



New Hampshire  
COMPREHENSIVE  
CANCER  
COLLABORATION

Together-Eliminating Cancer

# EMERGING ISSUES BRIEF



## The HPV Vaccine

Ardis Olson, MD

Professor of Pediatrics and Community & Family Medicine, Geisel School of Medicine at Dartmouth; Investigator, Cancer Control Research Program, Norris Cotton Cancer Center

Jenna Schifflbein, MPH, CHES

Director of Community Prevention and Education, Norris Cotton Cancer Center

Human papillomavirus (HPV) is the most common sexually transmitted infection in the U.S.; in fact, about 90% of people will be infected with HPV at some point in their lives<sup>(1)</sup>. Several high-risk types of HPV are known to be precursors to cervical cancer, as well as anal, penile, vaginal, vulvar, rectal and oropharyngeal (mouth/throat) cancers<sup>(2)</sup>. An estimated 31,500 new HPV-attributable cancers occur in the United States each year: 19,400 among females (of which 10,600 are cervical cancer) and 12,100 among males (of which 11,600 are oropharyngeal cancers)<sup>(2)</sup>. Unfortunately, cases of oropharyngeal cancers are on the rise, and as of 2013, the age-adjusted incidence rate for HPV-associated cancers among New Hampshire males surpassed that of New Hampshire females<sup>(3)</sup>.

### A safe, effective vaccine prevents most of these cancers

The HPV vaccine is safe and effective. While the FDA has licensed three HPV vaccines for use—Cervarix (2-valent), Gardasil<sup>®</sup> (4-valent), and Gardasil<sup>®</sup> 9 (9-valent)—only one is currently used by the New Hampshire Immunization Program—Gardasil<sup>®</sup> 9. As the name suggests, Gardasil<sup>®</sup> 9 is a nine-valent vaccine and offers protection against nine types of HPV, including seven high-risk types that cause cancer. According to the Centers for Disease Control and Prevention (CDC), about 73% of cancer cases of HPV-associated cancer cases could be prevented with Gardasil<sup>®</sup> 9<sup>(2)</sup>.

The vaccine's safety was studied in clinical trials involving thousands of participants before being available on the market and recommended to the public, and it was determined to be safe and effective<sup>(4)</sup>. The side effects associated with the vaccine are usually mild and are similar to side effects of any vaccine, such as pain where the shot was given, feeling tired, and fever<sup>(1)</sup>. The safety of the vaccine continues to be monitored<sup>(1)</sup>.

### Recommended vaccine schedule

The U.S. Advisory Committee on Immunization Practices (ACIP) published an updated vaccine schedule in late 2016, reflecting research findings that younger youth develop better immune responses to the HPV vaccine. The vaccine is recommended for all 11–12 year-olds adolescents, and the vaccine series is should ideally be completed by age 13. This age range is ideal for several reasons, including:

- 11–12 year-olds are due for other vaccines during this age range. Vaccinating against HPV along with the Tdap and meningococcal vaccine helps normalize the vaccine.
- 11–12 year-olds have a higher immune response to the HPV vaccine than older adolescents<sup>(5)</sup>.
- 11–12 year-olds are unlikely to have been exposed to HPV yet.
- 11–12 year-olds who follow the vaccination schedule only need two doses of the vaccine, rather than three doses.

If they were not vaccinated at 11–12 years old, the vaccine is also recommended for:

- Females through age 26;
- Males through age 21;
- Men who have sex through men, through age 26;
- Young adults who are transgender, through age 26;
- Young adults who have certain immunocompromising conditions, through age 26<sup>(6)</sup>.

Because the vaccine is more effective when given at a younger age, these groups should get the vaccine as early as they are able to<sup>(7)</sup>.

Adolescents who start the vaccine series after their 15th birthday, need three doses of the vaccine for full protection—giving a strong incentive for providers, parents, and adolescents to start the series early and follow the vaccine schedule<sup>(8)</sup>. Please see this helpful [decision guide](#)<sup>(9)</sup> from the CDC for more information about who needs to be vaccinated and how many doses they need.

### Local HPV vaccination rates

New Hampshire's initiation rate of the HPV vaccination series is higher than many other states—with 70.6% of females and 69.3% of males 13–17 years old having received at least one dose<sup>(10)</sup>. However, these rates lag behind New Hampshire rates of other adolescent vaccines, such as Tdap (95.3%) and meningococcal (88%) vaccines, which are also recommended for 11–12 year-olds<sup>(11)</sup>. This points to missed opportunities in the provider's office when an adolescent is receiving these other vaccines.

Unfortunately, the percentage of adolescents completing the vaccine series is even lower. Among New Hampshire adolescents 13–17 years old, only 51.2% of females and 46.3% of males were up-to-date with the vaccine series in 2016<sup>(11)</sup>.

