

Call to Action

Addressing New and Ongoing Adolescent Vaccination Challenges



March 2016



Experts gather to discuss the importance of adolescent vaccination

The recommendations in this Call to Action are based on the discussions at a February 2016 virtual roundtable convened by the National Foundation for Infectious Diseases (NFID).

NFID invited subject matter experts, including representatives from professional medical and nursing associations, patient health organizations, and government agencies to discuss the long-term health impacts of under-immunized adolescents and the important role healthcare professionals play in increasing vaccination rates.

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Vaccination Gaps Leave Adolescents Vulnerable to Cancer and Meningitis

Prior to 2006, the only vaccine recommended routinely for US adolescents was a tetanus and diphtheria (Td) booster.¹ In the decade since, vaccines have been added to the US immunization schedule to protect adolescents against meningococcal disease, human papillomavirus (HPV)-associated cancers, influenza (flu), and pertussis (whooping cough).²

But according to the National Immunization Survey-Teen (NIS-Teen), uptake of these vaccines is uneven, with some adolescent vaccination rates below Healthy People 2020 goals.³⁻⁵ Compared to the high coverage achieved for Tdap (tetanus, diphtheria, and pertussis) and the first dose of MenACWY (meningococcal serogroup A, C, W, Y), vaccination coverage is much lower for the HPV vaccine series recommended at age 11-12 years, the MenACWY booster recommended at age 16 years, and the annual influenza vaccine recommended for all individuals age 6 months and older. The result is millions of adolescents vulnerable to serious health risks from flu and meningitis, as well as serious long-term risks of HPV infection including oropharyngeal, cervical, and other anogenital cancers.

The primary adolescent vaccination platform at 11-12 years of age is well-established and calls for same-visit administration of HPV, MenACWY, and Tdap vaccines, in addition to an annual influenza vaccine if the visit is at the appropriate time of year. This platform has created an expectation among healthcare professionals (HCPs) and families for vaccination at this age—an expectation that has only been partially met.

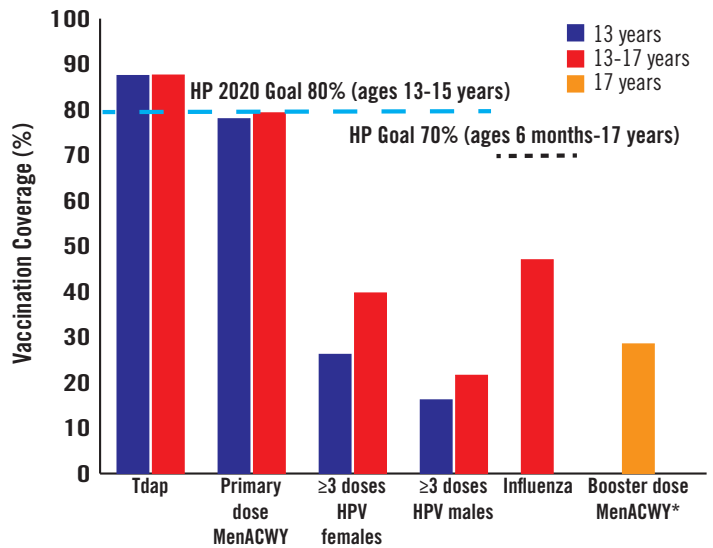
Among adolescents age 13 years in the US, Tdap vaccination coverage is 88 percent and coverage for the primary dose of MenACWY is 78 percent, similar to coverage observed for older adolescents (Figure).³ For these two vaccines, at least, the 11-12 year platform is effective; however, teens who do not receive these vaccines at the recommended age are unlikely to receive them at a later age (i.e., catch-up vaccination does not occur).

HPV vaccination, however, follows a different pattern in the US. Among adolescents age 13 years, only 26 percent of females and 16 percent of males receive the full three-dose HPV series, significantly lower than coverage for older adolescents.³ Clearly, there are unique barriers to HPV vaccination that lead to lower overall coverage rates and a much higher likelihood of late compliance (catch-up vaccination) compared with Tdap and MenACWY vaccines.³

Rational for an Additional Vaccination Platform at Age 16 Years

A booster dose of MenACWY vaccine is recommended for adolescents at age 16 years. However, among adolescents age 17 years, NIS-Teen reports that less than 30 percent receive it.³ The NIS-Teen survey does not capture the first or second MenACWY dose given on or after the 18th birthday, so actual pre-college coverage rates may be higher. A new adolescent platform at age

Figure: Vaccination coverage in adolescents, 2014 National Immunization Survey-Teen³⁻⁵



HP 2020 = Healthy People 2020; HPV = human papillomavirus; MenACWY = meningococcal serogroup A, C, W, Y; Tdap = tetanus, diphtheria, and pertussis
*No HP 2020 goal.

16 years could help improve coverage for this vaccine and provide important protection against meningococcal disease during the high-risk late-teen and college years.

