



## The HPV Vaccine: Preventing Cancer Beats Treating It

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You don't have to be an oncologist to know that fighting cancer is tough. Nearly 1.7 million Americans will be [diagnosed](#) with cancer this year, and about 600,000 will die from the disease. But here's some good news: overall U.S. cancer deaths have been in a [steep decline](#) for over 25 years. Much of this reduction is tied to a decline in smoking, along with early detection of some cancers (e.g. colon), and more effective cancer therapies. While treatments against some particular types of cancer have advanced greatly, it's still a disease no one wants to face. Fighting an opponent that you can never be really sure you've defeated challenges both the physical strength and mental fortitude of those who've been diagnosed. I know because I've been there.

Why put patients through painful surgeries, nausea-inducing chemo, and/or energy-sapping radiation treatments if you don't have to? The majority of cancers, unfortunately, cannot presently be prevented, but some can. The primary example is cancers caused by human papilloma viruses (HPV). There are a large number of these sexually transmitted viruses (more than 150 types), but only a few strains (types 16 and 18) are responsible for the majority of HPV cancers.

These viruses are surprisingly widespread. An estimated *79 million* Americans have been infected by HPV. About *14 million* more Americans will be infected this year. That's a huge number [compared](#) to new cases of other sexually transmitted diseases such as chlamydia (1.6 million), gonorrhea (469,000), or syphilis (about 30,000). The exact details of how transmission occurs with HPV are [still unclear](#). HPV is far and away the most common sexually transmitted infection, and about [80 percent of sexually active people](#) will become infected with this virus sometime in their lives.

Most people's immune systems successfully fight off the virus, but those who can't are at risk of developing a number of different cancers. These include cervical, vaginal, and vulvar cancers in women, penile cancers in

men, and anal and oral (tonsil, base of the tongue, and back of the throat) cancers in both sexes.



Hokusai's The Great Wave (Re-interpreted by Josh and Stewart Lyman)

Let's focus on this last category – oral cancers (these belong to the broader category known as head and neck cancers). Despite the fact that cancer death rates have been [dropping](#), the [incidence](#) of HPV positive oral cancers in the U.S. **increased** between 1988 and 2004 by a staggering 225 percent, and it's still climbing. During that same time interval, the incidence of HPV negative oral cancers (that is, those NOT caused by the virus) **dropped** by 50 percent.

It's expected that the annual number of HPV positive oral cancers will surpass the number of cervical cancers (which are mostly caused by HPV) sometime around 2020. About 7 percent of adult Americans have [oral HPV infections](#) the majority of which will not lead to cancer. And for those who go on to develop cancer, the appearance of these tumors can take decades. Because these tumors are not painful early on, they're most often diagnosed at stages 3 or 4 (i.e. after they've spread). Both sexes are not affected equally; [four times](#) as many men will develop HPV positive oral cancers as women. That ratio may increase to as many as seven times by 2030.



I was one of these men. I was diagnosed in 2016 with a malignant HPV 16 positive tonsil tumor. I'm sharing my story for one simple reason: I don't want anyone else go through what I did. I was lucky that my cancer was caught fairly early, and after treatment my prognosis going forward is good. My doctors, though, offer no guarantees. There are no screening tests yet to detect HPV positive oral cancers that can replicate the success of the Pap test used for detecting cervical cancer. Research to develop such a screening test is ongoing.

### Vaccines To The Rescue

Preventing viral infections from taking hold can eliminate HPV as a cause of human cancers. Here's the good news. The FDA has [approved](#) three different HPV vaccines since 2006: Gardasil, Gardasil 9 (which replaced

Gardasil), and Cervix. Development of these vaccines was truly a [major health breakthrough](#). According to the [National Cancer Institute](#), "All three vaccines prevent infections with HPV types 16 and 18, two high-risk HPVs that cause about 70% of cervical cancers and an even higher percentage of some of the other HPV-associated cancers. Gardasil also prevents infection with HPV types 6 and 11, which cause 90% of genital warts. Gardasil 9 prevents infection with the same four HPV types plus five additional high-risk types (31, 33, 45, 52, and 58)."

