

## Oneida County Health Department

# PUBLIC HEALTH UPDATE

June 2019

### National Immunization Awareness Month

August

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#### **People of all ages can protect their health with on-time vaccination.**

National Immunization Awareness Month (NIAM) is an annual observance held in August to highlight the importance of vaccination for people of all ages. Communities across the country use the month each year to raise awareness about the important role vaccines play in preventing serious, sometimes deadly, diseases across the lifespan.

#### **How can National Immunization Awareness Month make a difference?**

We can all use this month to raise awareness about vaccines and share strategies to increase immunization rates in our community.

#### **Here are just a few ideas:**

Talk to friends and family members about how vaccines aren't just for kids. Shots can protect people of all ages from serious diseases.

Encourage people in your community to get the flu vaccine every year.

Invite a doctor or nurse to speak to parents about why it's important for all kids to get vaccinated.

#### **How can I help spread the word?**

We've made it easier for you to make a difference! This toolkit is full of ideas to help you take action today. For example:

Add information about vaccines to your newsletter.

Tweet about National Immunization Awareness Month.

Host a community event where people can get together and learn about immunizations.

Add this Web badge to your website or blog.

# Skin Cancer Awareness

## For Providers to talk about with Patients

Exposure to ultraviolet (UV) rays causes most cases of melanoma, the deadliest kind of skin cancer. To lower your skin cancer risk, protect your skin from the sun and avoid indoor tanning.

Summer is full of outdoor activities. You probably put sunscreen on yourself and your kids when you go to the pool or the beach. But do you know you should protect your skin with more than just sunscreen anytime you're outside?

Sun protection is important all year round, and it's best to use several different kinds. When you're working in the yard, watching a ballgame, or taking an afternoon walk, make sun safety an everyday habit so you can avoid getting a sunburn and lower your chance of getting skin cancer.

### What's In Your Tote Bag?

Here's an easy tip to help make sure you and your family stay sun-safe. Get ready for summer with a tote bag full of different ways to protect your skin. Keep the tote bag handy so you can grab it whenever you head out for summer fun!

### Some important things to pack—

A lightweight long-sleeved shirt or cover-up.

A hat with a wide brim that shades your face, head, ears, and neck.

Sunglasses that block both UVA and UVB rays.

## Oneida County Communicable Disease

DISEASE	March	April	YTD	YTD	DISEASE	March	April	YTD	YTD
	2019	2019		2019		2018	2019		2019
				March					March
				April					April
Tuberculosis	1	0	1	2	Influenza A	826	412	2,491	2,699
Giardia	1	1	5	5	Influenza B	8	14	38	776
Rabies Exposure	2	3	11	3	Pertussis	0	0	0	0
Salmonella	2	3	5	5	Cryptosporidiosis	0	1	1	3
Campylobacter	1	5	10	3	Syphilis	3	1	10	4
Hepatitis C	21	10	39	49	Gonorrhea	12	11	42	30
Hepatitis C (acute)	0	0	1	3	Chlamydia	65	55	188	216

# Perinatal Transmission

Hepatitis B virus (HBV) infection in a pregnant woman poses a serious risk to her infant at birth. Without post-exposure immunoprophylaxis, approximately 40% of infants born to HBV-infected mothers in the United States will develop chronic HBV infection, approximately one-fourth of whom will eventually die from chronic liver disease.

Perinatal HBV transmission can be prevented by identifying HBV-infected (i.e., hepatitis B surface antigen [HBsAg]-positive) pregnant women and providing hepatitis B immune globulin and hepatitis B vaccine to their infants within 12 hours of birth.

Preventing perinatal HBV transmission is an integral part of the national strategy to eliminate hepatitis B in the United States.

## National guidelines call for the following:

- Universal screening of pregnant women for HBsAg during each pregnancy
- Screening all HBsAg-positive pregnant women for HBV DNA to guide the use of maternal antiviral therapy during pregnancy. AASLD suggests maternal antiviral therapy when HBV DNA is  $>200,000$  IU/mL
- Case management of HBsAg-positive mothers and their infants
- Provision of immunoprophylaxis for infants born to infected mothers, including hepatitis B vaccine and hepatitis B immune globulin within 12 hours of birth

Routine vaccination of all infants with the hepatitis B vaccine series, with the first dose administered within 24 hours of birth.