Establishing this later-adolescent platform would also provide an opportunity for HCPs, parents/caregivers, and adolescents to discuss MenB (meningococcal serogroup B) vaccination. The Centers for Disease Control and Prevention (CDC) recommends* that adolescents age 16 through 23 years may be vaccinated with a MenB vaccine, preferably at 16 through 18 years old.⁶ The timing is designed to provide protection during the high-risk period in late adolescence, when serogroup B causes one in three meningococcal disease cases.⁷

One of the goals of a late adolescent platform is creating the expectation among providers and patients that vaccinations will be reviewed and

*This is a category B recommendation. Individual clinical decision-making is recommended. Parents/caregivers and teens are encouraged to talk with their healthcare professional about the serogroup B meningococcal vaccine.

administered at age 16 years. This additional platform would allow adolescents to catch up on any routine vaccines missed earlier, including starting or completing the HPV series. However, every effort must be made to complete the HPV series as recommended by CDC at age 11-12 years because it is the best way to protect against the many cancers caused by HPV and provides higher levels of antibody response (see box below).

By making vaccination **routine at 16**, we not only provide important protection against infectious diseases, but we also lay a foundation that supports good preventive healthcare decisions as older adolescents begin to take ownership of their own health. For those heading to college, we must ensure they are protected before they get to campus—a goal supported by the American College Health Association. Colleges commonly provide vaccines, but it may take a full semester to validate, track, and administer vaccines to those

HPV: Cancer Risk Reductions Connected to Vaccination at Age 11-12 Years

Simultaneous administration of all recommended vaccines at age 11-12 years increases the likelihood of adolescents receiving all vaccines on schedule.⁸ In addition, younger adolescents (through 15 years) have two- to three-fold higher HPV antibody levels after HPV immunization compared to older adolescents and young adults (age 16-26 years).

who are not immunized when they arrive. This is an additional barrier to timely and appropriate vaccination. Insurance coverage also may be difficult to ascertain in some cases. Adolescents not heading to college will soon be out on their own and need to be protected before they leave home.

Ongoing Work Needed to Overcome Barriers to Timely Adolescent Vaccination

There is neither a simple nor singular answer to the problem of low vaccine uptake in adolescents. **Mandates and school requirements** have had a positive impact on overall vaccination rates and should be considered along with other complementary strategies to bring all adolescent vaccination rates up to established public health goals. Ongoing efforts are essential to address all types of barriers—parent/caregiver/patient, HCP, and system-based.

There has been steady improvement in the proportion of adolescents receiving annual well visits,^{9,10} providing additional opportunities for vaccination. But many of these **vaccination opportunities are missed**—underscored by the fact that most adolescents who have not received HPV have received Tdap and/or MenACWY.¹¹ NFID has developed an online resource portal including **5 Key Steps to Improve HPV Vaccination Rates** ([nfid.org/5-key-steps-hpv](https://www.nfid.org/5-key-steps-hpv)) to help overcome these missed opportunities and close HPV vaccination gaps.

Ongoing communication with parents/caregivers and adolescents about vaccines is essential. Nearly four million children reach age 11 annually, and their parents/caregivers need to hear positive messages encouraging vaccination. It is also essential to counter the steady drumbeat

of misinformation about vaccines aimed at parents/caregivers and adolescents through social and digital media. Communications need to be tailored to both adolescents and parents/caregivers, as each responds not only to different communication styles, but also to different messages, shared through different mediums and tools.

Vaccine education and support for HCPs.

HCPs know that HPV vaccine is a valuable cancer prevention tool, and they believe the vaccine is safe and effective, yet they still do not advocate for it uniformly at age 11-12 as recommended.^{12,13} In general, HCPs with lower patient HPV vaccination rates delay recommendations for girls they perceive to be at low-risk for sexual activity while HCPs with higher patient HPV vaccination rates present HPV vaccination as routine for all girls to prevent certain types of cancer.¹⁴ Parents/caregivers respond more favorably to messages that emphasize the importance of the HPV vaccine as cancer prevention. More decisive and direct communication from HCPs leads to better uptake of vaccines overall.¹⁵ HCPs need to fully understand all current adolescent vaccination recommendations, including the need for boys and girls to receive HPV vaccination at age 11-12 years.

Put systems in place that make adolescent vaccination routine. One of the most effective tools is a standing order, which allows the administration of vaccines to all patients who meet certain criteria. This works exceptionally well for age-based recommendations since age is the only inclusion criteria and there are few contraindications to vaccines. Other valuable system changes include provider reminders built into integrated electronic medical records, use of

immunization information systems (IIS), reminder communications to parents/caregivers and adolescents when vaccines are due, and recall communications when appointments are missed.

It is essential to **involve all HCPs in vaccine delivery**. While school-based vaccine delivery may not be routine, vaccine recommendations and reminders from school nurses, a trusted resource, can be very valuable. Retail pharmacies continue to expand their vaccination services and they are valuable partners for improving adolescent vaccination rates. In healthcare offices, extended evening and weekend hours may increase ease and convenience of vaccination. It is also important that every staff member beginning with the receptionist—deliver the same positive vaccine messages.

