Initiation of HPV vaccination at age 9: A deep dive into five health system success stories

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Background

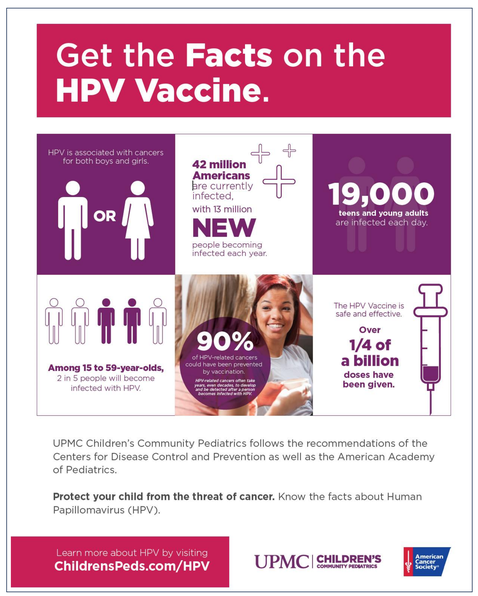
- Despite mounting evidence in support of the HPV vaccine's efficacy, only 39% of 9-17-year-olds had received at least one dose in 2022.[1]
- Earlier initiation of the vaccine (at ages 9-10 versus ages 11-12) is associated with increased likelihood of completing the series by age 13 and higher antibody titers, among other benefits.[2-4]
- Several U.S. healthcare organizations have implemented earlier initiation practices, initiating HPV vaccination at ages 9-10 rather than 11-12, resulting in improved HPV vaccination rates.[5]

Methods

- Recruited five healthcare organizations (HCOs) with demonstrated success in vaccinating 9-10-year-old children against HPV.
- Surveyed providers and staff who deliver or support the delivery of HPV vaccines for 9-10-year-old patients at each HCO.
- Interviewed two leaders of pediatric HPV vaccination initiatives at each HCO.
- Conducted qualitative content analysis of open-ended survey responses and analyzed quantitative data resulting from closed-ended survey questions.
- Applied qualitative data reduction and rapid coding methods to summarize themes and insights.

Study Objective:

Understand and disseminate best practices for HPV vaccination beginning at age 9



Results

Table 1. Characteristics of participating healthcare organizations (HCO)

	HCO 1	HCO 2	HCO 3	HCO 4	HCO 5
Organizational type	IDN	IDN	IDN	CIN	IDN
Physicians (#)	2000	350	1400	1200	1500
Geographic region	Southwest	Northeast	West	West	Midwest
Clinics vaccinating children (#)	70	56	35	2	211
VFC eligible	39%	54.5%	48%	55%	34%
Local initiative start date	10/2018	7/2022	6/2022	2/2023	7/2020
Baseline 9-10 HPV vaccination rates	0.5% (2018)	1.8% (2022)	17% (2021)	0% (2022)	0.7% (2020)
Percentage point improvement in 9-10 HPV vaccination rates	48.0% (2022)	12.9% (2023)	43.0% (2023)	48.0% (2023)	20.4% (2023)
Completion by age 13 (2023)	73.5%	51.7%	69.0%	NA	53.3%
Initiation gap closures age 9 (2023)	30.3%	12.5%	50.0%	NA	15.3%
Initiation gap closures age 10 (2023)	47.2%	17.2%	61.0%	NA	14.0%

IDN=integrated delivery network; CIN=clinically integrated Network; VFC=vaccines for children

INNER SETTING

Data transparency along with the why, to get buy-in… because if providers believe in it, then people are gonna do it.
- nurse

OUTER SETTING

If there is resistance, I make sure to emphasize 'general' cancer prevention [and I share]: ***'it is so cool there is a vaccine that can prevent cancer.'***
– Nurse

INTERVENTION

Seeing the data--where you were pre- [transition to age 9] and where you are now, organizationally, by practice and individually--has been quite impactful for a lot of our doctors.
- CMO

INDIVIDUALS

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

Posters in the clinic are super helpful. Patients and families are already thinking about it before I get in the room.
– Physician

PROCESSES

Once the EMR [electronic medical record] 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].*
– Physician

Table 3. Barriers and solutions based on the Consolidated Framework for Implementation Research (CFIR)

CFIR Domain (Survey/Interview Questions)	Barriers	Interventions[1]
Inner Setting (what led to initiative, who led, how did it come about)	Lack of org. prioritization/ buy-in	**Leadership buy-in and prioritization of age 9 initiation**
	Competing QI initiatives	Prioritization of initiative to initiate age 9
	Lack of champion	Champion for age 9 initiation
Outer Setting (what external factors interfered with implementation)	General myths about HPV Vax	**Scripts for providers to address family concerns**
	Religious influences	**Scripts for providers/staffs to take clinical approach; cancer focus**
	Lack of CDC guidance	Lobby the ACIP; provide reasons for age 9
Intervention Characteristics (what about age 9 initiation was challenging)	Lack of knowledge about evidence	**Educate providers; share data/evidence**
	Bias toward status quo	Staff education; make process easy; update EHR; reminders **Family education** via handouts, posters, website, podcast
Characteristics of Individuals (what biases did providers/staff or patient/families bring)	Families: cultural influences	Address with families; education; cancer focus
	Lack of buy in from all clinic staff	Standing orders; all staff education; specific language
	Family hesitancy due to age	**Prepare in advance for visit; educational** posters, podcast; repetition – by multiple staff at multiple visits; cancer focus
	Patient access issues	Vaccine-only appointments; drop in
	Lack of staff comfort w/ conversation	**Provider/staff scripts/talking points/presumptive approach**
Process (what internal processes were necessary to be successful)	EHR legacy settings	**Update EHR settings to age 9 initiation; standing orders**
	Lack of HPV vax reporting by age	Regular reporting and **sharing of data** on age 9-10
	Lack of time during visit for provider	Standing orders
	Lack of workflow for 9 yr visit	Create new workflows; **prepare families in advance; presumptive approach**; vaccine-only visits
	Lack of workflow for 2nd dose	Schedule second dose during initiation dose visit or 6-month reminder timers*

[1]All HCOs implemented all interventions listed except where noted with '*', HCOs (#1 and #5) did not implement. **Bolded** interventions were considered most impactful by HCOs. UPMC's interventions are colored purple for the purpose of this presentation.

Conclusions

- Interventions most widely adopted and reported as impactful:
  1. Prepared the HCO for the shift to initiation at age 9 by obtaining internal buy-in and sharing data on safety.
  2. Regularly shared 9-10-year-old vaccination data with providers/staff.
  3. Updated EHR/standing orders to age 9, educated staff and trained on communication, encouraged a presumptive approach.
  4. Educated patients/families, busted myths, outreached to prepare patients for their age 9 visit, addressed hesitancy.
- Surveys suggest a need to educate all staff on guidelines and identify opportunities to increase buy-in and identify potential champions.
- Organizations planning to implement initiation of HPV vaccination at age 9 should identify local barriers to earlier initiation and implement context-appropriate solutions.
- Implementing initiatives like this require patience, persistence, and the ability to pivot. Think PDSA!
- Efforts to increase vaccination rates may ultimately contribute to long-term reduction of HPV-related diseases.

UPMC educational videos:

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Poster and study references:

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