Strategies for Improving HPV Vaccination Rates

January 29, 2024
1:00 PM ET

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Agenda

Welcome and Introductions

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Questions and Answers

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- Marla Dalton (NFID Staff) owned stock from Merck & Co., Inc.

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Learning Objectives

At the conclusion of this activity, participants will be able to:

- Discuss current US recommendations for HPV vaccination
- Discuss coverage and disparities in HPV vaccination in the US
- Implement strategies to increase HPV vaccination rates in the US

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About NFID

Founded in 1973, the National Foundation for Infectious Diseases (NFID) is a non-profit 501(c)(3) organization

Vision:
Healthier lives for all through the effective prevention and treatment of infectious diseases

Mission:
Educate and engage the public, communities, and healthcare professionals about infectious diseases across the lifespan

Core Values:
- Collaboration
- Diversity, Equity, Inclusion
- Evidence-Based
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Poll

What is the **most frequent** barrier you face when recommending HPV vaccine to patients/parents?

A. Concerns about vaccine safety and/or side effects
B. Lack of awareness about HPV
C. Stigma around sexual health
D. Logistics of timely follow-up for multi-dose series
E. Cost
F. Not currently in practice

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Cassandra (Sandy) Pingali, MS, MPH
Epidemiologist
Centers for Disease Control and Prevention (CDC)

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Recommended Immunization Schedule for Adolescents

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HPV Vaccine Recommendations across the Lifespan

Routine vaccination	Age **11–12 years**; can be started at age 9 years
Catch-up Vaccination*	Age **13–26 years**, if not adequately vaccinated
Shared clinical decision-making*	Some adults age **27–45 years**, if not adequately vaccinated

- **Children and adults age 9 through 26 years**
  - HPV vaccination is routinely recommended at age 11 or 12 years; vaccination can be given starting at age 9 years. Catch-up HPV vaccination is recommended for all persons through age 26 years who are not adequately vaccinated.
- **Adults age >26 years**
  - Catch-up HPV vaccination is not recommended for all adults age >26 years. Instead, shared clinical decision-making regarding HPV vaccination is recommended for some adults age 27 through 45 years who are not adequately vaccinated. HPV vaccines are not licensed for use in adults age >45 years.

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1. Human Papillomavirus Vaccination for Adults: Updated Recommendations of the Advisory Committee on Immunization Practices | MMWR (cdc.gov)
2. www.cdc.gov/mmwr/volumes/70/ss/ss7003a1.htm

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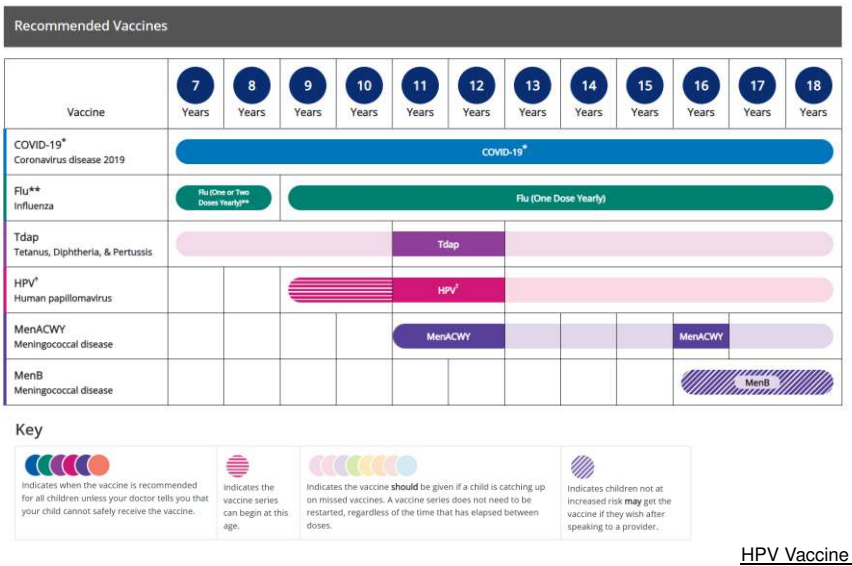
Recommended Vaccinations for Children Age 7 to 18 Years Old



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HPV Vaccine Schedule and Dosing | CDC

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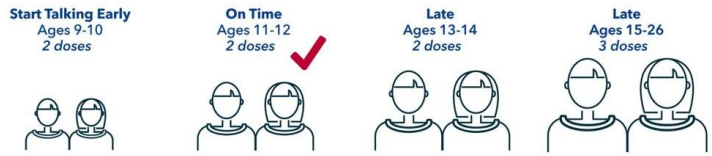
HPV Vaccine Schedule and Dosing



About 80% of people will get an HPV infection in their lifetime. Recommending HPV vaccination for all 11–12 year-olds can protect them long before they are ever exposed. **CDC recommends two doses of HPV vaccine for all adolescents at age 11 or 12 years.**

- A 2-dose series is recommended for those age 11 through 12 years old separated by 6 to 12 months
  - The series can begin at age 9 years
- A 3-dose series is recommended for those with weakened immune systems and those who start the series after their 15th birthday

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www.vax2stopcancer.org/resources-cliniciansER

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Assessing Routine Vaccination Coverage with the National Immunization Survey-Teen (NIS-Teen)

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What is the National Immunization Survey-Teen (NIS-Teen)?

- Who: Parents/guardians of adolescents age 13-17 years
- What: Surveillance system to monitor trends in vaccination coverage at the national, state, and local area/territory level
- When: January 2022 to December 2022
- Where: 50 states, Washington DC, select local areas and territories
- Why: Data are useful to identify gaps in immunization coverage, evaluate vaccination campaigns, and implement strategies to improve vaccine uptake

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NIS-Teen Methodology

- **Two phase** survey
  - 1st phase: random digit dialed cell phone survey of parents in households with teens age 13-17 years
  - 2nd phase: mailed survey of vaccination providers
- **Household survey** collects socio-demographics, health insurance status, and consent for provider survey
- **Provider survey** collects the types of vaccinations, number of doses, dates of administration, and other administrative data about the healthcare facility
  - Teens are classified as being up to date based on the ACIP-recommended number of doses for each vaccine
- Sample size of 2022 NIS-Teen survey included data collected from parents/guardians of 16,043 adolescents
  - Born January 2004-January 2010

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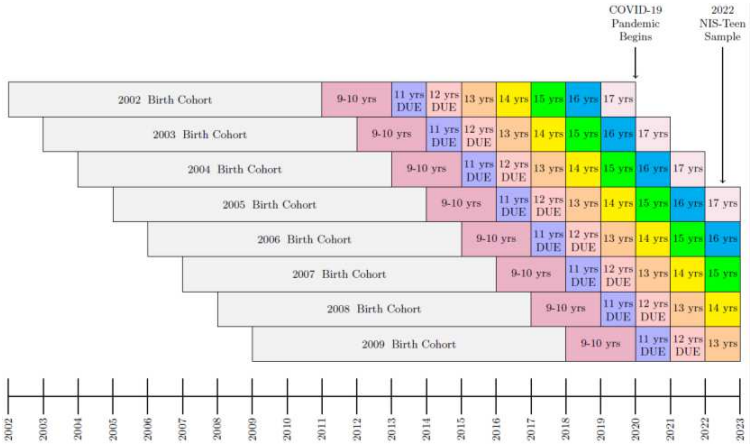
2022 NIS-Teen Analytic Approach



- Traditional **cross-sectional analysis** of coverage among teens age 13-17 years
- **Birth cohort analysis** of coverage by age groups to capture **recent changes** in vaccination coverage during the COVID-19 pandemic

