Preventing HPV Cancers in Childhood Cancer Survivors:
Healthcare Provider Toolkit

Pragya Poudel, DrPH
St. Jude Children's Research Hospital

Blake Harper, MPH
The University of Texas MD Anderson Cancer Center

Mentor: Shannon Christy, PhD

This toolkit was developed as part of the American Cancer Society National HPV Vaccination Roundtable (ACS HPVRT) Emerging Leaders Program. Fellows are early-career professionals whose work was informed by the guidance and mentorship of ACS HPVRT leadership and team members. The program supports HPV vaccination outreach, quality improvement efforts, and the sharing of best practices. The content does not necessarily represent the official positions of the American Cancer Society or the ACS HPVRT program.

Learn more about the program: Emerging Leaders Program - National HPV Vaccination Roundtable

Introduction

Childhood cancer survivors face a higher risk of developing human papillomavirus (HPV)-related cancers later in life. HPV vaccination – safe, effective, and recommended starting at age 9 – is a critical part of survivorship care. Healthcare providers play an essential role in supporting adherence to HPV vaccination, as a strong, routine recommendation is the single most important factor driving vaccination.

Key Takeaways for Healthcare Providers

- Begin HPV vaccination starting at age 9 for childhood cancer survivors.
- Initiate a three-dose series for cancer survivors, regardless of age at initiation.
- Start vaccination six months after completion of cancer therapy.
- Use a presumptive, strong recommendation at every eligible visit.
- Document vaccine status and communicate with the primary care provider (PCP).
- Utilize electronic health record (EHR) prompts, reminders, and survivorship care plans to support series completion.

Acknowledgments

We gratefully acknowledge Gabrielle Darville-Sanders, PhD, and the American Cancer Society Emerging Leaders Program team for their continued support. We also thank the healthcare providers and experts (Melissa Hudson, MD; Tim Folse, MD; Emily Browne, DNP, RN, CPNP; and Heather M. Brandt, PhD) who reviewed this toolkit and provided valuable feedback.

Preventing HPV Cancers in Childhood Cancer Survivors: Healthcare Provider Toolkit

Welcome to the HPV vaccination toolkit, a comprehensive resource for healthcare providers that interact with childhood cancer survivors. For this toolkit, the term healthcare providers refers to anyone working in a clinical or other setting in which HPV vaccination is given to childhood cancer survivors and who educate, recommend, and/or administer HPV vaccination.

Healthcare providers play a critical role in recommending HPV vaccination, helping prevent HPV-related cancers, and improving long-term health. This toolkit presents research that informs evidence-based guidelines, offering practical resources, strategies, and actionable content to support confident communication and integration of HPV vaccination into survivorship care.

Aims Of The Toolkit

- Offer healthcare providers guidance on HPV vaccination for childhood cancer survivors and their families involved in vaccination decision-making.
- Support providers in making strong, consistent HPV vaccination recommendations using evidence-based communication strategies.
- Provide information regarding implementation tools, such as checklists, EHR prompts, and reminder systems, to increase vaccine initiation and completion.
- Improve HPV vaccination rates and reduce the risk of HPV cancers in adulthood among childhood cancer survivors.

Table Of Contents

1. Background: Why HPV Vaccination Matters **5**
2. HPV Vaccine Safety And Effectiveness **6**
3. HPV Vaccination Guidelines For Childhood Cancer Survivors **7**
4. HPV Vaccination Starting At Age 9 . . . . . **8**
5. Role of Oncology Healthcare Providers. **8**
6. Healthcare Provider Communication Strategies **9**
7. Potential Barriers And Strategies to Improve HPV Vaccination **10**
8. Monitoring Progress (Evaluation) **12**
9. Resources. **12**
10. References **13**

1. Background: Why HPV Vaccination Matters

HPV is a common virus that causes more than 40,000 new cases of cancers each year in the United States.[1] HPV commonly causes six types of cancers, including oropharyngeal, cervical, anal, vaginal, vulvar, and penile cancers.[1] About 90% of HPV-related cancers can be prevented through on-time HPV vaccination.[2]