Cervix is no longer available in the U.S. market, making Gardasil 9 the current HPV vaccine of choice. It is given as a series of 2 or 3 shots and is [highly effective](#) in preventing infection with HPV. HPV vaccines have only been on the market for a decade, and they've already led to a large [decrease](#) in oral HPV infections. These vaccinations must be given before an individual is infected with HPV. Once you've been infected, the vaccine is useless at preventing disease. For this reason the American Academy of Pediatrics (with its 60,000 members) [recommends](#) immunizing both girls AND boys starting at ages 11-12. Remember: if you can't be infected, then you eliminate the possibility of being diagnosed one day with an HPV-caused cancer. Your pediatrician will be happy to share details about the vaccine with you.

If you're not convinced yet that kids should get the vaccine, let me recast the cancer incidence data in another light. If most kids in the U.S. were vaccinated against HPV, it would, according to the [National Cancer Institute](#), reduce the number of:

- Oral cancer cases (in both sexes) by 70 percent
- Anal cancer cases (in both sexes) by 95 percent
- Cervical cancer cases by 70 percent
- Vaginal cancer cases by 65 percent
- Vulvar cancer cases by 50 percent
- Penile cancer cases by 35 percent

Bottom line: the HPV vaccine could eliminate more than thirty thousand annual cancer cases if it was widely used! Get the picture? I wish I could have been vaccinated against the virus when I was a kid, but it wasn't available back then. Parents nowadays should take advantage of this very effective weapon in the war on cancer.

### **Seems Like A No Brainer To Get Kids Vaccinated**

It should be. Vaccination is the same process that keeps kids from getting diseases such as mumps, measles, and chicken pox. However, only about half of girls and 38 percent of boys have currently been vaccinated in the U.S. The rest remain at risk of someday developing HPV induced cancers. The rates at which parents get their kids vaccinated [varies greatly](#) from state to state. For example, only 20 percent of boys in Wyoming have been vaccinated compared to 69 percent in Rhode Island, the highest-ranking state. For girls, only 31 percent are current with their vaccinations in South Carolina, while Rhode Island again leads the way with 73 percent (kudos, Rhode Island!). The rates in the poorly vaccinating states are below the threshold of what is generally thought to be necessary to establish [herd immunity](#) against HPV, where uninfected people are generally protected from being infected by the vaccinated people around them.

Vaccination rates in the U.S. are way below some other countries. For example, the [vaccination rate for girls](#) in Rwanda is over 99 percent. Great success has also been seen with Australia's [vaccination rate for girls](#). At the other end of the spectrum, the vaccination rate in Japan was nearly 70 percent in 2013, but now it's close to zero. What caused the rate to plummet? It was caused by the widespread dissemination of [pseudo-scientific studies](#) as well as a disinformation campaign by vaccine opponents.

Dr. Riko Muranaka, a researcher at Kyoto University, was recently awarded the [John Maddox prize](#) for her work

challenging the disreputable studies circulating about the HPV vaccine in Japan. The award is given to individuals who promote sound biomedical research practices by actively opposing false scientific claims. I recommend you read her stirring truth-to-power acceptance speech [A Hundred Thousand Wombs](#). To paraphrase the old saw about lies, "Information that the vaccine was harmful spread around the country before the truth about its safety record and benefits could get its pants on."

### **So Why Don't Parents Get Their Kids Vaccinated?**

There are many reasons, and they cut across all parts of the ideological spectrum. Many parents are simply uninformed about the long-term dangers of HPV infections, and don't understand the need to vaccinate boys as well as girls. They've picked up on the general climate of fear and misinformation about vaccines that pervades some communities. This leads them to take the path of least resistance and skip the vaccines. Let's take a look at many of the oft-stated (but erroneous) reasons parents refrain from getting their kids vaccinated, but now with a cancer context.

### **Belief That Childhood Illnesses Are Not All That Dangerous**

For many of these diseases, parents wrongly believe that they're innocuous, a mere inconvenience in their lives. No big deal. They've bought into the erroneous idea that vaccines may do more harm than the disease ever could. They've never seen children hospitalized and/or dying from measles, diphtheria, or whooping cough (pertussis) infections. Every one of these diseases can be ***fatal***, but few parents personally know anyone who died from them. They think it won't happen to their kids, or their friend's kids. Out of sight, out of mind.