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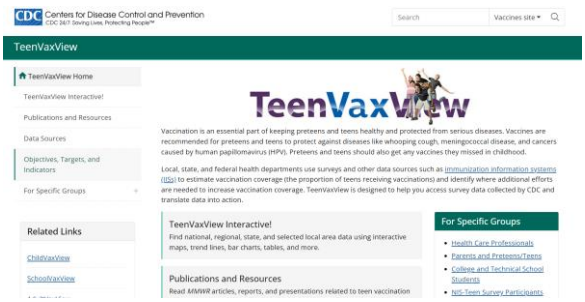
Annual Vaccination Coverage Results among Adolescents Age 13-17 Years Available in Yearly MMWR Publication and CDC TeenVaxView



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1. Vaccination Coverage Among Adolescents Aged 13–17 Years — National Immunization Survey–Teen, United States, 2022 | MMWR (cdc.gov)

2. TeenVaxView | Home | CDC

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Cross-Sectional Analysis Results

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Estimated Vaccination Coverage with Routine Vaccines among Adolescents Age 13-17 Years: NIS-Teen, 2021 and 2022

VACCINE	2022 (n=16,043)	2021 (n=18,002)	SIGNIFICANT Increase or Decrease?	PERCENTAGE POINT DIFFERENCE COMPARED TO 2021
	% (95% CI)	% (95% CI)		
≥1 Tdap	89.9 (88.9-90.9)	89.6 (88.6-90.5)	-	0.3
≥1 MenACWY	88.6 (87.6-89.6)	89.0 (87.9-90.0)	-	-0.4
≥2 MenACWY*	60.8 (57.5-63.9)	60.0 (56.6-63.3)	-	0.8
HPV Females and Males Combined				
≥1 HPV	76.0 (74.7-77.3)	76.9 (75.6-78.2)	-	-0.9
HPV UTD	62.6 (61.1-64.0)	61.7 (60.2-63.2)	-	0.8
HPV Females Only				
≥1 HPV	77.8 (75.8-79.6)	78.5 (76.6-80.4)	-	-0.8
HPV UTD	64.6 (62.5-66.6)	63.8 (61.5-65.9)	-	0.9
HPV Males Only				
≥1 HPV	74.4 (72.5-76.1)	75.4 (73.5-77.2)	-	-1.1
HPV UTD	60.6 (58.6-62.6)	59.8 (57.6-61.8)	-	0.9

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*Assessed among adolescents age 17 years; MenACWY estimate does not include 17-year-old adolescents who received their first MenACWY dose at ≥16 years and do not need a second vaccine dose

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Estimated Vaccination Coverage with Catch-Up and Other Vaccines Recommended for Adolescents among Adolescents Age 13-17 Years: NIS-Teen, 2021 and 2022

VACCINE	2022 (n=16,043)	2021 (n=18,002)	SIGNIFICANT Increase or Decrease?	PERCENTAGE POINT DIFFERENCE COMPARED TO 2021
	% (95% CI)	% (95% CI)		
≥1 MenB	29.4 (26.5-32.4)	31.4 (28.2-34.8)	-	-2.1
≥2 MMR	91.2 (90.2-92.1)	92.2 (91.2-93.2)	-	-1.1
≥2 HepA	85.0 (83.8-86.1)	85.0 (83.8-86.1)	-	0.0
≥3 HepB	91.2 (90.2-92.1)	92.3 (91.3-93.1)	-	-1.1
Varicella				
History of varicella disease	7.0 (6.3-7.8)	7.3 (6.5-8.2)	-	-0.3
Among adolescents without history of varicella disease: ≥1 VAR ≥2 VAR	 94.1 (93.2-94.8) 90.8 (89.8-91.8)	 94.9 (94.0-95.7) 91.5 (90.5-92.5)	 - -	 -0.9 -0.7
History of varicella disease or received ≥2 VAR	91.5 (90.5-92.4)	92.2 (91.2-93.1)	-	-0.7

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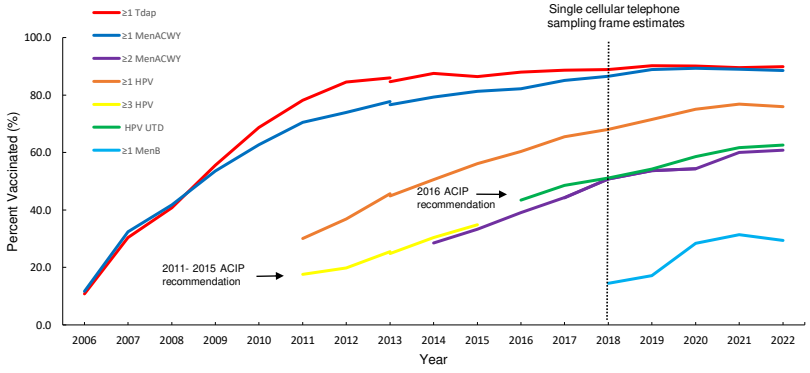
Estimated Vaccination Coverage with Selected Vaccines and Doses* among Adolescents Age 13-17 Years, by Survey Year: NIS-Teen§, ¶, 2006-2022



*≥1 dose Tdap at or after age 10 years; ≥1 dose MenACWY or meningococcal-unknown type vaccine; ≥2 doses MenACWY or meningococcal-unknown type vaccine, calculated only among adolescents age 17 years at time of interview. Does not include adolescents who received their first and only dose of MenACWY at or after 16 years of age; HPV vaccine, nine-valent (9vHPV), quadrivalent (4vHPV) or bivalent (2vHPV). The routine ACIP recommendation for HPV vaccination was made for females in 2006 and for males in 2011. Because HPV vaccination was recommended for boys in 2011, coverage for all adolescents was not measured before that year; HPV UTD - Includes those with ≥3 doses, and those with 2 doses when the first HPV vaccine dose was initiated before age 15 years and at least five months minus four days elapsed between the first and second dose.

† NIS-Teen implemented a revised adequate provider data definition (APD) in 2014, and retrospectively applied the revised APD definition to 2013 data. Estimates using different APD definitions may not be directly comparable.

§ NIS-Teen moved to a single-sample frame in 2018.

¶ The Advisory Committee on Immunization Practices (ACIP) revised the recommended HPV vaccination schedule in late 2016. The schedule changed from a 3-dose to 2-dose series with appropriate spacing between receipt of the 1st and 2nd dose for immunocompetent adolescents initiating the series before the 15th birthday. Three doses are still recommended for adolescents initiating the series between the ages of 15 and 26 years. Because of the change in definition, the graph includes estimates for ≥3 doses HPV from 2011 to 2015 and the HPV UTD estimate for 2016 - 2022. Because HPV vaccination was recommended for boys in 2011, coverage for all adolescents was not measured before that year.

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Estimated Vaccination Coverage among Adolescents Age 13-17 Years, by Metropolitan Statistical Area: NIS-Teen, 2022

Vaccines	Non-MSA (Mostly Rural)	MSA, Non-Principal City (Mostly Suburban)	MSA, Principal City (Mostly Urban)	Percentage point difference (Non-MSA - Principal City %)	Percentage point difference (MSA Non-Principal City% - Principal City %)
≥1 HPV	71.3 (68.1 to 74.2)*	75.0 (73.1 to 76.9)*	78.3 (76.2 to 80.4)	-7.1 (-10.8 to -3.4)	-3.3 (-6.1 to -0.5)
HPV UTD	56.2 (52.8 to 59.5)*	62.1 (60.0 to 64.1)	64.8 (62.4 to 67.1)	-8.6 (-12.7 to -4.5)	-2.7 (-5.8 to 0.4)

*Statistically significant difference compared with adolescents living in MSA Principal City ($p<0.05$).