<https://www.cdc.gov/hepatitis/hbv/pdfs/PrenatalHBsAgTesting.pdf>

**Screening Pregnant Women for Hepatitis B Virus (HBV) Infection:** Use the link below

<https://www.cdc.gov/hepatitis/hbv/>

[pdfs/PrenatalHBsAgTesting.pdf](https://www.cdc.gov/hepatitis/hbv/pdfs/PrenatalHBsAgTesting.pdf)



# HPV

CDC recommends that 11- to 12-year-olds receive two doses of HPV vaccine at least six months apart rather than the previously recommended three doses to protect against cancers caused by human papillomavirus (HPV) infections. Teens and young adults who start the series later, at ages 15 through 26 years, will continue to need three doses of HPV vaccine to protect against cancer-causing HPV infection.

“Safe, effective, and long-lasting protection against HPV cancers with two visits instead of three means more Americans will be protected from cancer,” said CDC Director Tom Frieden, M.D., M.P.H. “This recommendation will make it simpler for parents to get their children protected in time.”

The Advisory Committee on Immunization Practices (ACIP) voted today to recommend a 2-dose HPV vaccine schedule for young adolescents. ACIP is a panel of experts that advises the CDC on vaccine recommendations in the United States. CDC Director Frieden approved the committee’s recommendations shortly after the vote. ACIP recommendations approved by the CDC Director become agency guidelines on the date published in the Morbidity and Mortality Weekly Report (MMWR).

CDC and ACIP made this recommendation after a thorough review of studies over several meetings. CDC and ACIP reviewed data from clinical trials showing two doses of HPV vaccine in younger adolescents (aged 9-14 years) produced an immune response similar or higher than the response in young adults (aged 16-26 years) who received three doses.

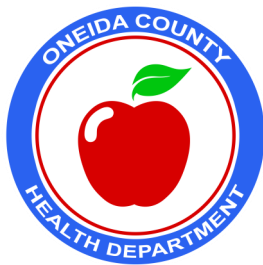
Generally, preteens receive HPV vaccine at the same time as whooping cough and meningitis vaccines. Two doses of HPV vaccine given at least six months apart at ages 11 and 12 years will provide safe, effective, and long-lasting protection against HPV cancers. Adolescents ages 13-14 are also able to receive HPV vaccination on the new 2-dose schedule.

CDC will provide guidance to parents, healthcare professionals, and insurers on the change in recommendation. On October 7, 2016, the U.S. Food and Drug Administration (FDA) approved adding a 2-dose schedule for 9-valent HPV vaccine (Gardasil® 9) for adolescents ages 9 through 14 years. CDC encourages clinicians to begin implementing the 2-dose schedule in their practice to protect their preteen patients from HPV cancers.

ACIP, CDC, FDA and partners monitor vaccines in use in the U.S. year-round. These updated recommendations are an example of using the latest available evidence to provide the best possible protection against serious diseases.



ANTHONY J. PICENTE, JR.  
ONEIDA COUNTY EXECUTIVE



## CLINICAL SERVICES

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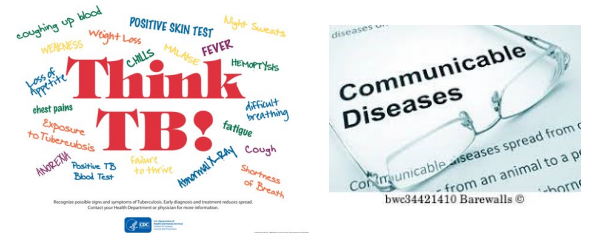
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E-mail:

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**Clinic Hours:**

**8:30-4pm Monday  
through Friday**



**Immunizations are for everyone!**



Maternal  
& Child  
Health

All previous Public Health Updates/Newsletters are posted at

<http://www.ocgov.net/health>

**Etc., Etc.**

## Outbreak Control Guidelines for Vaccine Preventable Diseases

[https://www.health.ny.gov/prevention/immunization/providers/outbreak\\_control\\_guidelines.htm](https://www.health.ny.gov/prevention/immunization/providers/outbreak_control_guidelines.htm)

[https://www.cdc.gov/std/products/infographics/images/GISP-Graphic-2\\_2016.6.30.pdf](https://www.cdc.gov/std/products/infographics/images/GISP-Graphic-2_2016.6.30.pdf)

*STD's are on the Rise...*

**Health Care Providers:**  
**Help protect our last treatment option for gonorrhea**

Gonorrhea is developing resistance to the antibiotics used to treat it. We have only one recommended treatment option left. Help protect it.

