Closing in on the Bull's Eye

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Moving from volume to value through HPV vaccination

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Every year in the United States, human papillomavirus (HPV) is responsible for more than 33,000 cases of cancer and 10 times as many precancers.[1] This virus affects both men and women, causing cancers of the oropharynx, cervix, anus, vagina, vulva, and penis. But infection with the strains of HPV that cause about 90% of these cancers is preventable with the HPV vaccine.[2] Debbie Saslow, Ph.D., managing director of Cancer Control Intervention for HPV Vaccination and Women's Cancers for the American Cancer Society (ACS), explains:

Never in history has a cancer been eliminated, but the elimination of cervical cancer is a very real possibility if two conditions are met: (1) sustained 80% HPV vaccination coverage for pre-teen boys and girls, and (2) continued routine screening and treatment for cervical pre-cancers.[3]

In the United States, we still have a lot of work to do to achieve 80% HPV vaccination coverage. While rates have been increasing, currently fewer than 50% of adolescents ages 13–17 years have completed the series.[4] A recent analysis of HPV vaccination rates among 18 AMGA healthcare organizations that pool their electronic health record (EHR) data as part of a national learning collaborative found average rates among 13-year-old adolescents who have initiated the HPV vaccination series was 57.5% overall in 2018 and ranged from 36% to 81% across the organizations (see Figure 1).

While the overall average rate aligns with nationally reported rates, several AMGA members exceeded these rates and are clearly leading the way. In addition, all 18 organizations improved their vaccination rates (initiation among 13-year-olds) between 2016 and 2018 (see Figure 2).

Improving HPV vaccination rates is a winnable battle, but to reach 80% HPV vaccination coverage and meet the goal of cervical cancer elimination, we need to leverage the tools of healthcare systems: integrated provider networks, health information technology, and population health management. Several AMGA health systems across the country are leading the way.

The Kelsey-Seybold Clinic Initiative

Kelsey-Seybold Clinic is a large, multispecialty system located in Greater Houston, Texas. Their system includes 425 providers who care for a half-million patients annually in more than 55 medical specialties at 20 locations. Kelsey-Seybold was the first accredited accountable care organization (ACO) in the United States. In 2013, their leaders realized that HPV vaccination rates were not comparable to other childhood