Vaccination Coverage by Geographic Area

- Adolescents living in mostly rural areas (non-MSAs) had **significantly lower** coverage with ≥1 HPV and HPV UTD compared to adolescents living in mostly urban areas (MSA Principal Cities)
- Adolescents living in MSA non-principal cities had **significantly lower** coverage with ≥1 HPV compared to adolescents living in mostly urban areas (MSA Principal Cities)

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Estimated Vaccination Coverage among Adolescents Age 13-17 Years, by Poverty Status: NIS-Teen, 2022

Vaccines	Below Poverty Level	At or Above Poverty Level	Percentage Point Difference (Below Poverty % - At or Above Poverty %)
≥1 HPV	79.3 (75.6 to 82.6)	75.5 (74.1 to 76.9)	3.8 (0.0 to 7.5)
HPV UTD	64.0 (59.9 to 68.0)	62.1 (60.5 to 63.6)	2.0 (-2.4 to 6.3)

Vaccination Coverage by Poverty Status

- There were **no significant differences** in coverage by poverty status for ≥1 HPV and HPV UTD

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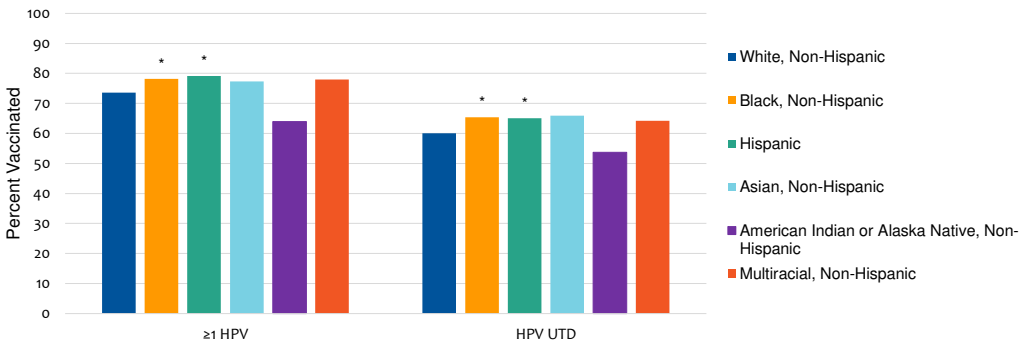
Estimated Vaccination Coverage among Adolescents Age 13-17 Years, by Race and Ethnicity: NIS-Teen, 2022



* Coverage significantly higher compared to white adolescents.

Vaccination Coverage by Race and Ethnicity

- Black and Hispanic adolescents had **significantly higher coverage** with ≥1 HPV, HPV UTD than White adolescents

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Estimated Vaccination Coverage among Adolescents Age 13-17 Years, by Health Insurance Status: NIS-Teen, 2022

Vaccines	Private Insurance	Any-Medicaid	Other Insurance	Uninsured	Percentage point difference for Any Medicaid	Percentage point difference for Other Insurance	Percentage point difference for Uninsured
≥1 HPV dose	76.9 (75.3 to 78.4)	77.2 (74.8 to 79.4)	71.8 (66.8 to 76.3)	58.3 (48.2 to 67.7)*	0.3	-5.1	-18.6
HPV UTD	64.4 (62.6 to 66.1)	63.5 (60.9 to 66.0)	56.0 (51.0 to 60.9)*	38.2 (29.7 to 47.5)*	-0.9	-8.4	-26.2

*Statistically significant difference compared with teens with private insurance only ($p<0.05$).

Vaccination coverage by health insurance status

- Compared to adolescents with private insurance only, adolescents with **other insurance** (CHIP, military, IHS, any other) had **significantly lower** percentage of adolescents HPV UTD
- Compared to adolescents with private insurance only, **uninsured** adolescents had **significantly lower** coverage with ≥1 HPV and HPV UTD
- Medicaid-insured adolescents and privately insured adolescents had similar HPV vaccination coverage in 2022

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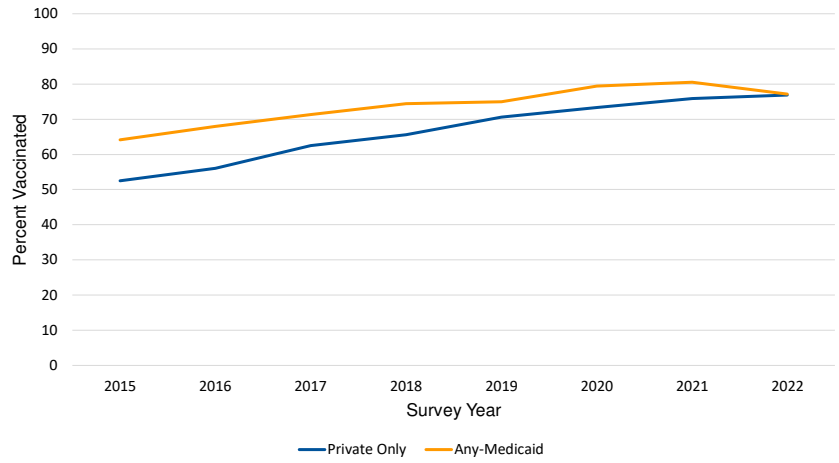
Estimated Vaccination Coverage with ≥1 Human Papillomavirus (HPV) Vaccine among Adolescents Age 13-17 Years, by Health Insurance Status: NIS-Teen, 2015-2022



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Estimated Vaccination Coverage with Selected Vaccines and Doses among Adolescents Age 13-17 Years and those with Private and Any-Medicaid Insurance: NIS-Teen, 2021 and 2022

	Health Insurance Status, % (95% CI)					
	Private Insurance Only			Any-Medicaid		
	2022	2021	Difference	2022	2021	Difference
	(n = 9,463)	(n = 11,146)		(n = 4,939)	(n = 5,163)	
≥1 HPV	76.9 (75.3 to 78.4)	75.9 (74.1 to 77.6)	1.0 (-1.3-3.4)	77.2 (74.8 to 79.4)	80.5 (78.2 to 82.5)	-3.3 (-6.4 to -0.1) *
HPV UTD	64.4 (62.6 to 66.1)	62.1 (60.2 to 64.0)	2.3 (-0.4-4.9)	63.5 (60.9 to 66.0)	64.1 (61.3 to 66.7)	-0.5 (-4.3 to 3.2)

*Statistically significant difference ($p<0.05$) in estimated vaccination coverage within insurance status; referent group was 2021 survey year.

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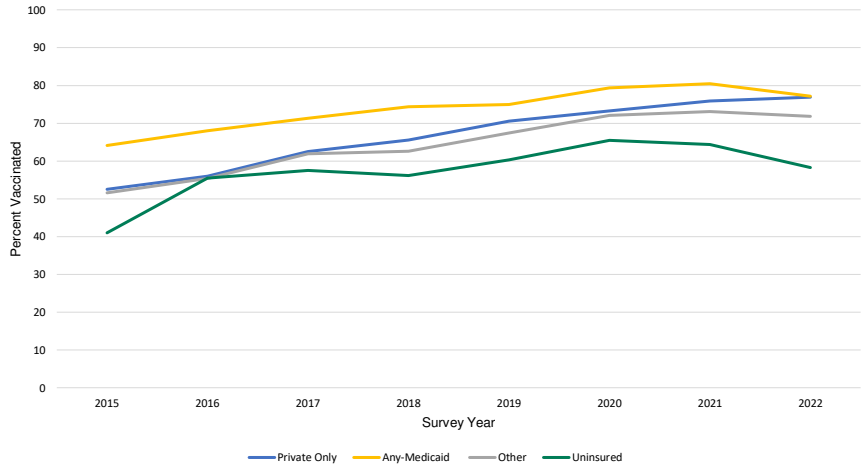
Estimated Vaccination Coverage with ≥1 Human Papillomavirus (HPV) Vaccine among Adolescents Age 13-17 Years, by Health Insurance Status: NIS-Teen, 2015-2022