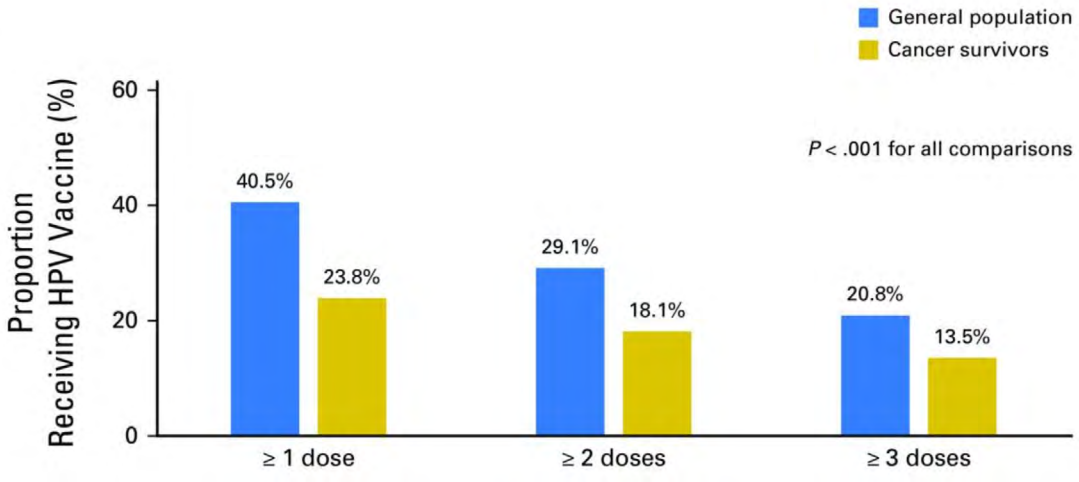
HPV vaccination is recommended for routine vaccination at age 11 or 12 years and starting at age 9.[3] Advisory Committee for Immunization Practices (ACIP) also recommends HPV vaccination for everyone through age 26 years if not adequately vaccinated previously. Some adults ages 27 through 45 years may decide to get the HPV vaccine based on discussions with their healthcare provider, if they did not get adequately vaccinated when they were younger. For those ages 9-14, two doses of HPV vaccination are recommended. Three doses are recommended for everyone aged 15-45 and for those who have a compromised immune system, including childhood cancer survivors.[4,5] Additionally, the American Academy of Pediatrics recommends starting the vaccination series between ages 9 and 12 years.[6] Evidence supports HPV vaccination starting at age 9.[7,8]

Despite the availability of the HPV vaccine in the US since 2006 for females and 2009 for males, HPV vaccination up-to-date coverage is 62.9% which falls short of the national Healthy People 2030 goal of 80%,[9] with lower coverage in some populations, including childhood cancer survivors.[10]

1.1. Importance of HPV Vaccination In Childhood Cancer Survivors

Eight out of 10 people will get HPV at some point in their lives.[2] On-time HPV vaccination can prevent approximately 90% HPV-related cancers.[11] Childhood cancer survivors face lasting health challenges even after the completion of cancer treatment and are at higher risk for HPV-related second cancers, potentially due to a weakened immune system from cancer-directed therapy.[12,13] However, these cancer survivors are less likely to be vaccinated against HPV compared to the general population (**Figure 1**).[10]

Figure 1. HPV Vaccination Among Cancer Survivors, Ages 13-26 (2012-2015)[10]



Furthermore, a recent study showed low HPV vaccination coverage among childhood cancer survivors, with only 27.3% reporting HPV vaccination initiation, highlighting gaps in cancer prevention.[14] HPV vaccination among childhood cancer survivors is critical for preventing HPV infections and subsequent cancers, making timely vaccination an essential component of long-term survivorship care.