Figure 1

2018 HPV Adolescent Vaccination Rates by Healthcare Organization: HPV Vaccination Series Initiated by Age 13 or 15

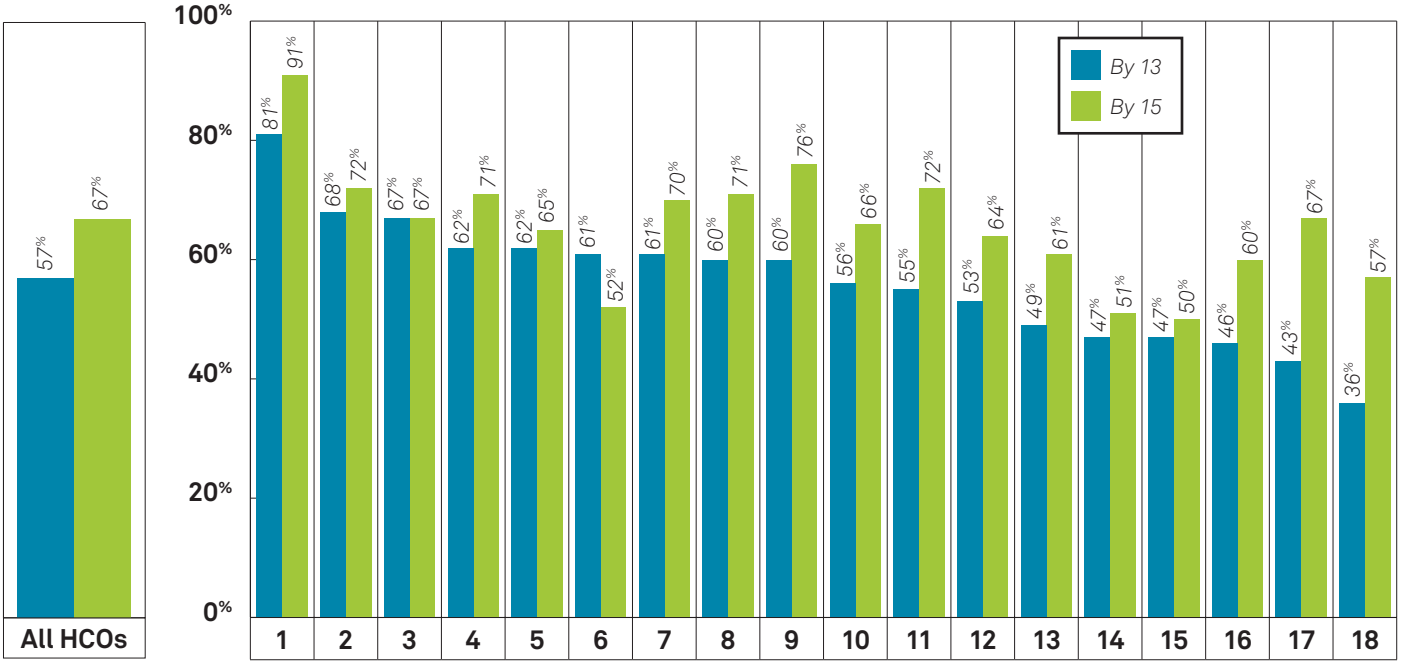
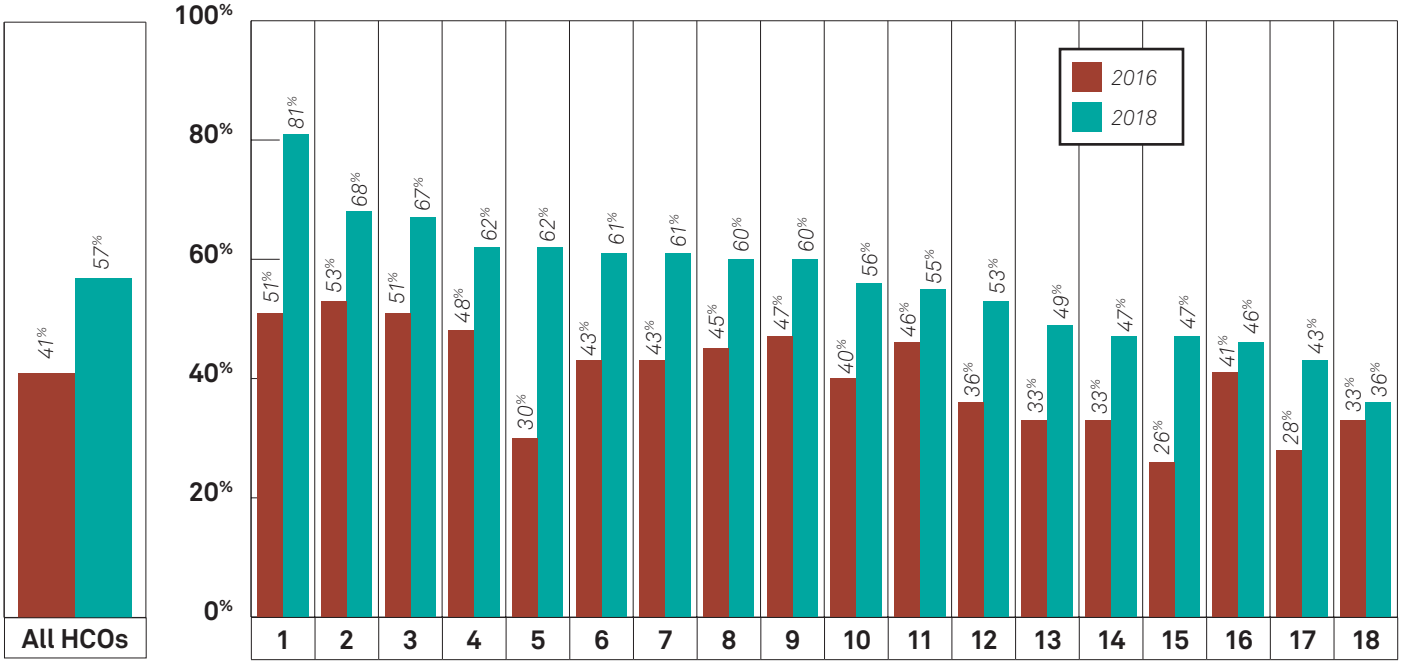


Figure 2

HPV Vaccination Initiation Rates by Age 13 Between 2016 and 2018: By Healthcare Organization (HCO)



vaccination rates, and work began to improve their rates.

