



*SPOTlight:* HPV is a highly prevalent virus in the United States and its vaccine is not only effective, but completely safe.

### What is HPV?

- Human papillomavirus (HPV) is a virus estimated to be the most common sexually transmitted infection in the USA, infecting nearly every sexually active person during their lifetime [1].
- While most infections do not cause symptoms (asymptomatic), HPV is the leading cause of several different cancers, estimated to be responsible for more than 90% of all cervical and anal cancers [3].
- There are more than 100 different types of HPV, at least 14 of which are known to cause cancer [2].
- HPV infections occur most commonly through sexual contact with an infected individual. Penetrative sex is not required for transmission [2].
- In the USA alone, HPV infection results in an estimated 11,000 cases of cervical cancer per year, with more than 4,000 deaths among women [4].
- HPV is responsible for more than 70% of all oropharyngeal (back of the throat) cancers [15].

### What is the HPV vaccine?

- **Gardasil 9** is currently the **only licensed vaccine available in the USA** [5].
- Gardasil 9 was approved by the FDA for public administration in December of 2014 following extensive clinical trials, in which the vaccine was found safe, effective, and with minimal risk of serious side effects [6].
- Continued safety monitoring of Gardasil 9 collected between December 2014 and December 2017 found **no additional safety concerns beyond those discovered in clinical trials** [5].
- The HPV vaccine contains **no live virus** and thus **is not infectious** [7].
- In addition to water and the actual vaccine, the administration contains several components to stabilize and enhance the efficacy of the vaccine. Aluminum adjuvants (stimulators of the immune response) have been tested and approved by the FDA on the basis of efficacy and safety repeatedly for over 70 years [7-11].
- The remaining ingredients, sodium chloride, L-histidine, polysorbate 80, and sodium borate are all common vaccine additives used in a variety of vaccines and have repeatedly been proven to be safe [7, 9, 10].

### Is HPV preventable?

- Trials leading to the approval of Gardasil 9 have shown it to be nearly 100% effective in preventing cancers caused by all target viruses [6, 7, 12].
- Compared to the period before vaccination, infections from two more dangerous types of HPV “...decreased by 83% among girls aged 15–19 years and by 66% among women aged 20–24 years at up to 8 years after vaccination began.” [13].
- The HPV vaccine provides protection to a person who has not previously been infected with the virus, but does not cure those who already have. Therefore, the vaccine is most effective when administered **before patients become sexually active**. For this reason, doctors recommend administration at age 11 [6, 13].
- Vaccination may not be advisable for people with a compromised immune system. Vaccinating the healthy people around them can dramatically reduce the chance of these people encountering the virus [14].
- Evidence suggests that Gardasil 9 is effective for at least 6 years, with no decrease in protection noticeable over time. Gardasil, the previous HPV vaccine in use since 2006, has proven to be safe and effective more than 10 years after administration [13].

## References and additional resources

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*The Science Policy Outreach Task Force (SPOT) compiled this document. SPOT is a nonpartisan organization of Northwestern University researchers focused on advocating for science, evidence-based reasoning, and scientifically-sound policy to the voting-aged public and policymakers. This document was created in collaboration with the University of Chicago. This document does not represent an official statement by Northwestern University or the University of Chicago. It does not contain an exhaustive summary of all scientific issues, but rather is intended to provide background information relevant to the topic.*

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