/pubs/pinkbook/hpv.html#safety). It is still essential for women to receive regular HPV screenings and pap smears to detect and monitor any abnormal cell changes and growth.

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