Table 1

Roles of Survey Respondents, by HCO, Years of Engagement, and Familiarity with HPV Vaccination Guidelines

	HCO 1 (n = 49)	HCO 2 (n = 143)	HCO 3 (n = 53)	HCO 4 (n = 50)	Total (n = 295)	Years Supporting Adolescent Vaccination, mean (SD)	High familiarity with HPV vaccination guidelines†
Physician/advanced practice provider	27 (55%)	63 (44%)	20 (38%)	15 (31%)	125 (43%)	11.8 (9.6)	114 (92%)
Nurse/medical assistant	22 (45%)	44 (31%)	32 (60%)	23 (47%)	121 (41%)	5.5 (6.8)	91 (76%)
Support staff*	0 (0%)	35 (25%)	1 (2%)	11 (22%)	47 (16%)	9.6 (8.4)	23 (49%)
Years supporting adolescent vaccination, mean (SD)	10.5 (10.0)	9.9 (9.0)	4.8 (5.4)	7.5 (8.4)	8.7 (8.8)	--	--
High familiarity with HPV vaccination guidelines†	43 (88%)	110 (78%)	39 (74%)	37 (76%)	229 (78%)	--	--

*Support staff include administrative staff, care coordination, quality improvement/population health, health informatics, office management
†Self-reported very or extremely familiar on a 5-point Likert scale

Earlier Initiation

Highlights from HPV vaccination success stories

By Alicia Rooney, MPH, MSW, and Elizabeth L. Ciemins, PhD, MPH, MA

"It is so cool that there is a vaccine that can prevent cancer," a nurse wrote in response to AMGA's recent survey on human papillomavirus (HPV) vaccination in 9- and 10-year-olds.

Despite mounting evidence in support of its efficacy, uptake of the HPV vaccine remains low, with only 39% of those aged 9 to 17 years having received at least one dose in 2022.[1] Guidelines are moving toward recommending earlier initiation of the vaccine (at ages 9–10 compared with 11–12),[2–4] which is associated with an increased likelihood of completing the series by age 15, along with other notable benefits, such as stronger immune response.[5–7] Several U.S. healthcare organizations (HCOs) that have implemented earlier initiation have increased HPV vaccination rates.[8]

To understand and disseminate best practices to members, AMGA recruited five diverse member organizations (differing in size, population served, and geographic region) that have demonstrated success vaccinating 9- and 10-year-olds against HPV to participate in a qualitative research study.

AMGA asked each participating HCO to recruit ~50 providers and staff who deliver, or support the delivery of, HPV vaccines for 9- and 10-year-old patients to complete surveys. Four of the five HCOs have completed recruitment (see Table 1). Respondents were mostly physicians/advanced practice providers (43%) and nurses/medical assistants (42%), with some support staff (administrative staff, care coordination, quality improvement/population health, health informatics, office management) also completing the survey (16%). Respondents had an average of 8.7 years supporting adolescent vaccination, and 78% reported high familiarity with HPV vaccination guidelines.

Table 2

Factors Impacting the Success of Age 9 HPV Vaccination Initiation

Main themes	Subthemes	Examples
Patient/family factors	Education	Handouts during visits and visuals (e.g., posters on clinic walls)
	Preparation	Pre-visit marketing and outreach. Discussion of HPV vaccination at earlier visits (letting families know it will be offered at the age 9 visit)
	Barrier reduction	Scheduling (e.g., vaccine-only appointments)
Healthcare organization factors	Provider/staff education	Frequent education and reminders with broad reach to all clinic staff; provide specific data and language to use with patients and families
	Provider/staff buy-in	Consistency across all relevant roles; strong recommendation
	Protocol modification	Standardization and automation
Communication factors	Repetition	Discussion by multiple staff; discussion at multiple visits
	Message framing	Focus on cancer prevention rather than sex; benefits of vaccination and earlier vaccination; presumptive approach; treat the same as other vaccines
	Addressing concerns	Combating misinformation; addressing hesitancy

Survey respondents were asked open-ended questions about their organization's successes and challenges with HPV vaccination at ages 9–10, training they have received on the topic, their successes with communication and engagement with patients and families, experiences with vaccine refusal, and vaccination disparities, and were given space to provide additional comments. Several themes emerged from analysis of open-ended responses (see Table 2 for a summary of themes, subthemes, and examples). Identified themes were categorized into patient and family factors, HCO factors, and communication factors and summarized thematic elements impacting the success of earlier vaccination.

Patient and Family Factors

Patient and family factors impacting the success of earlier initiation of HPV vaccination reported by respondents included providing education, preparation for what's to come, and barrier reduction. Several respondents pointed to the positive impact of educational handouts and visuals on clinic walls, with one physician stating:

> *Posters in the clinic are super helpful… Patients and families are already thinking about it before I get in the room.*

Respondents described earlier visits and pre-visit marketing and communication as opportunities to prepare patients and their families for the upcoming vaccine. A nurse described how their organization prepares patients and their families for vaccination at age 9:

> *The conversation regarding the benefits of the HPV vaccine starts at ages 6–8 wellness visits. This allows parents adequate time to research it and make an informed decision.*

Respondents also reported reducing barriers to patients coming in for visits during which they might receive the HPV vaccine. An administrative staff member described the process at their organization:

> *As a department, we do our best to get patients in on time so they can get their vaccines. We also offer vaccine-only appointments to accommodate more patients who are needing/wanting vaccines.*