HCPs need to take responsibility as medical experts and stewards of patient health to strongly urge timely vaccination with all adolescent vaccines. Recommendations to improve adolescent vaccination rates include:

- Establishment of an additional adolescent vaccination platform at age 16 years (make vaccination routine at 16)
- Ongoing communication between HCPs, parents/caregivers, and adolescents about vaccines
- Timely vaccine education and support to HCPs regarding current adolescent vaccine recommendations
- Implementation of systems to make adolescent vaccination routine and avoid any missed opportunities to vaccinate
- Involve all HCPs in vaccine delivery



Participating Organizations

Representatives from the following organizations participated in the February 2016 NFID virtual roundtable, which served as the basis for this Call to Action.

- Academic Pediatric Association
- American Academy of Family Physicians
- American Academy of Physician Assistants
- American Cancer Society
- American College Health Association
- American College of Obstetricians and Gynecologists
- Boston University School of Medicine
- Centers for Disease Control and Prevention
- HHS Office of Adolescent Health
- Immunization Action Coalition
- National Association of Pediatric Nurse Practitioners
- National Association of School Nurses
- National Foundation for Infectious Diseases
- National HPV Vaccination Roundtable
- National Meningitis Association
- Society for Adolescent Health and Medicine
- UNITY Consortium
- University of North Carolina, Gillings School of Global Public Health
- University of Oklahoma Health Sciences Center
- Vaccine Education Center at The Children’s Hospital of Philadelphia

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References

1. Centers for Disease Control and Prevention. Recommended childhood and adolescent immunization schedule — United States, 2005. *MMWR Morb Mortal Wkly Rep.* 2005;53(51):Q1-Q3.
2. Robinson CL. Advisory Committee on Immunization Practices recommended immunization schedules for persons aged 0 through 18 years — United States, 2016. *MMWR Morb Mortal Wkly Rep.* 2016;65(4):86-87.
3. Reagan-Steiner S, Yankey D, Jeyarajah J, Elam-Evans LD, et al. National, regional, state, and selected local area vaccination coverage among adolescents aged 13-17 years — United States, 2014. *MMWR Morb Mortal Wkly Rep.* 2015;64(29):784-792.
4. Healthy People 2020 [Internet]. Washington, DC: US Department of Health and Human Services, Office of Disease Prevention and Health Promotion. At <http://www.healthypeople.gov/2020/topics-objectives/topic/immunization-and-infectious-diseases/objectives>. Accessed February 13, 2016.
5. Centers for Disease Control and Prevention. Flu vaccination coverage, United States, 2014-15 influenza season. At: <http://www.cdc.gov/flu/fluview/coverage-1415estimates.htm#data>. Accessed March 1, 2016.
6. MacNeil JR, Rubin L, Folaranmi T, Ortega-Sanchez IR, Patel M, Martin SW. Serogroup B meningococcal vaccines in adolescents and young adults: Recommendations of the Advisory Committee on Immunization Practices, 2015. *MMWR Morb Mortal Wkly Rep.* 2015;64(41):1171-1176.
7. Centers for Disease Control and Prevention. Meningococcal disease surveillance. At: <http://www.cdc.gov/meningococcal/surveillance/index.html>. Accessed February 12, 2016.
8. Centers for Disease Control and Prevention. Quadrivalent human papillomavirus vaccine. Recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR Recomm Rep.* 2007;56(RR-2):1-24.
9. Centers for Disease Control and Prevention. Quickstats. Percentage of youths aged 10-17 years who did not receive a well-child checkup in the past 12 months, by metropolitan status of residence—National Health Interview Survey, United States, 2008-2014. *MMWR Morb Mortal Wkly Rep.* 2016;64(51):1410.
10. Tsai Y, Zhou F, Wortley P, Shefer A, Stokley S. Trends and characteristics of preventive care visits among commercially insured adolescents, 2003-2010. *J Pediatr.* 2014;164(3):625-630.
11. Stokley S, Jeyarajah J, Yankey Y, et al. Human papillomavirus vaccination coverage among adolescents, 2007-2013, and post-licensure vaccine safety monitoring, 2006-2014—United States. *MMWR Morb Mortal Wkly Rep.* 2014;63(29):620-624.
12. Allison MA, Hurley LP, Markowitz L, et al. Primary care physicians' perspectives about HPV vaccine. *Pediatrics.* 2016;137(2):1-9.
13. Gilkey MB, Malo TL, Shah PD, Hall ME, Brewer NT. *Cancer Epidemiol Biomarkers Prev.* 2015;24(11):1673-1679.
14. Perkins RB, Clark JA, Apte G, et al. Missed opportunities for HPV vaccination in adolescent girls: a qualitative study. *Pediatrics.* 2014;134:e666-e674.
15. Opel DJ, Heritage J, Taylor JA, et al. The architecture of provider-parent vaccine discussions at health supervision visits. *Pediatrics.* 2013;132(6):1037-1046.