1.2. Reasons For Lower HPV Vaccination Coverage In Childhood Cancer Survivors

Multilevel factors influence HPV vaccination coverage in childhood cancer survivors, including cancer survivors or caregiver-level factors, healthcare provider-level factors, and system-level factors (**Figure 2**).[15] Evidence indicates lack of provider recommendation as the strongest predictor for lower HPV vaccination coverage.[10,16-19]

Figure 2. Multi-level Factors for Lower Vaccination Coverage Among Childhood Cancer Survivors[15]

Survivor/caregiver level	Healthcare provider level	System level
• Knowledge gaps • Safety concerns • Hesitancy • Financial concerns • Lack of understanding about the relevance for childhood cancer survivors	• Inconsistent guidelines • Knowledge gaps regarding vaccination specific to childhood cancer survivors • Time constraints • Competing priorities	• Lack of vaccine availability • Limitations in vaccine storage

2. HPV Vaccine Safety And Effectiveness

HPV vaccination is safe and effective and prevents HPV-related infections and cancers.[20] On-time vaccination prevents most HPV-related cancers, including second cancers in childhood cancer survivors.[11]

Since its introduction in 2006, more than 500 million doses of HPV vaccine have been administered worldwide, generating extensive clinical safety data.[21] Large-scale research consistently demonstrates the safety of HPV vaccines. A systematic review of 109 studies, including over 2.5 million vaccinated individuals, showed no evidence of an increased risk of autoimmune, neurological, venous thromboembolic, or other unexpected serious health conditions associated with HPV vaccination.[22]

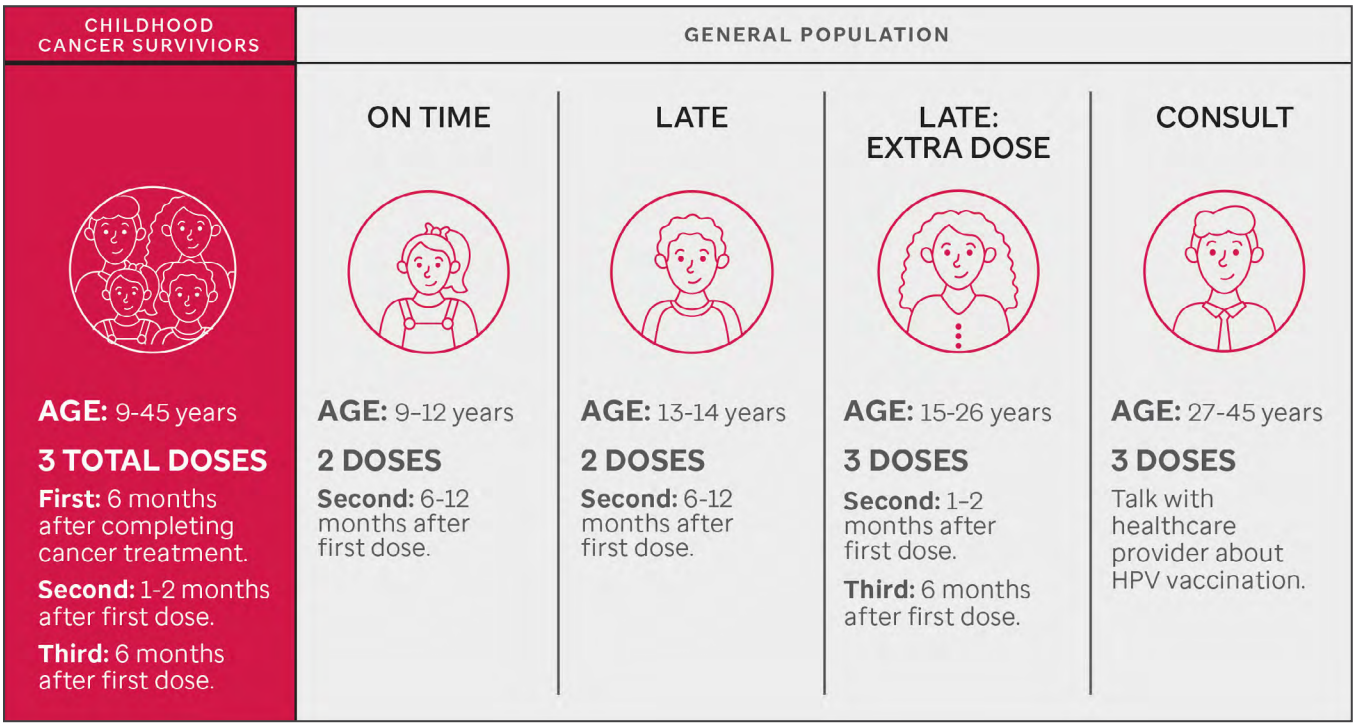
More recent evidence continues to show support for the safety of HPV vaccination.[23] A study published in 2022 used the data from the Vaccine Safety Datalink for over 1.8 million HPV vaccine doses administered in the US from 2015 to 2021 showed no association between HPV vaccination and severe health events.[24] Additionally, recent systematic reviews found that HPV vaccination is not associated with rheumatoid arthritis or other autoimmune diseases.[25, 26] Like with any vaccination, recipients may experience common side effects that are generally mild, including pain, redness, and/or swelling at the injection site.[11]