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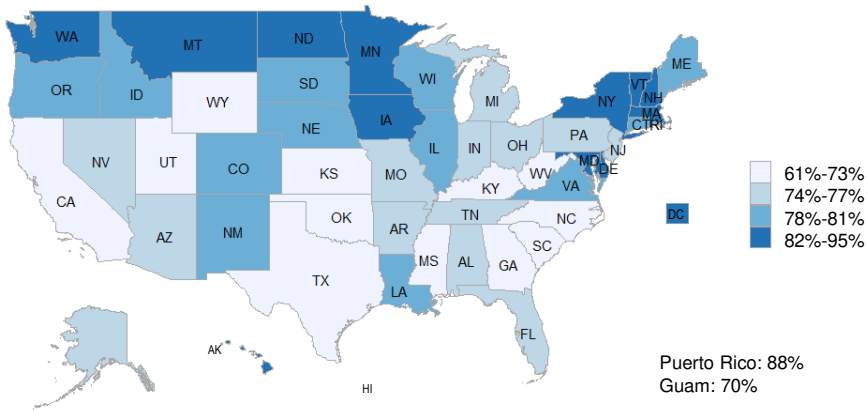
Estimated Vaccination Coverage with ≥1 Dose of HPV among Adolescents Age 13-17 Years: NIS-Teen, 2022



Puerto Rico: 88%
Guam: 70%

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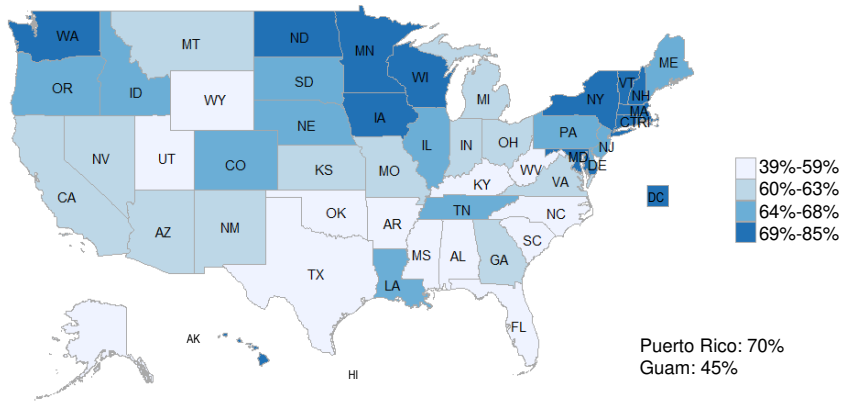
Estimated Percentage Up to Date for HPV Vaccine (HPV UTD) among Adolescents Age 13-17 Years: NIS-Teen, 2022



Puerto Rico: 70%
Guam: 45%

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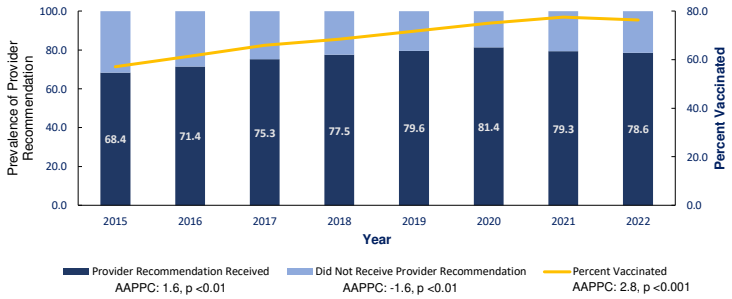
HPV Vaccination Initiation (≥1 dose HPV) and Prevalence of Provider Recommendation among Adolescents Age 13-17 Years: NIS-Teen, 2015-2022



From 2015 to 2022, the prevalence of a provider recommendation for HPV vaccination has increased on average by 1.6 percentage points per year

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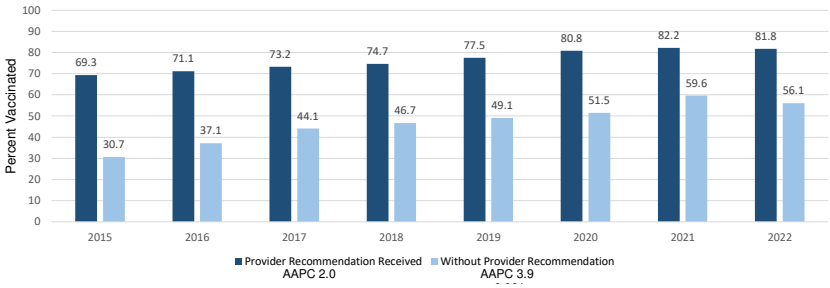
Trends in HPV Vaccination Initiation (≥1 dose HPV) by Provider Recommendation Status among Adolescents Age 13-17 Years: NIS-Teen, 2015-2022



HPV vaccination initiation is **higher** among adolescents **with** a provider recommendation than those without a provider recommendation

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Birth Cohort Analysis Results

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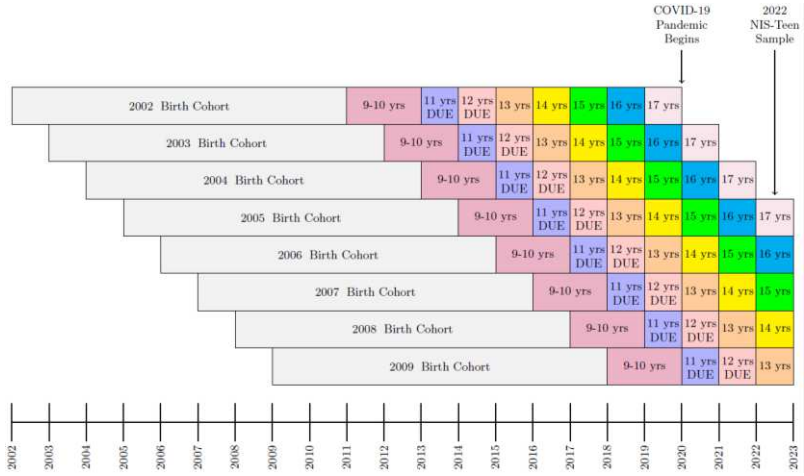
Birth Cohort Analysis



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- Combined 2015 – 2022 NIS-Teen data.
- Used Kaplan-Meier estimation to account for censoring of vaccination status at ages 14 and older.

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Coverage with ≥1 Dose of Tdap, ≥1 Dose of MenACWY, ≥1 Dose of HPV Vaccine, and Percentage HPV UTD, among Adolescents in the 2007–2009 Birth Years, by Age 13 Years: NIS-Teen, 2020–2022

≥1 Tdap			≥1 MenACWY			≥1 HPV			HPV UTD		
Birth Year			Birth Year			Birth Year			Birth Year		
2007	2008	2009	2007	2008	2009	2007	2008	2009	2007	2008	2009
% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
89.6 (88.5-90.7)	86.4 (84.1-88.5)*	87.1 (83.0-90.7)	87.1 (85.5-88.5)	84.1 (81.5-86.4)*	87.3 (84.1-90.2)	72.6 (70.8-74.5)	69.5 (66.8-72.1)	71.4 (67.1-75.6)	52.9 (50.8-55.0)	50.0 (47.2-52.8)	52.7 (48.0-57.6)

Abbreviations: Tdap=tetanus, diphtheria, and acellular pertussis vaccine, MenACWY=quadrivalent meningococcal conjugate vaccine, HPV= human papillomavirus vaccine.