### Overcoming barriers to HPV vaccination

In the time since the HPV vaccine has been on the market, researchers have studied what barriers to vaccination exist, as well as interventions to help overcome those barriers. The National Vaccine Advisory Committee has identified two key barriers that need to be overcome<sup>(12)</sup>:

1. Weak healthcare provider recommendations and

## 2. Low parental demand for the vaccine.

According to the CDC, as many as two-thirds of 11- and 12-year-old vaccine-eligible girls may not be receiving HPV vaccines when visiting their doctor for other pre-teen vaccines (Tdap, meningococcal, and influenza)<sup>(13)</sup>. Providers can play an important role in increasing parental demand for the vaccine by providing information and recommending the HPV vaccine during preventive care visits when other vaccines are administered.

Providers should recommend the HPV vaccine in the same way and same day as they recommend other adolescent vaccines<sup>(14)</sup>. For example, a provider seeing an 11 year-old for a preventive visit and vaccinations might say, “Your child needs three vaccines today. They will protect him against meningitis, HPV cancers, and whooping cough. He’ll get those shots today”<sup>(15)</sup>. This strong recommendation is a critical factor in getting a child vaccinated. If a parent does decline the HPV vaccine, despite a strong recommendation, providers should revisit the discussion at future visits until the child completes the vaccine series<sup>(15)</sup>. Some parents will have questions about the vaccine’s safety or about its link with sexual activity; the CDC has a [useful resource](#)<sup>(16)</sup> to help providers answer these questions.

Beyond talking with parents, providers and healthcare practices can take other steps to increase their HPV vaccine rates. Strategies include knowing provider-level and practice-level vaccination rates, implementing standing orders, provider reminders, patient reminder/recall systems, and provider assessment and feedback<sup>(15, 17)</sup>. The CDC has also compiled a top-10 list of strategies for healthcare practices, which can be accessed [on the CDC’s website](#)<sup>(18)</sup>.

## HPV vaccination activity in New Hampshire

New Hampshire has several efforts underway to increase HPV vaccine rates.

- The [New Hampshire State Comprehensive Cancer Collaboration’s 2015–2020 Cancer Plan](#)<sup>(19)</sup> includes an objective to increase the percentage of NH youth who complete the vaccination series.
- The New Hampshire HPV Vaccination Working Group was started by the Norris Cotton Cancer Center and the American Cancer Society in 2016. This group of key stakeholders has been collaborating on activities to educate healthcare providers and to increase parental demand for the vaccine. Activities have included continuing education trainings for providers, public screenings/discussions of [Someone You Love: The HPV Epidemic](#)<sup>(20)</sup>, and distribution of HPV vaccine educational materials. Providers, public health professionals, and others interested in joining this group are welcome to do so by emailing [Jenna.E.Schiffelbein@Dartmouth.edu](mailto:Jenna.E.Schiffelbein@Dartmouth.edu).
- The NH Pediatric Improvement Partnership is conducting quality improvement activities for HPV vaccination in practices in NH. Key efforts address eliminating missed opportunities where vaccination should occur, establishing standing orders for second and third doses, and tracking HPV immunization rates at the practice-level.
- Legislative support and partnerships with insurers in both states have resulted in coverage of vaccine costs for all

NH Comprehensive Cancer Collaboration in partnership with Dartmouth-Hitchcock Norris Cotton Cancer Center and its NCI National Outreach Network Community Health Educator Site.



children. This coverage includes the HPV vaccine for 9–18 year-old adolescents.

Additional coordinated efforts are needed to increase HPV vaccination rates in New Hampshire. *Accelerating HPV Vaccine Uptake: Urgency for Action to Prevent Cancer: A Report to the President of the United States from the President’s Cancer Panel*, issued in February, 2014, stated that increasing the rate of HPV vaccinations is one of the most profound opportunities in cancer prevention today<sup>(19)</sup>. According to CDC estimates, increasing HPV vaccination rates from current levels to 80 percent would prevent an additional 53,000 future cervical cancer cases in the United States among girls who now are 12 years old or younger over the course of their lifetimes<sup>(21)</sup>. A growing number of other HPV-associated cancers, like oropharyngeal cancers, may also be prevented through vaccination<sup>(22)</sup>.

Individuals and organizations need to coordinate their efforts to create a well-organized system that can deliver clear messaging about the importance of early HPV vaccination to providers and parents throughout New Hampshire.