Childhood cancer survivors are at increased risk for HPV-related cancers, and evidence shows HPV vaccination in this population is safe and produces immune responses similar to those in the general population.[20] Because of its effectiveness in preventing HPV-related cancers, 62 National Cancer Institute (NCI)-Designated Cancer Centers and several leading cancer organizations fully endorse the importance of HPV vaccination for preventing HPV-related cancers.[27]

3. HPV Vaccination Guidelines For Childhood Cancer Survivors

The Children's Oncology Group (COG) Long-Term Follow-Up Guidelines (version 6.0) recommend a total of three doses of HPV vaccine for childhood cancer survivors, starting six months after the completion of cancer treatment, regardless of their age at first vaccine dose (COG, 2023) (**Figure 3**).[5] This is because available evidence about vaccine effectiveness is based on the three-dose series.[20]

Figure 3. HPV Vaccination Long-term Follow-up Guidelines for Childhood Cancer Survivors[5]



These recommendations for the general population are based on MMWR, August 16, 2019, Vol 68(32);698-702 and MMWR, December 16, 2016, Vol 65(49);1405-1408, which are consistent with recommendations of the American Academy of Pediatrics and the American Cancer Society for on-time HPV vaccination.[4,28] Childhood cancer survivor recommendations are based on the COG Long-Term Follow-Up Guidelines (version 6.0).[5]

4. HPV Vaccination Starting At Age 9

HPV vaccination initiation starting at age 9 is most effective because it provides stronger immune protection and prevents HPV infection before exposure, thereby reducing the risk of HPV-related cancers later in life.[6, 7, 29] Young survivors of childhood cancer are a special population, and HPV vaccination should begin at age 9 and six months after completing cancer therapy, when possible. Cancer survivors require a total of three-dose series regardless of their age at first vaccination.[5] Evidence shows several benefits of starting HPV vaccination at age 9,[6, 7, 29, 30] and these benefits extend to childhood cancer survivors following their immune recovery. These benefits include:

1. **Provides stronger immune response**
   On-time vaccination helps to maximize immune response.
2. **Vaccination before HPV exposure**
   On-time vaccination increases the likelihood of protection before HPV exposure.
3. **Reduces concerns about sexual activity**
   Starting vaccination at the youngest recommended age reduces parental concern about the vaccine being linked to sexual activity.
4. **Ensures timely completion of three-dose schedule**
   Childhood cancer survivors need three doses regardless of age; initiation at age 9 allows more time to complete the full series on schedule.
5. **Increased vaccination rates**
   Initiation at age 9 increases the likelihood of completing the full series.
6. **Prevention of HPV cancer in later life**
   Childhood cancer survivors are at higher risk of HPV cancers in their adulthood, so on-time vaccination provides critical protection.

It is important to acknowledge that some childhood cancer survivors may be unable to start at age 9. It is recommended that they be vaccinated six months following completion of cancer-directed therapy. In some cases, the period following completion of therapy may be longer for medical reasons. However, it is safe to begin HPV vaccination among medically eligible childhood cancer survivors at age 9.