- Always follow CDC screening and treatment guidelines
- Report treatment failures to your health department's STD program
- Prevent reinfection by notifying and treating partners

CDC is committed to ensuring that we have safe and effective treatment for gonorrhea. **We can't do it without you.**

Learn more at [www.cdc.gov/std/gonorrhea/arg](http://www.cdc.gov/std/gonorrhea/arg)

## Roadmap for the Prevention and Control of Rising Rates of Chlamydia (CT), Gonorrhea (GC) and Syphilis

<https://www.cdc.gov/std/dstdp/roadmap-for-the-prevention-and-control-of-rising-chlamydia.pdf>



# Oropharyngeal Cancer (OPC) and HPV Prevention in Children

## 5 Key Points that Pediatricians Need to Know

1

OPC is also known as squamous cell carcinoma of the pharynx, including the base of the tongue and tonsils.

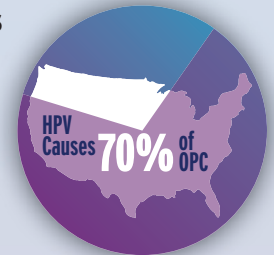
The incidence of OPC has overtaken that of cervical cancer. Pediatric health professionals have a powerful opportunity to tell families about OPC.



4

HPV causes 70% of OPCs in the US. HPV type 16 (which is covered by HPV vaccine) causes 60% of all OPCs.

HPV vaccine safely and effectively prevents infection by the major cancer-causing HPV types.



2

OPC incidence is rapidly increasing. This cancer is hard to detect before it spreads.

Although OPC is not often seen in children, it is important for pediatricians to look in the mouth and understand how the disease can affect children as they grow into adults. Currently, middle-aged white men are at highest risk for OPC.



5

You are the key to cancer prevention.

Make a strong recommendation for adolescent vaccines, including HPV, to boys and girls ages 11 - 12. Every visit on or after the 9th birthday is an opportunity to recommend the vaccine.



3

8 out of 10 people will contract the Human Papillomavirus (HPV) at some point in their lives and some will develop cancer. Everyone is at risk.

Although OPC is highly treatable, the treatment and the side effects are severe.



**HPV YOU ARE THE KEY TO CANCER PREVENTION**

**Pediatric health professionals should talk to families about OPC and strongly recommend the HPV vaccine.**

American Academy  
of Pediatrics



DEDICATED TO THE HEALTH OF ALL CHILDREN®

For More Information: [aap.org/oralhealth](http://aap.org/oralhealth) • [aap.org/hpvtoolkit](http://aap.org/hpvtoolkit) • email: [HPV@aap.org](mailto:HPV@aap.org)

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The recommendations in this publication do not indicate an exclusive course of treatment or serve as a standard of medical care. Variations, taking into account individual circumstances, may be appropriate. This fact sheet has been developed by the American Academy of Pediatrics. The authors, editors, and contributors are expert authorities in the field of pediatrics. No commercial involvement of any kind has been solicited or accepted in the development of the content of this publication.

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# HPV VACCs



Vaccinate Adolescents against Cancers

## **FACT 1** *The HPV vaccines are safe.*

Scientists from the CDC, the FDA, and other organizations in the US and around the world continue to monitor and report any adverse events and side effects related to HPV vaccines. Monitoring in 2009 revealed that most side effects related to HPV vaccines were mild and were similar to those seen with any other vaccine. Several studies from 2011-2015 looking at more than four million women and girls who were vaccinated show that there is no relationship between HPV vaccines and autoimmune disorders, blood clots, or other serious disorders.<sup>1</sup>

**TALKING POINT:** More than 270 million doses of vaccine have been distributed worldwide, with more than 100 million doses in the US. Like with all vaccines, HPV vaccine safety is constantly monitored, and these studies continue to show that HPV vaccination is very safe. All medications and vaccines can have side effects. The most common side effects seen with HPV vaccination are mild and are very similar to the reactions from other vaccines.<sup>1,2</sup>

