Prevention of HPV-related Cancers and Disease in Children, Adolescents, and Young Adults: A Health Systems Approach

A PI/QI CME Initiative Designed to Increase HPV Vaccination Rates

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INTRODUCTION

A performance improvement (PI)/quality improvement (QI) program was implemented within the Cleveland Clinic Community Care Network to improve HPV vaccination rates in eligible patients per guideline recommendations.

Performance Improvement	Quality Improvement
A structured, long-term process by which physicians learn about specific performance measures, assess their practice using selected measures, implement interventions to improve their practice, and then reassess their practice after an interval of time.	A framework used to systematically and continuously transform the way healthcare is delivered by leveraging the involvement of all team members to lead to better patient outcomes.

QUALITY MEASURES & CALCULATIONS

1. Percent of patients with ≥ 2 HPV doses by age 13
2. Percent of patients with ≥ 2 HPV doses by age 15
3. Percent of patients to complete HPV vaccine by age 27

Numerator Description	Numerator Calculation	Denominator Description	Denominator Calculation
Patients who complete HPV vaccination schedule by age 13	Patients in the denominator population with two or more doses before 13th birthday *Measure Source: NQF 1407*	Total patient population	Patients <27 years with at least one office visit with current provider within four years
Patients who complete HPV vaccination schedule by age 15	Patients in the denominator population with two or more doses before 15th birthday	Total patient population	Patients <27 years with at least one office visit with current provider within four years
Patients who complete HPV vaccination schedule by age 27	Patients in denominator population with two doses by age 15 or three doses by age 27 if first dose received is at or after age 15	Total patient population	Patients <27 years with at least one office visit with current provider within four years

ACTIVITY DETAILS

1. QI/PI model leveraged to immunize eligible children, adolescents, and young adults against HPV
2. Interventions, resources, tools implemented
3. Online digital toolkit to support sustainability of changes and to provide interested practices a framework to replicate success

Target Audience: This educational activity was designed for pediatricians, family practitioners, and other clinicians who treat children, adolescents and young adults, and have an opportunity to assess, discuss, and/or administer the HPV vaccine.

Start date: January 29, 2021
End date: October 1, 2022

Accreditation: *AMA PRA Category 1 Credits™*, as well as the American Board of Pediatrics (ABP), the American Board of Family Medicine (ABFM), and the American Board of Internal Medicine (ABIM) MOC Part IV credits.

Aim Statement: Improve the percentage of eligible patients with >2 HPV vaccine doses by age 13 within the Cleveland Clinic Community Health Pediatric and Family Medicine clinics from 20% to 24% by August 2022.

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HPV Vaccination Portal & Toolkit:
www.CCFHPV.org

ACKNOWLEDGEMENTS

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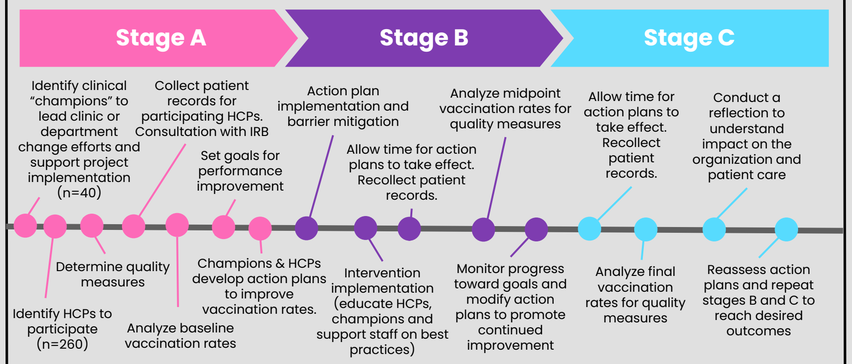
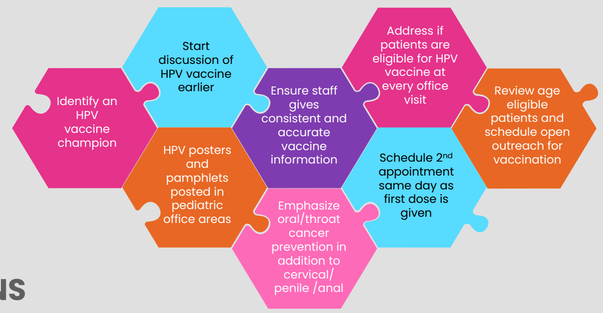
IMPLEMENTATION



INTERVENTIONS & ACTION PLANS

Educational Interventions	Impact on Physician Practice	Impact on Patient Care
CME enduring material (slides/audio): Decreasing the Impact of HPV-related Infections and Cancers	Physicians need to be aware of the burden of HPV, the available recommendations for HPV vaccination, and the efficacy of vaccination in preventing HPV infections and related cancers.	Patients receive a complete course of the HPV vaccine before their 13th birthday.
CME enduring material (slides/audio): Developing an Action Plan for Your Practice to Increase Vaccination and Prevention HPV-related Cancers	This activity outlined baseline vaccination rates for boys and girls, and potential barriers to widespread vaccination. It also offered clinicians strategies for overcoming these parental-, clinician-, and systems-related barriers by utilizing department-specific action plans.	Patients and their parents receive education on the benefits of HPV vaccination.
CME enduring material (video): Strategies to Address Misconceptions and Educate Parents and Patients on HPV-vaccination	This intervention equipped providers with useful communication strategies to effectively address FAQs and misconceptions often posed by parents and patients about HPV-vaccination.	Patients and their parents receive counseling to address fears and correct misconceptions.
CME enduring material (video): Shots in the Dark: How can Clinicians Bridge the Immunization Gaps Widened by the COVID-19 Pandemic?	Polarizing language used during the COVID-19 pandemic further widened immunization rates and vaccine hesitancy. To address this specific barrier, communication strategies were offered to support shared decision making and to relay the safety and efficacy data with the HPV vaccine.	Patients and their parents understand the importance of vaccinations and are confident in the efficacy and safety of HPV vaccination

Action plans included changes to be made, potential barriers, team members involved, resources needed, timelines, follow-up benchmarks, and lessons learned.