5. Role of Oncology Healthcare Providers

HPV vaccination is cancer prevention. As trusted individuals, oncology healthcare providers play a critical role in HPV vaccination recommendations.[16, 31, 32] It is crucial to initiate HPV vaccination conversations with childhood cancer survivors and their caregivers early after the completion of cancer therapy and during survivorship visits and to assess cancer survivors' immune status and ensure medical readiness. Additionally, it is important to communicate the importance of HPV vaccination with the cancer survivors' primary care providers (PCPs).[33-35]

6. Healthcare Provider Communication Strategies

The Announcement Approach Training (AAT) is effective in improving healthcare providers' communication about HPV vaccination and increasing HPV vaccination rates in the general populations.[36, 37] The following has been adapted for improving HPV vaccination rates among childhood cancer survivors.

Announcement Approach Training

(1) Announce:

State it as routine, standard care for childhood cancer survivors:

- *"Alex/Maya has reached an important milestone having completed their cancer treatment. Alex/Mya is now 9, so today they will get a vaccine that prevents six different HPV cancers."*

(2) Connect and counsel:

If caregivers or survivors show some hesitation:

- Ask:
  - *"What would you say is your main concern?"*
- Listen carefully, repeat their concern to show understanding, and emphasize evidence that the HPV vaccine is safe for cancer survivors and prevents cancers. Share that you want what is best for them and want to prevent another type of cancer they may develop as an adult.
- Provide clear, evidence-based reassurance:
  - "*Similar to the general population, the HPV vaccine is safe for childhood cancer survivors and helps to prevent cancers in the future."*

(3) Try Again:

If HPV vaccination is declined today:

- Say:
  - *"I understand you want to think about this. I want to do all I can to keep them safe and healthy, and I know HPV vaccination is safe, it works, and it protects childhood cancer survivors. Let's discuss it again at their next appointment."*
- Respectfully note the decision in the chart.
- Revisit the recommendation at the next survivorship or future follow-up visit.

7. Potential Barriers And Strategies to Improve HPV Vaccination

Despite clear guidelines and the strong benefits of HPV vaccination for childhood cancer survivors, several barriers limit timely initiation and completion of the vaccination series. Healthcare providers play a critical role by asking childhood cancer survivors or caregivers about their main concerns. **Table 1** shows common barriers and strategies to improve HPV vaccination.

Table 1. Common Barriers and Strategies to Improve HPV Vaccination

Barriers	Potential strategies
• Safety concern and hesitancy	• Use the Announcement Approach Training; emphasize that the vaccine prevents six cancers. • Reassure: HPV vaccination is safe and effective in cancer survivors.
• Confusion about dose series: required three doses (versus only two doses in general population before age 15)	• Normalize: Cancer survivors need three total doses for strong protection. • Provide a clear schedule card and set reminders (text, EHR). • Coordinate doses across oncology and primary care.
• Transition from oncology to primary care after completion of cancer therapy can result in missed opportunities	• Document vaccine plan in survivorship care plan. • Communicate with primary care provider. • Communicate dose status at each visit. • Set up automated reminders (texts or calls). • Provide a written schedule at first dose. • Offer catch-up at oncology, survivorship, or PCP visits.
• Competing survivorship issues might overshadow vaccines in an oncology setting.	• Add HPV vaccine to survivorship checklist. • Train oncology teams to introduce it early. • Designate a vaccination champion in each clinic.
• Time constraints during visits might limit an opportunity for counseling.	• Use presumptive recommendation instead of a lengthy explanation. • Delegate vaccine administration to nursing staff with standing orders. • Use EHR pre-visit planning.

7.1. Provider Checklist

At each survivorship or follow-up visit:

- ☑ **1.** Confirm completion of cancer treatment.
- ☑ **2.** Ensure patient is at least 9 years old and six months post-treatment of cancer therapy.
- ☑ **3.** Confirm need for three-dose HPV vaccination series regardless of age.
- ☑ **4.** Deliver strong recommendation by announcing HPV vaccination as standard care.
- ☑ **5.** Administer dose 1 on the same day.
- ☑ **6.** Schedule for remaining doses (dose 2 [one to two months later], dose 3 [six months later]).
- ☑ **7.** Document vaccination in the EHR, vaccine registry, and survivorship care plan.
- ☑ **8.** Communicate vaccine plan and dose status to the PCP.
- ☑ **9.** Set reminders (text, emails, calls, EHR alerts).
- ☑ **10.** Readdress at next visit if previously declined.