## **FACT 2** *HPV vaccination does NOT cause fertility issues.*

There is no evidence that HPV vaccination causes fertility or reproductive problems. HPV vaccination can actually help protect fertility by preventing gynecological problems related to the treatment of cervical cancer. It's possible that the treatment of cervical cancer could leave a woman unable to have children. It's also possible that treatment for cervical pre-cancer could put a woman at risk for problems with her cervix, which could cause preterm delivery or other problems.<sup>3</sup>

**TALKING POINT:** There are no data to suggest that getting the HPV vaccine will have a negative effect on future fertility. In fact, getting vaccinated and protecting against cervical cancer can help ensure a woman's ability to get pregnant and have healthy babies.<sup>3</sup>

# HPV VACS



## Vaccinate Adolescents against Cancers

### **FACT 3** *The HPV vaccine does NOT contain harmful ingredients.*

HPV vaccines contain ingredients that have been proven to be safe. Like the hepatitis B and Tdap vaccines, HPV vaccines contain aluminum, which boosts the body's immune response to the vaccine. In addition to certain vaccines, aluminum is found in breast milk, infant formula, antacids, and numerous foods and beverages, including fruits and vegetables, seasonings, flour, cereals, nuts, dairy products, and honey. Typical adults ingest 7 to 9 milligrams of aluminum per day, whereas the HPV vaccines contain no more than .5 milligrams of aluminum per dose.<sup>4</sup> These vaccines, like other vaccines for children and adolescents, do not contain thimerosal (a preservative that contains mercury).<sup>5</sup>

**TALKING POINT:** People are exposed to aluminum every day through food and cooking utensils. Aluminum-containing vaccines have been used for decades and have been given to more than **1 billion people without problems**. In spring 2000, the National Vaccine Program Office reviewed aluminum exposure through vaccines and determined that no changes to vaccine recommendations were needed based on aluminum content. The Global Advisory Committee on Vaccine Safety, part of the World Health Organization, has also reviewed studies and found no evidence of health risks that would require changes to vaccine policy.<sup>4</sup>

### **FACT 4** *The HPV vaccine is necessary, regardless of sexual activity.*

Vaccines are for prevention, not treatment, so they only work if given before coming in contact with a virus. Research shows that cancer protection decreases as age at vaccination increases.<sup>6</sup>

Studies have shown that HPV vaccination is not associated with changes in sexual behavior. Age of onset of sexual activity, incidence of STIs, and rates of pregnancy have all been shown to be similar in vaccinated girls compared to unvaccinated girls.<sup>7,8,9</sup>

**TALKING POINT:** People are vaccinated well before they're exposed to an infection – just like measles or pneumonia. Similarly, they should be vaccinated before they are exposed to HPV. Vaccinating children at age 11 or 12 offers the most HPV cancer prevention.<sup>2</sup>

HPV is so common that almost everyone will be exposed at some point in their lives. So even if your child delays sexual activity until marriage, or only has one partner in the future, they could still be exposed if their partner has been exposed.<sup>10,11</sup>

Studies have shown there's no correlation between receiving the HPV vaccine and increased rates of, or earlier engagement in, sexual activity.<sup>8</sup>



# HPV VACS



Vaccinate Adolescents against Cancers

## **FACT 5** *The HPV vaccine is for boys and girls.*

Both males and females can get HPV. It's very common; scientists estimate that between 80-90% of people will be infected with at least one type of HPV in their lifetime.<sup>11</sup>

Although cervical cancer is the most well-known type of cancer caused by HPV, persistent infection can cause several other types of cancer, including cancers of the base of the tongue and tonsils. These cancers are now the most common HPV cancers and affect more men than women.<sup>12</sup> HPV can also cause penile and anal cancers in men. HPV vaccination helps prevent infection with the types of HPV that cause most HPV cancers in men.<sup>3</sup>

**TALKING POINT:** HPV vaccination is strongly recommended for boys and girls. Vaccination helps protect boys from getting infected with the most common types of HPV that can cause cancers of the throat, penis, and anus.<sup>3</sup>

## **FACT 6** *The HPV vaccine is effective and helps prevent cancer.*

In studies that led to the approval of HPV vaccines, the vaccines provided nearly 100% protection against persistent cervical infections with HPV types 16 and 18, plus the pre-cancers that those persistent infections can cause. In addition, a clinical trial of HPV vaccines in men indicated that they can prevent anal pre-cancers caused by persistent infection.<sup>10</sup>

HPV cancers can take decades to develop, and the vaccines have not been in use long enough to produce studies comparing cancer rates. Advanced pre-cancers are universally accepted markers for cancers.