- Coverage with ≥1 Tdap, ≥1 MenACWY for adolescents born in **2008** was **significantly lower by age 13 years** than for earlier birth years
  - Coverage with ≥1 HPV and HPV UTD was not significantly different
- Coverage with ≥1 Tdap, ≥1 MenACWY, ≥1 HPV and HPV UTD for adolescents born in **2009** was not significantly different than for the 2008 or 2007 birth years

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Coverage with ≥1 Dose of Tdap, ≥1 Dose of MenACWY, ≥1 Dose of HPV Vaccine, and Percentage HPV UTD, among Adolescents in the 2006–2008 Birth Years, by Age 14 Years: NIS-Teen, 2020–2022

≥1 Tdap			≥1 MenACWY			≥1 HPV			HPV UTD		
Birth Year			Birth Year			Birth Year			Birth Year		
2006	2007	2008	2006	2007	2008	2006	2007	2008	2006	2007	2008
% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
89.3 (88.2-90.4)	90.9 (89.7-91.9)	87.1 (84.9-89.2)*	88.5 (87.3-89.7)	88.8 (87.2-90.2)	86.0 (83.2-88.6)	74.8 (73.1-76.4)	76.3 (74.4-78.2)	72.5 (69.5-75.5)*	58.5 (56.7-60.3)	59.6 (57.4-61.9)	53.9 (50.9-56.9)*

Abbreviations: Tdap=tetanus, diphtheria, and acellular pertussis vaccine, MenACWY=quadrivalent meningococcal conjugate vaccine, HPV= human papillomavirus vaccine.

Coverage with ≥1 Tdap, ≥1 HPV and HPV UTD in the **2008 birth year** was **significantly lower by age 14 years** than in earlier birth years. Coverage with ≥1 MenACWY was not significantly different (but, was borderline significant p=0.05).

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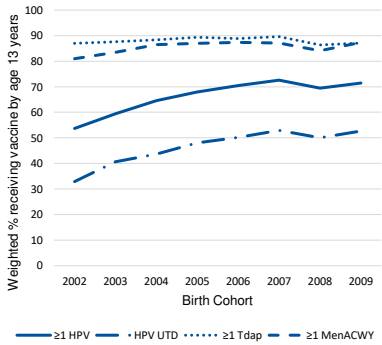
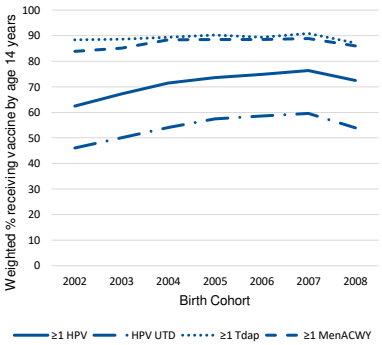
Coverage with ≥1 Dose of HPV Vaccine, Percentage HPV UTD, ≥1 Dose of MenACWY, and ≥1 Dose of Tdap, among Adolescents in the 2002–2009 Annual Birth Cohorts, by Age 13 Years (A) and by Age 14 Years (B): NIS-Teen, 2015–2022

A. By age 13 years



B. By age 14 years



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Abbreviations: Tdap=tetanus, diphtheria, and acellular pertussis vaccine, MenACWY=quadrivalent meningococcal conjugate vaccine, HPV= human papillomavirus vaccine.

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Birth Cohort Analysis Summary

- Coverage with ≥1 Tdap, ≥1 MenACWY, ≥1 HPV, and HPV UTD in the **2009 birth year** was not significantly different than in the 2008 or 2007 birth years
- Coverage with ≥1 Tdap, ≥1 MenACWY in the **2008 birth year** was **significantly lower** **by age 13 years** than in earlier birth years
  - Coverage with ≥1 HPV and HPV UTD was not significantly different
- Coverage with ≥1 Tdap, ≥1 HPV, and HPV UTD in the **2008 birth year** was **significantly lower** **by age 14 years** than in earlier birth years
  - Coverage with ≥1 MenACWY was not significantly different
- Vaccination coverage was significantly lower by sociodemographic factors and health insurance status and these coverage patterns varied by age and vaccine*
  - Interestingly, vaccination coverage with all 4 vaccine measures in the **2008 birth year by age 14 years** was **significantly lower** among those living in **urban areas** compared with earlier birth years

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*Vaccination Coverage Among Adolescents Aged 13–17 Years — National Immunization Survey–Teen, United States, 2022 | MMWR (cdc.gov)

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3 Key Points and a Recommendation

Key Points

1. For the first time in a decade, HPV vaccination coverage **did not increase** among teens age 13-17 years
2. HPV vaccination initiation **declined** among Medicaid-insured teens and **remains lowest** among uninsured teens (2 of the 4 groups eligible for VFC)
3. Teens born in 2008 have **lower** coverage with ≥1 Tdap, ≥1 HPV, and a lower percentage HPV UTD than previous birth cohorts

Recommendation

In the wake of the COVID-19 pandemic, clinicians should review adolescent immunization histories, particularly for teens born in 2008 and for those who are VFC-eligible, to ensure that they are up to date with all recommended vaccinations

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Thank You!

- David Yankey
- Benjamin Fredua
- Madeleine Valier
- Laurie Elam-Evans
- Jim Singleton
- Shannon Stokley
- Sean Hu
- Seth Meador
- Sarah McCartha
- Carla Black

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Sherri Zorn, MD
Pediatric Physician-Quality Improvement Coach
Washington Chapter of the American Academy of Pediatrics
Washington HPV Free Task Force

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Barriers and Hesitancy Got You Down?

- Barriers to HPV vaccination and HPV vaccine hesitancy are REAL–but not the whole story
- Common barriers to HPV vaccine:
  - Lack of awareness
  - STD stigma – "my child isn't at risk"
  - Access
  - 3 shots in the adolescent bundle is "too many" for some parents, patients, AND some providers
  - Vaccine hesitancy: concerns about safety or effectiveness
  - **Lack of healthcare professional recommendation–this one is on us!**
- 23% of US parents (of 11-17-year-olds) are hesitant about HPV vaccine
- **Conversely, the MAJORITY are not hesitant–let's focus on that!**

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Morales-Campos, Human Papillomavirus Vaccine Hesitancy in the United States. Pediatr Clin North Am. 2023, doi: 10.1016/j.pcl.2022.11.002. PMID: 36841591.
Szilagyi, Prevalence and characteristics of HPV vaccine hesitancy among parents of adolescents across the US. Vaccine. 2020, doi: 10.1016/j.vaccine.2020.06.074.

Evidence-Based Strategies: Practical implementation Tips

- **Start HPV vaccination at age 9**
- **Strong healthcare professional recommendation**
- **Get leadership on board for clinic-level strategies:**
  - Involve your whole team–vaccination is a team sport
  - Cancer prevention message
  - Standardize and simplify your immunization schedule
  - Standing orders
  - Targeted reminder recall
  - Hard-wiring "HPV@9"
  - Putting it all together for real results–examples from Washington state

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Innovative Strategy: Start HPV Vaccination at Age 9

- Increases on-time HPV completion by age 13
- Easier conversations with parents
  - Focus on cancer prevention–NOT on sex
- More time and opportunities to vaccinate—4 full years
  - Helps mitigate disruptions in care and access issues
- Fewer shots per visit
  - Many parents, patients, and heathcare professionals (HCPs) prefer spacing shots out instead of bundling
- Allows for simplified yearly outreach–skip the 6 month visit for the 2nd shot
  - Start at age 9 or 10–finish at age 10 or 11 (with the adolescent bundle)
- More relaxed approach to hesitancy
  - Less pressure to resolve hesitancy in a single visit
  - More time for hesitant parents/patients to learn about the vaccine

Best practice:
- American Academy of Pediatrics
- American Cancer Society
- National HPV Vaccination Roundtable
- Supported by ACIP guidelines