7.2. Implementation Tools

The following suggestions may aid in the implementation of the recommended steps to improve HPV vaccination among childhood cancer survivors at the clinic, with family, and across systems.

Clinic level

- EHR alerts until series completion
- Standing orders empowering nursing staff to address vaccination status
- Pre-visit planning to identify eligible cancer survivors
- Survivorship visit checklists, including HPV vaccination

Family level

- Text/call/email reminders
- Printed vaccination schedule (including Next: HPV dose due [insert date])
- Appointment scheduling at time of dose 1

Cross-system Coordination

- Primary care provider follow-up scheduling
- Navigation support for dose tracking
- Shared electronic medical record (EMR) orders when possible
- Patient navigation and care coordination support for both oncology and PCP office

8. Monitoring Progress (Evaluation)

Clinics and healthcare providers using this toolkit are encouraged to monitor the implementation efforts to improve HPV vaccination coverage among childhood cancer survivors.

Process evaluation

- **Reach:** Track the number of providers who received the toolkit (e.g., via email, clinic distribution).
- **Engagement:** Monitor the frequency of toolkit access and time spent using it in clinical practice.
- **Feasibility:** Gather provider feedback on clarity, usability, and applicability of content of the toolkit in clinical practice.

Outcome evaluation

- Confidence in recommending HPV vaccine: assessing healthcare providers' confidence in recommending HPV vaccination to childhood cancer survivors
- Percentage of eligible childhood cancer survivors who initiated HPV vaccination
- Percentage of childhood cancer survivors who completed the three-dose series
- Time from treatment completion to receipt of dose 1 and series completion

9. Resources

Learn more about HPV vaccination and specifically HPV vaccination among childhood cancer survivors from these resources.

- American Academy of Pediatrics Immunizations for Teenagers and Young Adults[8]
- American Cancer Society HPV Vaccine[2]
- American Cancer Society National HPV Vaccination Roundtable Start at Age 9 Resources[38]
- COG Long-term Follow-up Guidelines for Survivors of Childhood, Adolescent, and Young Adult Cancer (Version 6.0)[5]
- St. Jude HPV Cancer Prevention Program Survivor Proud[39]