**TALKING POINT:** The vaccine has been proven, through numerous studies, to prevent the infections that can cause multiple HPV cancers.

In addition, population studies in the US and other countries that have introduced the HPV vaccine have shown a significant reduction in abnormal Pap test results<sup>13,14</sup> and genital warts.<sup>15,16</sup>

# HPV VACS

Vaccinate Adolescents against Cancers



## **FACT 7** *An effective recommendation from a clinician matters.*

An effective clinician recommendation – recommending the HPV vaccine in the same way and on the same day as other adolescent vaccines – is the number one reason parents choose to vaccinate their children.<sup>17</sup> Recent studies show that a patient who receives a recommendation from a provider is four to five times more likely to receive the HPV vaccine.<sup>18,19</sup> Studies have also shown that parents value the HPV vaccine equally with other adolescent vaccines.<sup>20</sup> In addition, parents want to prevent cancer in their children.

**TALKING POINT:** Try this effective recommendation: *Your child needs three vaccines today to protect against meningitis, HPV cancers, and pertussis.*

## **FACT 8** *The effectiveness of the HPV vaccine does not decrease over time.*

Ongoing studies have found that those who received the HPV vaccine continue to have antibodies to the virus, providing long-term protection against infections and pre-cancers. There is no indication that they will decrease over time. Studies will continue to monitor the duration of protection.<sup>21</sup>

**TALKING POINT:** Studies continue to monitor how long the vaccine protects against HPV infections and cancer. Protection has been shown to last more than 10 years with no signs of the protection weakening.

# HPV VACCs

## Vaccinate Adolescents against Cancers



### References

- <sup>1</sup> Weekly epidemiological record, 14 July 2017, vol. 92, 28 (pp. 393–404). World Health Organization. <http://www.who.int/wer/2017/wer9228/en/>. Accessed April 4, 2018.
- <sup>2</sup> Human papillomavirus (HPV) questions and answers. Centers for Disease Control and Prevention. <https://www.cdc.gov/hpv/parents/questions-answers.html>. Published December 19, 2017. Accessed April 4, 2018.
- <sup>3</sup> What parents should know about HPV vaccine safety and effectiveness. Centers for Disease Control and Prevention. <https://www.cdc.gov/vaccines/partners/downloads/teens/vaccine-safety.pdf>. Published April 22, 2016. Accessed April 4, 2018.
- <sup>4</sup> Vaccine ingredients – aluminum. Children’s Hospital of Philadelphia. <http://www.chop.edu/centers-programs/vaccine-education-center/vaccine-ingredients/aluminum>. Published November 4, 2014. Accessed April 4, 2018.
- <sup>5</sup> Hamborsky J, Kroger A, Wolfe S, eds. Vaccine Excipient & Media Summary. In: *Epidemiology and Prevention of Vaccine-Preventable Diseases*. 13th ed. Washington D.C.: Public Health Foundation; 2015. <http://www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/B/excipient-table-2.pdf>. Accessed April 4, 2018.
- <sup>6</sup> Herweijer E, Sundström K, Ploner A, Uhnoo I, Sparén P, Arnheim-Dahlström L. Quadrivalent HPV vaccine effectiveness against high-grade cervical lesions by age at vaccination: A population-based study. *Int J Cancer*. 2016;138(12):2867-2874. doi: [10.1002/ijc.30035](https://doi.org/10.1002/ijc.30035).
- <sup>7</sup> Bednarczyk RA, Davis R, Ault K, Orenstein W, Omer SB. Sexual activity-related outcomes after human papillomavirus vaccination of 11- to 12-year-olds. *Pediatrics*. 2012;130(5):798-805. doi: [10.1542/peds.2012-1516](https://doi.org/10.1542/peds.2012-1516).
- <sup>8</sup> Jena AB, Goldman DP, Seabury SA. Incidence of sexually transmitted infections after human papillomavirus vaccination among adolescent females. *JAMA Intern Med*. 2015;175(4):617-623. doi: [10.1001/jamainternmed.2014.7886](https://doi.org/10.1001/jamainternmed.2014.7886).
- <sup>9</sup> Smith LM, Kaufman JS, Strumpf EC, Lévesque LE. Effect of human papillomavirus (HPV) vaccination on clinical indicators of sexual behaviour among adolescent girls: the Ontario Grade 8 HPV Vaccine Cohort Study. *CMAJ*. 2015;187(2):E74-81. doi: [10.1503/cmaj.140900](https://doi.org/10.1503/cmaj.140900). Epub Dec 8, 2014.
- <sup>10</sup> Human papillomavirus (HPV) vaccines. National Cancer Institute. <https://www.cancer.gov/about-cancer/causes-prevention/risk/infectious-agents/hpv-vaccine-fact-sheet>. Accessed April 5, 2018.
- <sup>11</sup> Chesson HW, Dunne EF, Hariri S, Markowitz LE. The estimated lifetime probability of acquiring human papillomavirus in the United States. *Sex Transm Dis*. 2014;41(11):660-664. doi: [10.1097/OLQ.000000000000193](https://doi.org/10.1097/OLQ.000000000000193).
- <sup>12</sup> How many cancers are linked with HPV each year? Centers for Disease Control and Prevention. <https://www.cdc.gov/cancer/hpv/statistics/cases.htm>. Accessed April 4, 2018.
- <sup>13</sup> Pollock KGJ, Kavanagh K, Potts A, et al. Reduction of low- and high-grade cervical abnormalities associated with high uptake of the HPV bivalent vaccine in Scotland. *Br J Cancer*. 2014;111(9):1824-1830. doi: [10.1038/bjc.2014.479](https://doi.org/10.1038/bjc.2014.479).
- <sup>14</sup> Baldur-Felskov B, Dehlendorff C, Munk C, Kjaer SK. Early impact of human papillomavirus vaccination on cervical neoplasia – Nationwide follow-up of young Danish women. *J Natl Cancer Inst*. 2014;106(3):djt460. doi: [10.1093/jnci/djt460](https://doi.org/10.1093/jnci/djt460).