No downsides!
- Excellent immunity at age 9-10
- Immunity doesn't wear off

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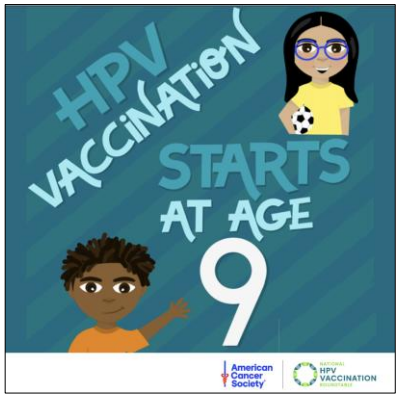
Mounting Body of Evidence Supports Starting at Age 9 Years

- Human Vaccines and Immunotherapeutics
  Special Collection of 22 articles, all on HPV at age 9-10
- "Start HPV Vaccination at 9" Landing Page

Information, reference articles, tools, resources, videos, and more!
https://hpvroundtable.org/start-hpv-vaccination-at-age-9/



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Minihan, The association of initiating HPV vaccination at ages 9-10 years and up-to-date status among adolescents ages 13-17 years, 2016-2020. Hum Vaccin Immunother. 2023, doi: 10.1080/21645515.2023.2175555
Kahn, Framing of national HPV vaccine recommendations and willingness to recommend at ages 9-10. Hum Vaccin Immunother. 2023, doi: 10.1080/21645515.2023.2172276
Goodman, Early Initiation of HPV Vaccination and Series Completion in Early and Mid-Adolescence. *Pediatrics* 2023; doi: 10.1542/peds.2022-058794

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Strong Healthcare Professional Recommendation

Strong healthcare professional (HCP) recommendation is the strongest facilitator for HPV vaccination!

- Proven to increase vaccine acceptance
- Presumptive announcement—assumes parents are ready to vaccinate
- Can be followed up with counseling or motivational interviewing if there are questions or hesitancy

A presumptive announcement is a statement–not an open-ended question!

It sounds like: "Your child is due for the HPV vaccine today"

- It *does not* sound like:
  - "What would you like to do today about the HPV vaccine?"
  - "Would you like the HPV vaccine? We have it available."

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Opel, The architecture of provider-parent vaccine discussions at health supervision visits. Pediatrics. 2013, doi: 10.1542/peds.2013-2037
Gilkey, Provider communication and HPV vaccination: The impact of recommendation quality. Vaccine. 2016, doi: 10.1016/j.vaccine.2016.01.023
Brewer, Announcements versus conversations to improve HPV vaccination coverage: a randomized trial. Pediatrics. 2017, doi:10.1542/peds.2016-1764

Announcement Approach

Use presumptive announcement–15 seconds

- Focus on cancer prevention

ANNOUNCEMENT EXAMPLE

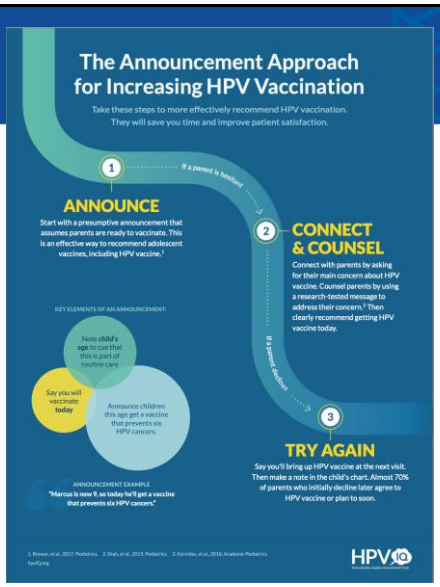
"Marcus is now 9, so today he'll get a vaccine that prevents six HPV cancers."

If hesitant, connect with parents, ask for their main concern

- Don't be afraid of questions
- Counsel using research-tested messages (on back of flyer)–2-5 minutes

If the parent declines, try again another day

- Almost 70% of parents who initially decline HPV, eventually say YES, or plan to soon



www.hpviq.org/wp-content/uploads/2021/01/AAT-flyer.pdf
Brewer, How to make effective HPV vaccine recommendations starting at age 9, Hum Vaccin & Immunother. 2023, doi: 10.1080/21645515.2023.2216117
Kornides, Parents Who Decline HPV Vaccination: Who Later Accepts and Why? Acad Pediatr. 2018, doi: 10.1016/j.acap.2017.06.008.

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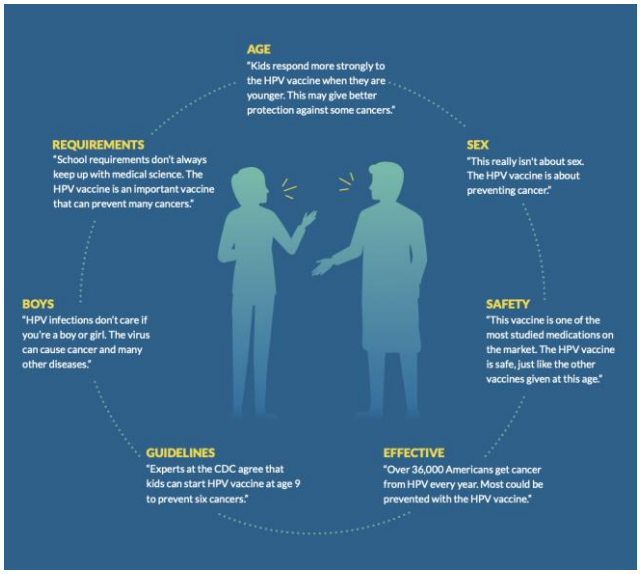
Research-Tested Messages to Address HPV Vaccine Concerns



HPV IQ

Survey of ~1,200 parents

More training tools available at HPVIQ.org

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Shah, Questions and Concerns About HPV Vaccine: A Communication Experiment. Pediatrics. 2019, doi: 10.1542/peds.2018-1872

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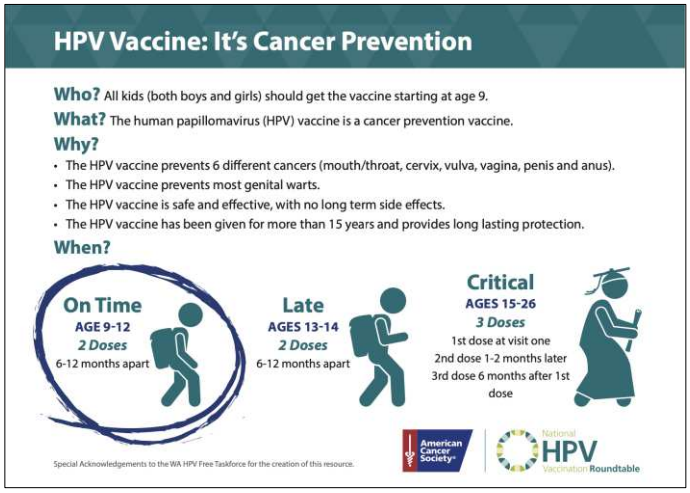
Involve Your Whole Team: Vaccination is a Team Sport

Team members need to know:

- Prevents 90% of 6 HPV-related cancers
- HPV vaccine is SAFE, Effective, and provides long lasting protection
- Dosing schedule–same for all genders

Keep the message consistent and accurate



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www.hpvroundtable.org

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Patient Education: HPV is Cancer Prevention

- Poster for exam room or lobby
- Diverse representation of 9-12-year-olds
- Simple message – kids understand it!