LIMITATIONS

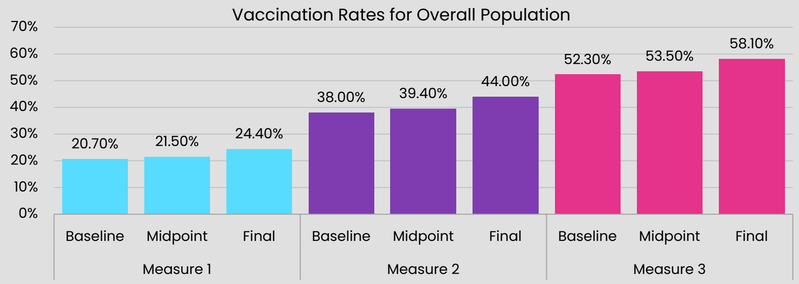
The COVID-19 pandemic presented immense barriers to change, as providers in this cohort lost their opportunity to vaccinate patients pursuant to federal and state shutdown orders. Patients were only seen in doctors' offices for serious medical illness, with most leveraging virtual technologies to see their family practitioners or pediatricians as needed. As such, vaccine administration suffered greatly. Even as children returned to school, many remained in a virtual learning environment. These decisions effectively minimized back-to-school vaccines, including the HPV vaccine, which usually sees an uptake with vaccine bundles required for in-person schooling. In addition to lack of patient access, rhetoric around the COVID-19 pandemic introduced a new wave of vaccine hesitancy for providers to dispel.

To account for the decline in vaccine rates caused by the COVID-19 pandemic, this project was delayed by one year and baseline data included vaccine data from 2017-2020 – a time frame that included enough data to assess vaccine rates before the pandemic, as well as a duration of time during the pandemic where vaccine rates were most severely impacted. Also, to ensure maximum impact of all interventions, providers were asked to create their action plans when stay-at-home orders were loosening, and patients were returning to doctors' offices.

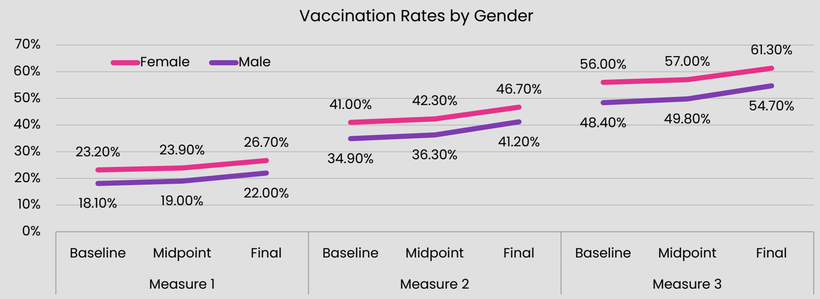
RESULTS

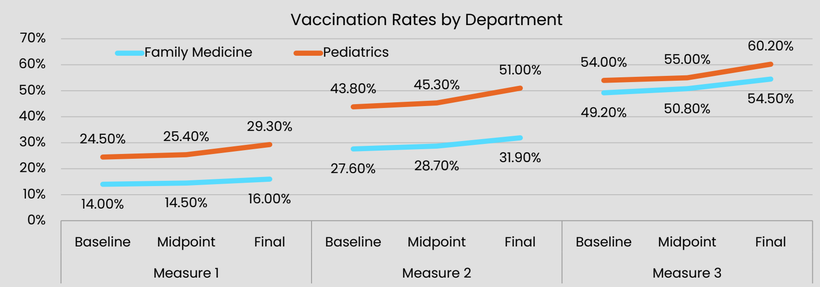
For each time point, the three vaccination measures are summarized as percentages. The Cochran-Armitage trend test was used to compare each measure over time. Subgroup analyses were performed by gender and health system department. The chi-squared test was used to compare the vaccination rates between any two groups at each time point. Statistical significance was established at two-sided $P<0.05$. All analyses were conducted using SAS version 9.4 (SAS Institute, Inc. Cary, NC).

- Baseline data: April 1, 2017 – December 31, 2020
- Midpoint data: April 1, 2017 – October 1, 2021
- Final data: February 1, 2018 – August 1, 2022



The Cochran-Armitage trend test shows that rates have significantly increased over time for the overall population ($P<0.001$; n=76,616).





Vaccination rates by gender and by department increased over time as well. The vaccination rates for all measures are significantly different between subgroups. ($P<0.001$; n=76,616).

CONCLUSION

Results indicate structured quality improvement programs can sustainably improve HPV vaccination practices efficiently and effectively. The nature of the "plan, do, study, act" philosophy allowed for this focus to become engrained into the culture of the pediatric and family medicine providers who actively engaged in this initiative. Actions leveraged to increase rates will continue as providers are encouraged by the gains they've seen and will continue efforts to increase vaccination rates for patients at younger ages (per guidelines), which will lead to sustained improvement in patient outcomes.

"This project allowed our entire caregiver group a chance to participate in trying to better our patient care. By working as a team to achieve the same goal, we honed our communication skills created more efficient processes. By learning these types of skills, our entire patient care delivery improved, and our patients will have better health outcomes as result of this effort."