HCO Factors

HCO factors that arose included provider and staff education, provider and staff buy-in, and protocol modification. Respondents emphasized the importance of continuing education for all levels of staff supporting pediatric HPV vaccination. A medical assistant suggested one approach:

> *Regular reminders in clinic would be helpful for medical assistants and providers to provide correct information about the vaccine.*

Several respondents described how consistency, buy-in, and recommendation from all levels of staff/providers can help further success of HPV vaccination for 9- and 10-year-olds. One physician discussed how they recommend the vaccine to their younger patients and families:

> *I let them know how strongly I support the earlier age for vaccination against these cancers.*

Some respondents described how standardization of protocol to incorporate age 9 as the age when the vaccine is due and automation simplified the transition to age 9 initiation. One physician said:

> *Once the electronic medical record (EMR) was optimized to push 'HPV vaccine' as part of regular care, the challenge was reduced, because variation in provider recommendations became less relevant. Every patient has the 'care gaps section' and every eligible patient was pushed the same standard of care within the EMR.*

Communication Factors

Communication factors impacting the success of HPV vaccination at age 9 across the four HCOs included repetition, message framing, and addressing concerns. Repetition by multiple staff at multiple visits was mentioned by several respondents as a key component to increasing vaccination at age 9, with a medical assistant stating:

> *There are times when the provider and medical assistant need to work together to help parents and kids to understand the benefits to the vaccine. With engaging teamwork from staff, the information is given better.*

Many respondents described the importance of intentional message framing, such as focusing on cancer prevention rather than sex, treating this vaccine similar to other vaccines, discussing the benefits of vaccination and earlier vaccination, and utilizing a presumptive approach, as well as its impact on vaccine acceptance. An advanced practice provider, for example, said:

> *Once we discuss why we give it at an earlier age, they have a better understanding and normally will accept the vaccine.*

Respondents often reported parent and caregiver resistance as a barrier to vaccination, and the ability to combat misinformation and address hesitancy was frequently mentioned as a necessary factor for improving HPV vaccination rates, particularly in the younger age group. One physician described their approach to this as a partnership:

> *Effective communication with parents, reflective listening to all their concerns, and partnering with them.*

Conclusion

The themes resulting from surveys of four unique HCOs across the U.S. suggest that similar factors tend to impact the success of HPV vaccination at age 9. Organizations hoping to increase their age 9 HPV vaccination rates, ultimately increasing their overall HPV vaccination rates, should consider these themes and subthemes and support their providers and staff in optimizing them. GPJ

Acknowledgments
We would like to thank University of Pennsylvania Medical Center, Texas Children's Hospital, University of Utah Health, Sanford Medical Group, and PeaceHealth Medical Group for their participation in this study and Kristin Oliver, MD, MHS, Icahn School of Medicine at Mount Sinai, and Jason Yaun, MD, Methodist Le Bonheur Healthcare, for sharing their expertise to help guide this work. Our thanks to Merck & Co., Inc. for financial support and subject-matter expertise to OPEN Health for consultative services. All AMGA research is "above brand," focusing on care process design and implementation science—how medical groups and health systems improve population health. The views expressed in these surveys reflect the personal and professional opinions of the individuals interviewed, and not necessarily the views of their respective organizations, the study sponsor, or of AMGA.

***Alicia Rooney, MPH, MSW**, is population health research analyst, and **Elizabeth L. Ciemins, PhD, MPH, MA**, is senior vice president, Research and Analytics at AMGA.*

For more information on how to participate in two other ongoing trials to improve HPV vaccination rates among children and adolescents, please contact research@amga.org.

References

1. M.A. Villarroel, A.M. Galinsky, P.J. Lu, et al. 2024. Human papillomavirus vaccination coverage in children ages 9–17 years: United States, 2022. NCHS Data Brief, no 495. Hyattsville, MD: National Center for Health Statistics. CDC 2024. Available at stacks.cdc.gov/view/cdc/145593.
2. L.E. Markowitz, E.F. Dunne, M. Saraiya, et al. 2014. Human papillomavirus vaccination: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR Recomm Rep*, 2014; 63(RR-05): 1. Erratum in: *MMWR Recomm Rep* 2014; 63(49): 1182.
3. S.T. O'Leary. 2022. Why the American Academy of Pediatrics recommends initiating HPV vaccine at age 9. *Hum Vaccin Immunother*, 2022; 18(6): 2146434.
4. D. Saslow, K.S. Andrews, D. Manassaram-Baptiste, et al. 2020. Human papillomavirus vaccination 2020 guideline update: American Cancer Society guideline adaptation. *CA Cancer J Clin*, 2020; 70: 274.
5. E. Goodman, M. Felsher, D. Wang, et al. 2023. Early Initiation of HPV Vaccination and Series Completion in Early and Mid-Adolescence. *Pediatrics*, 2023; 151(3) :e2022058794.
6. S.R. Dobson, S. McNeil, M. Dionne, et al. 2013. Immunogenicity of 2 doses of HPV vaccine in younger adolescents vs 3 doses in young women: a randomized clinical trial. *JAMA*, 2013; 309(17): 1793.
7. L. Gillespie, C.W. Hicks, M. Santana, et al. 2011. The acceptability of human papillomavirus vaccine among parents and guardians of newborn to 10-year-old children. *J Pediatr Adolesc Gynecol*, 2011; 24(2): 66.
8. S. Zorn, G. Darville-Sanders, T. Vu, et al. 2023. Multi-level quality improvement strategies to optimize HPV vaccination starting at the 9-year well child visit: Success stories from two private pediatric clinics. *Hum Vaccin Immunother*, 2023; 19(1): 2163807.