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American Cancer Society Brand Toolkit
https://brandtoolkit.cancer.org/BMS/

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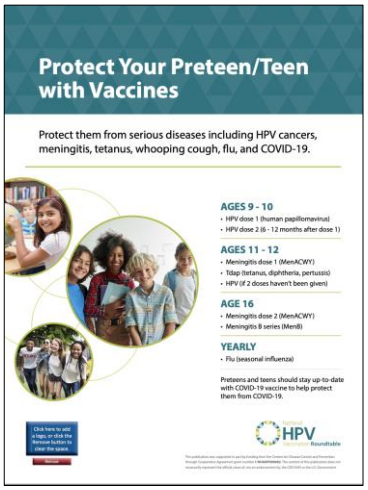
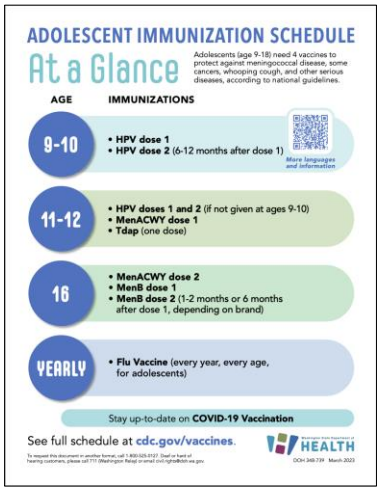
Standardized Immunization Schedule Poster: Make It Simple





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Using the Immunization Schedule Poster

- Conversation starter
- Indicates vaccines are important and routine
- Increases transparency

Parents:

- Like knowing what is next

Staff:

- Promotes standard workflow
- Helps with training
- Reduces confusion … easier for staff

Healthcare Professionals:

- Adds authority to strong recommendation

Customized to reflect each clinic's preferred immunization schedule and choice of combination vaccines (complies with ACIP and AAP guidelines)

Tips:

- Teach staff and providers how to interact with the poster
- Large is best: recommend 18 x 24 inch or 12 x 16 inch
- Place in exam rooms (and lobby) where parents can read it

Rated "Extremely Helpful" by 71% of providers

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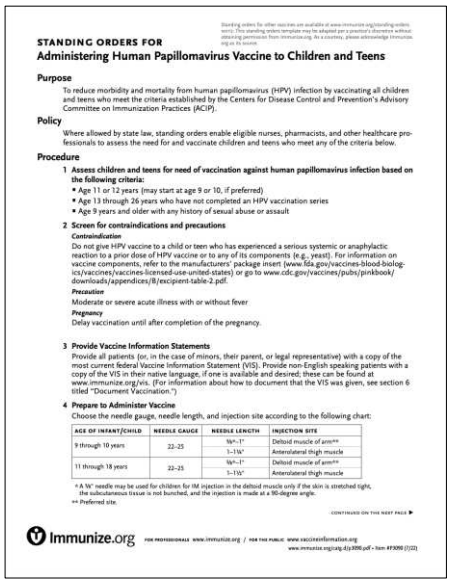
Standing Orders: Use Every Opportunity to Vaccinate

- **Get leadership approval**–medical director or lead physician signs the standing order
- **Empower your team**–nursing and medical assistant staff can vaccinate without an additional order from a provider

- Avoid missed opportunities
- Vaccinate before the provider visit
- Use every opportunity to vaccinate–or at least to make a strong recommendation

- Templates available at Immunize.org



STANDING ORDERS FOR
Administering Human Papillomavirus Vaccine to Children and Teens

Purpose

To reduce morbidity and mortality from human papillomavirus (HPV) infection by vaccinating all children and teens who meet the criteria established by the Centers for Disease Control and Prevention's Advisory Committee on Immunization Practices (ACIP).

Policy

Where allowed by state law, standing orders enable eligible nurses, pharmacists, and other healthcare professionals to assess the need for and vaccinate children and teens who meet any of the criteria below.

Procedure

1 **Assess children and teens for need of vaccination against human papillomavirus infection based on the following criteria:**
- Age 11 or 12 years (may start at age 9 or 10, if preferred)
- Age 13 through 26 years who have not completed an HPV vaccination series
- Age 9 years and older with any history of sexual abuse or assault

2 **Screen for contraindications and precautions**

Contraindication

Do not give HPV vaccine to a child or teen who has experienced a serious systemic or anaphylactic reaction to a prior dose of HPV vaccine or to any of its components (e.g., yeast). For information on vaccine components, refer to the manufacturers' package insert (www.fda.gov/vaccines-blood-biologics/vaccines/vaccines-licensed-use-united-states) or go to www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/B/excipient-table-2.pdf.

Precaution

Moderate or severe acute illness with or without fever

Pregnancy

Delay vaccination until after completion of the pregnancy.

3 **Provide Vaccine Information Statements**

Provide all patients (or, in the case of minors, their parent, or legal representative) with a copy of the most current federal Vaccine Information Statement (VIS). Provide non-English speaking patients with a copy of the VIS in their native language, if one is available and desired; these can be found at www.immunize.org/vis. (For information about how to document that the VIS was given, see section 6 titled "Document Vaccination.")

4 **Prepare to Administer Vaccine**

Choose the needle gauge, needle length, and injection site according to the following chart:

AGE OF INFANT/CHILD	NEEDLE GAUGE	NEEDLE LENGTH	INJECTION SITE
9 through 10 years	22–25	⅝"–1"	Deltoid muscle of arm**
		1–1¼"	Anterolateral thigh muscle
11 through 18 years	22–25	⅝"–1"	Deltoid muscle of arm**
		1–1½"	Anterolateral thigh muscle

* A ⅝" needle may be used for children for IM injection in the deltoid muscle only if the skin is stretched tight, the subcutaneous tissue is not bunched, and the injection is made at a 90-degree angle.
** Preferred site.

CONTINUED ON THE NEXT PAGE ▶

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Reminder/Recall Works for HPV!

2024 Randomized Clinical Trial: Mailed reminder/recall to parents resulted in more 11-12-year-old children receiving a dose of HPV vaccine (34.6%) compared to usual care (21.9%)–odds ratio of 1.56; 95% CI, 1.23-1.97

Planning Reminder/Recall Campaigns:

- Methods: mail, phone, text, EMR portal message
- Consider: staffing, cost, patient preference
- Data source: EMR-based, IIS registry-based (Immunization Information System)

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Finney Rutten, Multilevel Implementation Strategies for Adolescent Human Papillomavirus Vaccine Uptake: A Cluster Randomized Clinical Trial. JAMA Pediatr. 2024, doi: 10.1001/jamapediatrics.2023.4932
Kempe, The Contribution of Reminder-Recall to Vaccine Delivery Efforts: A Narrative Review. Acad Pediatr. 2021, doi: 10.1016/j.acap.2021.02.016

Reminder/Recall and Outreach: Be Strategic

Strategic suggestions

- Make reminder/recall campaigns sustainable and recurring
- Consider automating with a personalized message via portal or text
- Batches–easier for patient access, easier on staff, avoid running out of vaccine (order extra vaccine)

- 9-11-year-olds: Outreach for annual well child visit
  - Consider using 12-month dosing interval (skip the 6-month reminder for shot-only visit)
  - Get both doses done at 9 and 10
  - Or get 1 dose at 9-10 and bundle 2nd dose with Tdap and Men ACWY at age 11

- 12-year-olds: Reminder/Recall for overdue HPV vaccine
- Special post-pandemic outreach: birth cohort 2008–these are 15-16-year-olds overdue for vaccines

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Hardwiring "HPV@9" into Everyday Practice

Low Tech:

- Strong Provider Recommendation at age 9
- Staff training
- Simplified immunization poster
- HPV posters
- Standing orders

High Tech: Optimize EMR

- Change EMR prompt to recommend HPV starting at age 9 (Health Maintenance or Care Gap Alert)
  - **Barriers:** custom build, need leadership support, difficult with multi-state organizations, or shared EMRs
- Well-Child Order Sets with HPV preselected at age 9 and 10
- Automate Reminder/Recall with personalized messages
- Standing Order Sets–for MAs to order accurately and easily with just a few clicks