# HPV VACS

## Vaccinate Adolescents against Cancers



- <sup>15</sup> Ali H, Donovan B, Wand H, et al. Genital warts in young Australians five years into national human papillomavirus vaccination programme: national surveillance data. *BMJ*. 2013;346:f2032. doi: [10.1136/bmj.f2032](https://doi.org/10.1136/bmj.f2032).
- <sup>16</sup> Bauer HM, Wright G, Chow J. Evidence of human papillomavirus vaccine effectiveness in reducing genital warts: an analysis of California public family planning administrative claims data, 2007-2010. *Am J Public Health*. 2012;102(5):833-835. doi: [10.2105/AJPH.2011.300465](https://doi.org/10.2105/AJPH.2011.300465).
- <sup>17</sup> Smith PJ, Stokley S, Bednarczyk RA, Orenstein WA, Omer SB. HPV vaccination coverage of teen girls: the influence of health care providers. *Vaccine*. 2016;34(13):1604-1610. doi: [10.1016/j.vaccine.2016.01.061](https://doi.org/10.1016/j.vaccine.2016.01.061).
- <sup>18</sup> Ylitalo KR, Lee H, Mehta NK. Health care provider recommendation, human papillomavirus vaccination, and race/ethnicity in the US National Immunization Survey. *Am J Public Health*. 2012;103(1):164-169. doi: [10.2105/AJPH.2011.300600](https://doi.org/10.2105/AJPH.2011.300600).
- <sup>19</sup> Lau M, Lin H, Flores G. Factors associated with human papillomavirus vaccine-series initiation and healthcare provider recommendation in US adolescent females: 2007 National Survey of Children's Health. *Vaccine*. 2012;30(20):3112-3118. doi: [10.1016/j.vaccine.2012.02.034](https://doi.org/10.1016/j.vaccine.2012.02.034).
- <sup>20</sup> Healy CM, Montesinos DP, Middleman AB. Parent and provider perspectives on immunization: Are providers overestimating parental concerns? *Vaccine*. 2014;32(5):579-584. doi: [10.1016/j.vaccine.2013.11.076](https://doi.org/10.1016/j.vaccine.2013.11.076).
- <sup>21</sup> Deleré Y, Wichmann O, Klug SJ, et al. The efficacy and duration of vaccine protection against human papillomavirus: a systematic review and meta-analysis. *Dtsch Arztebl Int*. 2014;111(35-36):584-591. doi: [10.3238/arztebl.2014.0584](https://doi.org/10.3238/arztebl.2014.0584).



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