10. References

1. American Cancer Society. Cancers Linked with HPV. October 6, 2025. https://www.cancer.org/cancer/risk-prevention/hpv/hpv-and-cancer-info.html.
2. American Cancer Society. Prevent six cancers with the HPV vaccine. November 17, 2025. https://www.cancer.org/cancer/risk-prevention/hpv/hpv-vaccine.html.
3. Meites E. Human papillomavirus vaccination for adults: updated recommendations of the Advisory Committee on Immunization Practices. *MMWR Morb Mortal Wkly Rep.* 2019;68(32):698-702.
4. Meites E. Use of a 2-dose schedule for human papillomavirus vaccination - updated recommendations of the Advisory Committee on Immunization Practices. *MMWR Morb Mortal Wkly Rep*. 2016;65(49):1405-1408.
5. Children's Oncology Group. Long-Term Follow-Up Guidelines for Survivors of Childhood, Adolescent, and Young Adult Cancers (Version 6.0). October 5, 2025. https://www.survivorshipguidelines.org/
6. O'Leary ST. Why the American Academy of Pediatrics recommends initiating HPV vaccine at age 9. *Hum Vaccin Immunother* 2022;18(6):2146434.
7. Perkins RB, Humiston S, Oliver K. Evidence supporting the initiation of HPV vaccination starting at age 9: Collection overview. T*aylor & Francis*; 2023. p. 2269026.
8. American Academy of Pediatrics. AAP-Recommended Vaccines for Tweens, Teens & Young Adults. January 15, 2026. https://www.healthychildren.org/English/safety-prevention/immunizations/Pages/Immunizations-for-Teenagers-and-Young-Adults.aspx.
9. Pingali C. Vaccination Coverage Among Adolescents Aged 13-17 Years – National Immunization Survey-Teen, United States, 2024. *MMWR Morb Mortal Wkly Rep* 2025;74.
10. Klosky JL, Hudson MM, Chen Y, et al. Human papillomavirus vaccination rates in young cancer survivors. *J Clin Oncol*. 2017;35(31):3582-3590.
11. American Cancer Society. HPV Vaccines. October 4, 2025. https://www.cancer.org/cancer/risk-prevention/hpv/hpv-vaccines.html.
12. Ojha RP, Tota JE, Offutt-Powell TN, et al. Human papillomavirus-associated subsequent malignancies among long-term survivors of pediatric and young adult cancers. *PLoS One*. 2013;8(8):e70349. doi:10.1371/journal.pone.0070349.
13. Henderson TO, Fowler BW, Hamann HA, et al. Subsequent malignant neoplasms in the Childhood Cancer Survivor Study: Occurrence of cancer types in which human papillomavirus is an established etiologic risk factor. *Cancer.* 2022;128(2):373-382. doi:10.1002/cncr.33922.
14. Gautam Poudel P, Mirzaei S, Xing M, et al. Examining HPV vaccination coverage among childhood, adolescent, and young adult cancer survivors: a report from the St. Jude Lifetime Cohort study. *J Cancer Surviv*. 2026;doi:10.1007/s11764-026-02005-5.
15. Gautam Poudel P, Brown J, Brinkman TM, et al. Human papillomavirus vaccination among childhood cancer survivors: A scoping review. *Hum Vaccin Immunother*. 2025;21(1):2593098. doi:10.1080/21645515.2025.2593098.
16. Kirchhoff AC, Mann K, Warner EL, et al. HPV vaccination knowledge, intentions, and practices among caregivers of childhood cancer survivors. *Hum Vaccin Immunother.* 2019;15(7-8):1767-1775. doi:10.1080/21645515.2019.1619407.
17. Klosky JL, Russell KM, Canavera KE, et al. Risk factors for non-initiation of the human papillomavirus vaccine among adolescent survivors of childhood cancer. *Cancer Prev Res (Phila)*. 2013;6(10):1101-10. doi:10.1158/1940-6207.Capr-13-0127.
18. Klosky JL, Favaro B, Peck KR, et al. Prevalence and predictors of human papillomavirus (HPV) vaccination among young women surviving childhood cancer. *J Cancer Surviv.* Jun 2016;10(3):449-56. doi:10.1007/s11764-015-0495-2.
19. York JM, Klosky JL, Chen Y, et al. Patient-Level Factors Associated With Lack of Health Care Provider Recommendation for the Human Papillomavirus Vaccine Among Young Cancer Survivors. *J Clin Oncol*. 2020;38(25):2892-2901. doi:10.1200/jco.19.02026.
20. Landier W, Bhatia S, Wong FL, et al. Immunogenicity and safety of the human papillomavirus vaccine in young survivors of cancer in the USA: a single-arm, open-label, phase 2, non-inferiority trial. *Lancet Child Adolesc Health*. 2022;6(1):38-48. doi:10.1016/s2352-4642(21)00278-9.
21. Brotherton JML, LaMontagne DS, Bloem PJN. Global status of HPV vaccination two decades in: effective, safe and preventing cancer. *Expert Rev Vaccines*. 2026;25(1):2609869. doi:10.1080/14760584.2025.2609869.
22. Phillips A, Patel C, Pillsbury A, Brotherton J, Macartney K. Safety of human papillomavirus vaccines: an updated review. *Drug Saf.* 2018;41(4):329-346.
23. National HPV Vaccination Roundtable. The facts on HPV vaccine safety and effectiveness. April 18, 2026. https://hpvroundtable.org/wp-content/uploads/2026/02/081226-The-Facts-on-HPV-Vaccine-Safety-and-Effectiveness.pdf.
24. Sundaram ME, Kieke BA, Hanson KE, et al. Extended surveillance to assess safety of 9-valent human papillomavirus vaccine. *Hum Vaccin Immunother*. 2022;18(7):2159215. doi:10.1080/21645515.2022.2159215.
25. Wang M, Gu H, Zhai Y, et al. Vaccination and the risk of systemic lupus erythematosus: a meta-analysis of observational studies. *Arthritis Res Ther*. 2024;26(1):60. doi:10.1186/s13075-024-03296-8.
26. Pan H, Yu Y, Li X, et al. Vaccination and rheumatoid arthritis: an updated systematic review and meta-analysis of data from 25,949,597 participants. *BMC Public Health*. 2025;25(1):933. doi:10.1186/s12889-025-22093-9.
27. Leading Cancer Research Centers Reinforce Importance of Safe and Effective HPV Vaccination to Prevent Cancer. https://sjr-redesign.stjude.org/content/dam/research-redesign/centers-initiatives/hpv-cancer-prevention-program/hpv-nci-letter-2025.pdf.
28. Meites E. Human papillomavirus vaccination for adults: updated recommendations of the Advisory Committee on Immunization Practices. *MMWR Morb Mortal Wkly Rep*. 2019;68.
29. Brandt HM, Footman A, Adsul P, Ramanadhan S, Kepka D. Implementing interventions to start HPV vaccination at age 9: using the evidence we have. *Human Vaccin Immunother*. 2023;19(1):2180250.
30. American Cancer Society. Why age 9? November 17, 2024. https://hpvroundtable.org/wp-content/uploads/2023/05/HPV_Roundtable-HPV_Why_Age_9_Sales_Sheet_WEB.pdf.