## References:

1. Centers for Disease Control and Prevention. *Human Papillomavirus (HPV) Vaccine Safety*. 2017 [cited 2017]; Available from: <https://www.cdc.gov/vaccinesafety/vaccines/hpv-vaccine.html>.
2. Centers for Disease Control and Prevention. *How Many Cancers Are Linked with HPV Each Year? 2017* [cited 2017 August 28]; Available from: <https://www.cdc.gov/cancer/hpv/statistics/cases.htm>.
3. New Hampshire Department of Health and Human Services, *HPV-Associated Cancers in New Hampshire, 1999-2003 Data Brief*. 2016: Concord, NH.
4. Centers for Disease Control and Prevention. *HPV Vaccine Safety and Effectiveness*. 2016 [cited 2017 August 29]; Available from: <https://www.cdc.gov/vaccines/vpd/hpv/hcp/safety-effectiveness.html>.
5. Centers for Disease Control and Prevention. *HPV Vaccine for Preteens and Teens*. 2017 [cited 2017 August 29]; Available from: <https://www.cdc.gov/hpv/parents/vaccine.html>.
6. Centers for Disease Control and Prevention. *HPV Vaccines: Vaccinating Your Preteen or Teen*. 2016; Available from: <https://www.cdc.gov/hpv/parents/vaccine.html>.
7. American Cancer Society. *Who Should Get the HPV Vaccination and Why*. 2017 [cited 2017 Nov 3]; Available from: <https://www.cancer.org/latest-news/who-should-get-the-hpv-vaccination-and-why.html>.
8. National Center for Immunization and Respiratory Disease, *Clinician FAQ: CDC Recommendations for HPV Vaccine 2-Dose Schedule*. 2016.
9. Centers for Disease Control and Prevention. *Preventing Cancer Just Got Easier*. 2017; Available from: <https://www.cdc.gov/hpv/downloads/hpv-2-dose-decision-tree.pdf>.
10. Walker, T.Y., et al., *National, Regional, State, and Selected Local Area Vaccination Coverage Among Adolescents Aged 13-17 Years - United States, 2016*. *MMWR Morb Mortal Wkly Rep*, 2017. 66(33): p. 874-882.
11. Centers for Disease Control and Prevention, *Human papillomavirus vaccination coverage among adolescent girls, 2007-2012, and postlicensure vaccine monitoring, 2006-2013 -- United States*. *Morbidity and Mortality Weekly Report*, 2013. 62(29): p. 591-595.
12. National Vaccine Advisory Committee, *Overcoming Barriers to Low HPV Vaccine Uptake in the United States: Recommendations from the National Vaccine Advisory Committee*. 2015.
13. Stokley, S., et al., *Compliance with recommendations and opportunities for vaccination at ages 11 to 12 years: evaluation of the 2009 national immunization survey-teen*. *Arch Pediatr Adolesc Med*, 2011. 165(9): p. 813-8.
14. Centers for Disease Control and Prevention. *Clinician Factsheets and Guidance*. 2017 [cited 2017 August 29]; Available from: <https://www.cdc.gov/hpv/hcp/clinician-factsheet.html>.
15. Centers for Disease Control and Prevention. *You Are the Key to HPV Cancer Prevention*. 2017 [cited 2017 August 28]; Available from: <https://www.cdc.gov/vaccines/ed/hpv/index.html>.
16. Centers for Disease Control and Prevention. *Talking to Parents about HPV Vaccine*. 2016; Available from: <https://www.cdc.gov/hpv/hcp/for-hcp-tipsheet-hpv.pdf>.
17. *The Guide to Community Preventive Services. Vaccination*. 2016 [cited 2017 August 28]; Available from: [https://www.thecommunityguide.org/topic/vaccination?field\\_recommendation\\_tid=7476&items\\_per\\_page=5](https://www.thecommunityguide.org/topic/vaccination?field_recommendation_tid=7476&items_per_page=5).
18. Centers for Disease Control and Prevention. *Top 10 List for HPV #VaxSuccess*. Available from: <https://www.cdc.gov/hpv/downloads/Top10-improving-practice.pdf>.
19. New Hampshire Comprehensive Cancer Collaboration. *2015-2020 New Hampshire Comprehensive Cancer Control Plan*. Available from: [www.nhcancerplan.org/images/downloads/2015\\_2020\\_NH\\_Cancer\\_Plan.pdf](http://www.nhcancerplan.org/images/downloads/2015_2020_NH_Cancer_Plan.pdf)
20. Lumiere Media, Inc. *Someone You Love: The HPV Epidemic*. Available from: [www.hpvepidemic.com](http://www.hpvepidemic.com)
21. President’s Cancer Panel, *Accelerating HPV Vaccine Uptake: Urgency for Action to Prevent Cancer*. 2014: Bethesda, MD.
22. President’s Cancer Panel, *President’s Cancer Panel Annual Report 2012, 2014, Accelerating HPV Vaccine Uptake: Urgency for Action to Prevent Cancer*.