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# Benefits of HPV Vaccination in Adolescent Males

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## Abstract

HPV is the most common sexually transmitted infection in the United States, affecting approximately 75-80% of young adults at some point in their lives, and it is also known to be directly related to several forms of cancer including cervical, vaginal, penile, anal, oral, and oropharyngeal cancer. Vaccination against several high-risk strains of HPV first became available in the U.S. in June of 2006 and has been proven to be effective in creating antibodies against several strains of high-risk HPV, potentially decreasing and preventing more than 30,000 new cases of HPV related cancers each year. Despite this fact, HPV vaccination rates remain low. Although vaccination is recommended for both female and male adolescents, male vaccination rates remain lower than female, likely due to the fact that HPV is most commonly associated with cervical cancer. However; evidence shows that among certain male populations, such as homosexuals, HPV related cancer rates may be as high in males as cervical cancer rates in females, demonstrating the potential impact of HPV vaccination in males. Lack of knowledge, and a perception of a lack of necessity for male vaccination are substantial barriers for achieving targeted vaccination rates. There is evidence demonstrating that proper education, or simply having meaningful conversation with patients, can help to increase patient compliance of receipt of HPV vaccination. Additionally, there is an abundance of unverified information attempting to link HPV vaccination to severe adverse reactions. There is minimal evidence to support such a correlation, but some studies do suggest it. A need for further investigation is warranted.

## Introduction

- Over the past decade or so, people have become increasingly hesitant to receive many recommended vaccinations. There are several causes related to this hesitation; increasing number of recommended vaccines, public misconception, and just poor understanding of vaccination and/or the diseases these vaccines are preventing.
- There are approximately 120-150 different strains of HPV, some more virulent than others.
- The more virulent strains are known to cause genital warts and several types of cancer in both men and women later in life.
- According to the CDC, each year about 42,700 new cases of cancer are found in parts of the body where human papillomavirus (HPV) is often found. It is estimated that HPV causes about 33,700 of these cancers.

Number of HPV-Associated Cancer Cases per Year

Cancer site	Average number of cancers per year in sites where HPV is often found (HPV-associated cancers)	Percentage probably caused by any HPV type <sup>a</sup>	Number probably caused by any HPV type <sup>a</sup>
Cervix	11,866	91%	10,751
Vagina	846	75%	635
Vulva	3,934	69%	2,707
Penis	1,269	63%	803
Anus <sup>b</sup>	6,530	91%	5,957
Female	4,333	93%	4,008
Male	2,197	89%	1,949
Oropharynx	18,226	70%	12,885
Female	3,412	63%	2,160
Male	14,814	72%	10,725
<b>TOTAL</b>	<b>42,671</b>	<b>79%</b>	<b>33,737</b>
Female	24,391	83%	20,260
Male	18,280	74%	13,477

(Centers for Disease Control and Prevention, 2016)

## Statement of the Problem

- It is well established and accepted that HPV can lead to cervical cancer in females later in life. Consequences in males who have HPV are not as known or accepted by much of the public. Parents of adolescent male patients tend to be more hesitant in agreeing to vaccinate their male children.
- Additionally, there are many non-verified reports across social media and the internet stating that the HPV vaccine may cause different autoimmune diseases such as Guillain Barre Syndrome or other severe conditions such as postural orthostatic tachycardia syndrome (POTS)
- It is the responsibility of health care providers to properly educate patients and parents of patients whom are recommended to receive vaccination against HPV and prevent potentially severe complications later in life. Unfortunately, this is often not what actually happens

## Research Questions

- In adolescent male patients, does vaccination against human papilloma virus (HPV) significantly decrease incidence of several types of cancer later in life, compared to adolescent males who have not received an hpv vaccine?
- Does vaccination against Human Papilloma Virus cause potentially severe adverse reactions, such as autoimmune diseases?
- Can adequately educating patients, or a patient's caregiver, lead to an increase in compliance in receiving HPV vaccination in male adolescents?
- you want to emphasize.

## Literature Review

- There are more than 150 known strains of HPV. Only a few are virulent, these are spread through sexual contact and cause genital warts and can lead to some types of cancer (Centers for Disease Control and Prevention, 2016)
- HPV vaccines were first FDA approved in 2006. In the U.S. today there are two HPV vaccines available. They have a similar efficacy, but one only covers two strains of HPV and the other covers nine strains. (DiMario, 2015)
- in developing countries incidences of cervical cancers are far more prevalent than other cancers caused by HPV due to lack of routine screening, but in the developed world where routine screenings are performed, rates of cancers in men related to HPV are estimated to be much closer to rates of cervical cancer caused by HPV. (Palefsky, 2010)
- One meta-analysis revealed a prevalence of 49% of any type of human papillomavirus and 35% of high-risk human papillomavirus in all men within the studies reviewed, but men who have sex with other men are more likely to be infected with high-risk HPV. (Rodriguez-Alvarez, 2018)
- One meta-analysis evaluates nearly 500,000 cases and identifies no correlation between autoimmune disorders and the HPV vaccine. (Genovese, 2018)

## Discussion

- it is estimated that in the United States alone, 14 million persons are infected with HPV annually, and 79 million persons have prevalent infection.
- Since the initial release of the first HPV vaccine in 2006, the vaccine (Gardasil) has been updated to prevent 9 of the more virulent strains of HPV rather than 4 which is what the initial vaccine prevented. Another vaccination option is the bivalent HPV vaccine (Cervarix) which only prevents the high-risk HPV strains 16 and 18, however it may be more effective in preventing cancers related to these specific HPV strains.
- According to the CDC, only 49% of adolescents between the ages of 13 and 17 were up to date with their HPV vaccination schedule. This is well short of the goal of 80% vaccination amongst this age group.
- Increasingly alarming to the information above is the fact that male vaccination rates are even lower than the already low rates in female patients.
- Studies have shown the best seroconversion rates are among adolescents between 11 and 16 years of age and before first sexual encounter.
- Men who have sex with other men are much more likely to be infected with high-risk HPV.
- There is very minimal evidence to suggest that HPV vaccination can cause any autoimmune diseases such as Guillain-Barre syndrome. The majority of the evidence shows no increased risk.
- It is the responsibility of a healthcare provider to provide his/her patients with the most up to date, significant evidence regarding all vaccinations.
- Long term side effects as well as prolonged seroconversion must be evaluated to truly gauge the efficacy, safety, and impact HPV vaccination will truly have.

## Applicability to Clinical Practice

- This scholarly project was intended to inform and educate parents and clinicians of the importance of HPV vaccination in adolescent male patients, distinguish fact from fiction regarding adverse reactions caused by HPV vaccination, and to identify barriers causing skepticism and hesitancy in receiving HPV vaccination. With society's growing concerns regarding vaccinations, it is increasingly important to inform patients with the most accurate and up to date information about vaccines.
- With increasing education about HPV and HPV vaccination, we can potentially improve these vaccination rates and in doing so, decrease rates of HPV related cancers. Hopefully the information provided in scholarly project will aid clinicians to provide patients and parents with the necessary information to make informed decisions on whether to vaccinate their children against Human Papilloma Virus.

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