HPV-induced cancers are a significantly more serious medical issue than the usual spectrum of childhood illnesses. Let me share what I've learned about one of the two most prevalent HPV cancers (and the one I was diagnosed with): oropharyngeal (oral) cancer. Unless it's detected very early, patients are not even eligible for surgery. It's straight to radiation and chemo, with their accompanying side effects. Nausea. Vomiting. Tiredness. Radiation burns. Difficulty swallowing. Loss of taste. Damaged salivary glands. And that's if it hasn't spread yet. Five-year survival rates vary with the stage of the cancer when it's diagnosed. Some of these numbers are not very encouraging, but remember: most cases of this oral cancer are preventable.

When you daydream about your kids growing up, you likely picture graduations, weddings, and grandchildren, not their funerals. Maybe what parents need to see is an illustrative display of [guts and gore](#), something reminiscent of the movies used to scare the crap out of teenagers in high school drivers ed classes. Imagine a series of cancer horror films in the same vein as *Mechanized Death*, *Wheels of Tragedy*, or *Highway of Agony*. These days, that would take the form of YouTube videos showing how HPV infections can lead to bulging tumors, feeding tubes, disfigured patients, and bereaved family members. Would this help turn the tide and up the vaccination rate?

### **Objection To Mandated Vaccination Requirements**

Some parents resent being told by their state or local governments, or school districts, that they need to get their kids vaccinated against a variety of childhood diseases. For them, it's an issue of freedom, being able to choose what's right for their kids. That's NOT the case with the HPV vaccine. Only three jurisdictions (RI and VA, along with the District of Columbia) currently [mandate](#) HPV vaccinations to attend school. Yes, many states have introduced legislation around HPV infections, but that simply funds vaccinations and/or educates families about the vaccine. Parents are simply being given the chance to make a good decision for their children. We need more of them to take advantage of this opportunity. These vaccines are truly lifesaving!

### **They Don't Know About HPV Or The Cancers It Causes**

Vaccinations against HPV differ from the ones given for most childhood diseases in three important ways: (1)

the common childhood diseases are easily transmitted between kids via the air or casual contact. HPV cannot be passed that way. (2) HPV immunization is recommended for both boys and girls when they're about 11 or 12, which is much later than for other childhood vaccines. (3) Unlike other childhood illnesses, where acute disease rapidly follows exposure, the cancer-causing effects of HPV only manifest themselves years, or even decades, after infection.

### **Concerns That The Vaccine Will Lead Kids To Promiscuity**

Because HPV is a sexually transmitted disease, some parents fear (as with birth control) that vaccination will quell their kids fears about sex. This will lead their children down the path to promiscuity. There's simply no data that supports that conclusion. And while it's clear that the virus is sexually transmitted, it's unclear as to how that process takes place. Research on this subject is continuing.

### **Cost**

Many parents think they can't get their kids immunized against HPV because they simply don't have the money to pay for it. They haven't heard about the [Vaccines for Children program](#) of the CDC. It provides vaccines at no cost for children whose families have an inability to pay. The government buys the vaccines at a discount and sends them to providers who have signed up with the program. It's not limited to the HPV vaccine and covers immunizations that will protect children from as many as 16 diseases.

### **Final Thoughts**

I've been fighting against cancer for most of my adult life. Not personally, but professionally. I have a PhD in cancer research and spent most of my career working in the lab trying to develop innovative new drugs. Take it from me: ***cancer prevention is always preferable to cancer treatment.*** As I've transitioned from cancer researcher to cancer patient to cancer survivor, I vowed to make an effort to keep others from joining my club. Parents, please talk to your pediatrician and get both your boys and girls vaccinated against HPV. While you will never know for sure, you may very well save their lives.

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To learn more, check out the [extensive resources](#) provided by the Centers for Disease Control (CDC). For more information specifically on the safety and efficacy of HPV vaccines, check out this [page](#) on the National Cancer Institute website. Parents – only you can prevent HPV induced cancers. Ask your pediatrician today about getting your kids vaccinated. Also, take a look at this [If You Could Prevent Cancer, Would You?](#) graphic from the American Society of Clinical Oncology. For information on oral tumors caused by HPV, check out the numerous resources available from the [Head and Neck Cancer Alliance](#), the [Oral Cancer Foundation](#), and Support for People with Oral and Head & Neck Cancer ([SPOHNC](#)).

Finally, there's a lot of false information about vaccines circulating on the Internet. Visit [snopes.com](#) to check out the veracity of rumors and claims that you read. A large percentage of these are likely to be false.

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