31. Ramsay JM, Mann K, Kaul S, Zamora ER, Smits-Seemann RR, Kirchhoff AC. Follow-Up Care Provider Preferences of Adolescent and Young Adult Cancer Survivors. *J Adolesc Young Adult Oncol*. 2018;7(2):204-209. doi:10.1089/jayao.2017.0083.
32. Warner EL, Montenegro RE, Stroup A, Kinney AY, Kirchhoff AC. Health care concerns of rural childhood cancer survivors. *J Health Care Poor Underserved*. 2014;25(2):901-12. doi:10.1353/hpu.2014.0095.
33. Garcia MA, Schlecht NF, Rokitka DA, Attwood KM, Rodriguez EM. Examining the Barriers and Opportunities for Human Papillomavirus Vaccine Delivery in Cancer Care Settings: A Mixed-Methods Study. *Cancer Prev Res (Phila)*. 2023;16(10):581-589. doi:10.1158/1940-6207.Capr-23-0046.
34. Waters AR, Weir C, Kramer HS, et al. Implementation barriers and considerations for recommending and administering the human papillomavirus (HPV) vaccination in oncology settings. *J Cancer Surviv*. 2024;18(5):1481-1491. doi:10.1007/s11764-023-01391-4.
35. Kacew AJ, Jacobson S, Sheade J, et al. Provider-Level Barriers to Human Papillomavirus Vaccination in Survivors of Childhood and Young Adult Cancers. *J Adolesc Young Adult Oncol.* 2022;11(3):284-289. doi:10.1089/jayao.2021.0096.
36. Malo TL, Hall ME, Brewer NT, Lathren CR, Gilkey MB. Why is announcement training more effective than conversation training for introducing HPV vaccination? A theory-based investigation. *Implement Sci*. 2018;13(1):57. doi:10.1186/s13012-018-0743-8.
37. Brewer NT, Hall ME, Malo TL, Gilkey MB, Quinn B, Lathren C. Announcements versus conversations to improve HPV vaccination coverage: a randomized trial. *Pediatrics*. 2017;139(1):e20161764.
38. American Cancer Society. Start HPV vaccination at age 9. December 17, 2025. https://hpvroundtable.org/start-hpv-vaccination-at-age-9/.
39. Program SJHCP. Protect survivors from HPV cancers. December 10, 2025. https://www.stjude.org/research/comprehensive-cancer-center/hpv-cancer-prevention-program/survivor-proud.html.