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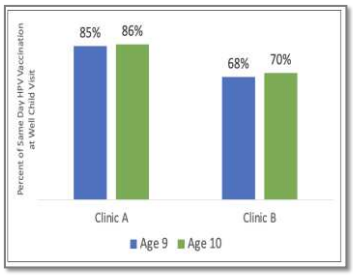
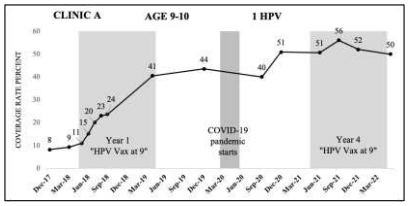
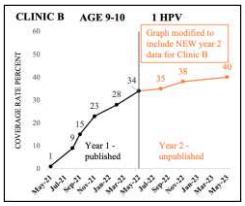
Real Results: Putting it All Together in Washington

Acceptable to providers and parents!
Majority of patients (68-86%) received the HPV vaccine on the same day as the 9 and 10-year well child visits

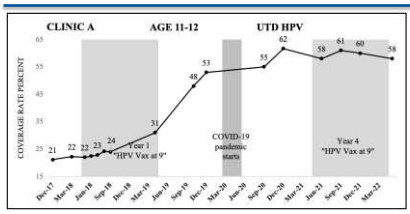


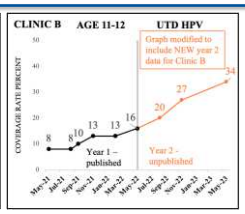
2 clinics implemented "HPV at 9", paired HPV with 9 & 10-year well child visit





HPV initiation at 9-10: Increased by 30+ % points in 1 year





HPV completion at 11-12: accelerates in 2nd year; maximal increase of 40 % points

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"I wish we had started vaccinating at age nine sooner. It is so important, and it's made it so simple"

Zorn, 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 doi: 10.1080/21645515.2022.2163807

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Rural Clinic Feedback: "HPV@9" is *EASY* to Implement

- "This has been an eye-opening experience and a big surprise that parents are welcoming of HPV at age 9/10"
- "Wow, I didn't think it would be this easy" … referring to implementing HPV@9
- "This has been a real win compared to how contentious COVID-19 vaccine was"

Survey of 34 providers in 5 clinics serving rural Washington communities:

Recommending HPV at 9-10 compared to 11-12

- 56% somewhat or much easier
- 35% same
- 9% somewhat or much harder

WCAAP "HPV@9" QI Project Cohort 1 (unpublished)

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WCAAP WASHINGTON CHAPTER AMERICAN ACADEMY OF PEDIATRICS Incorporated in Washington

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Reinvigorate Your HPV Vaccine Strategies: Start at Age 9 Years

"Proud to be preventing cancer!"

You can be successful too!

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Acknowledgements–Thank You!

More than 30 pediatric and primary care clinics in Washington informed this "HPV@9" work

Collaboration:

- WA HPV Free Task Force
- Washington Chapter of the American Academy of Pediatrics
- WA Department of Health
- National HPV Vaccination Roundtable

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References

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13. **Brewer,** How to make effective HPV vaccine recommendations starting at age 9, Hum Vaccin & Immunother. 2023, doi: 10.1080/21645515.2023.2216117
14. ***Kornides,*** Parents Who Decline HPV Vaccination: Who Later Accepts and Why? Acad Pediatr. 2018. doi: 10.1016/j.acap.2017.06.008
15. ***Shah,*** Questions and Concerns About HPV Vaccine: A Communication Experiment. Pediatrics. 2019, doi: 10.1542/peds.2018-1872
16. ***Finney Rutten,*** Multilevel Implementation Strategies for Adolescent Human Papillomavirus Vaccine Uptake: A Cluster Randomized Clinical Trial. JAMA Pediatr. 2024. doi: 10.1001/jamapediatrics.2023.4932
17. ***Kempe***, The Contribution of Reminder-Recall to Vaccine Delivery Efforts: A Narrative Review. Acad Pediatr. 2021, doi: 10.1016/j.acap.2021.02.016
18. ***Zorn***, 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 doi: 10.1080/21645515.2022.2163807

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Human Vaccines & Immunotherapeutics, Special Collection-22 Articles
www.tandfonline.com/journals/khvi20/collections/HPV-vaccination-starting-age-9

Resources/Materials

HPV Vaccine Toolkits

- National HPV Vaccination Roundtable: https://hpvroundtable.org/start-hpv-vaccination-at-age-9/
- CDC: www.cdc.gov/hpv/index.html
- AAP: www.aap.org/en/news-room/campaigns-and-toolkits/human-papillomavirus-hpv/
- WA DOH: https://doh.wa.gov/public-health-healthcare-providers/public-health-system-resources-and-services/immunization/hpv-information
- HPVIQ: www.hpviq.org

Featured Materials

- Announcement Approach: www.hpviq.org/wp-content/uploads/2021/01/AAT-flyer.pdf
- HPV Cue Card: http://hpvroundtable.org/wp-content/uploads/2023/08/HPV-Cue-Card_Single_Printing_English.pdf
- HPV Poster: https://brandtoolkit.cancer.org/BMS/
- Immunization Schedule Posters:
  - https://hpvroundtable.org/wp-content/uploads/2022/06/Co-Brand_HPV_Roundtable_2022_poster18x24_WEB-v1.pdf
  - https://doh.wa.gov/sites/default/files/legacy/Documents/Pubs//348-739-AdolescentImmmunizationSchedulePoster18x24.pdf
  - https://wcaap.org/resources/vaccines/#editable-immunization-schedule-template

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Kimberly Williams
Chief Diversity Equity and Inclusion Officer
Cervivor

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About Cervivor

Our Mission:

Cervivor is a global community of patient advocates who inspire and empower those affected by cervical cancer by educating and motivating them to use their voices for creating awareness to end stigma, influence decision and change, and end cervical cancer.

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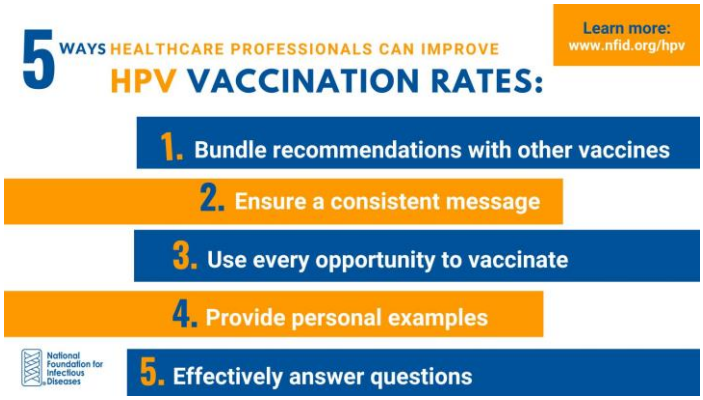
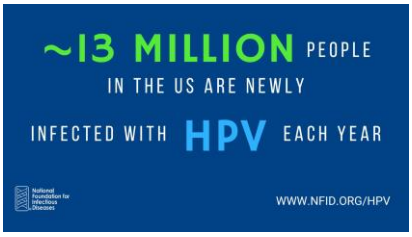
Discussion





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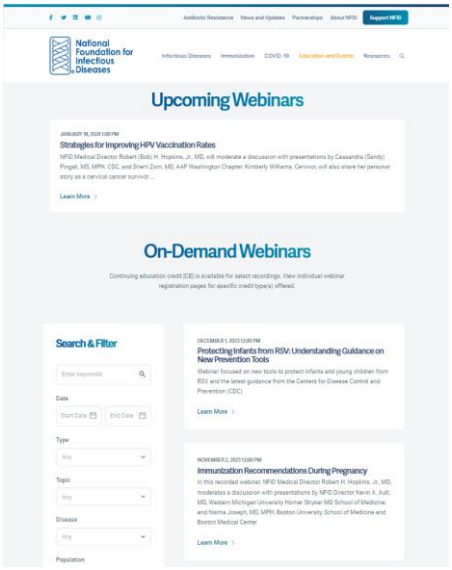

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