Melanie Mouzoon, M.D., managing physician for Immunization Practices, led the quality improvement initiatives for adolescent immunization and took steps with the Quality Improvement (QI) department to collaborate with department chairs in OB/GYN, pediatrics, family medicine, internal medicine, and oncology to improve physician recommendations for HPV vaccine and immunization rates. Over the past five years, Kelsey-Seybold reported HPV vaccination rates have increased from 49% to 67% for initiation by age 18 and to 54% for series completion. Kelsey-Seybold accomplished this while their adolescent population (13–17 years) more than doubled.

The key to their success is twofold: (1) utilizing multi-pronged interventions, and (2) maintaining an ongoing commitment to HPV vaccination quality improvement. Key interventions included use of standing orders by nurses, quarterly physician dashboards, provider training, patient recalls, electronic medical record (EMR) alerts, offering vaccine at age 9, and designating an initiative champion, supported by the QI department.

According to Dr. Mouzoon, "As a system, Kelsey-Seybold is focused on the health of the entire population we serve, and we look to the long-term improvements in individual well-being. Preventing cancer is great for the future of our patients and for our ACO model of care as well!"

What's the latest progress they've made? On first quarter dashboards from 2018, initiation rates by 18 years among the 43 pediatricians ranged from 33% to 66% for girls and from 22% to 63% for boys, with the best completion rates for an individual physician at 53% for girls and 51% for boys. A year later, QI 2019 initiation rates by 18 years increased to a range of from 48% to 94% for girls and from 50% to 91% for boys. The corresponding top completion rates were 86% for girls and 81% for boys, with 16 of 42 doctors reaching at least 70% completion for boys or girls or both.

To reach 80% HPV vaccination coverage and meet the goal of cervical cancer elimination, medical groups will need to leverage the tools of healthcare systems: integrated provider networks, health information technology, and population health management.

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An Advocate Health Priority

Advocate Health[5] is the largest health system in Illinois, with 6,000 physicians in an integrated network and 200 sites of care and specialty clinics from Chicago to Central Illinois. In 2017, Advocate, under the leadership of Chief Medical Officer Frank Belmonte, D.O., made HPV vaccination a priority for the system. Advocate's pediatric leaders felt preventing cancer was a powerful goal that everyone could get behind, and they could leverage other pediatric providers in the system to improve immunization rates.

HPV vaccination rates were 18% for patients ages 11 to 13 seen in 2016 in the medical group, compared to 76% for Tdap/meningococcal rates. In response, the Advocate Population Health Office incentivized employed physicians to improve rates in 2017–2018 by awarding them points that affect their year-end compensation.

Dr. Belmonte worked with the Population Health Office to develop a plan within a group of 90 employed physicians. The 18-month plan focused on providing the adolescent bundle at age 11 during sixth-grade visits. Efforts were targeted to clinics that serve the largest pediatric and adolescent populations, as well as pediatric and family medicine providers who had the most age-appropriate patients. According to the team, the vaccine bundles were relatively easy to set up. Providers were monitored with quarterly reports by provider and practice, with a goal of improving their HPV vaccination rates for patients by 13 years of age. All providers received baseline vaccination rate information and found the metrics highly useful.

Taking Action

If you're ready to take action to improve your rates, we recommend using the National HPV Vaccination Roundtable (hpvroundtable.org) and member resources to get started, including:

- **Action Guide for Large Health Systems (hpvroundtable.org/wp-content/uploads/2018/04/LARGE-SYSTEMS-Action-Guide-WEB.pdf)**
- **Case Studies**
- **Evidence-based tools for HPV vaccine quality improvement (hpviq.org)**
- **American Academy of Pediatrics HPV Champion Toolkit (aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunizations/HPV-Champion-Toolkit/Pages/HPV-Champion-Toolkit.aspx)**
- **Centers for Disease Control and Prevention Human Papillomavirus (HPV): For Clinicians (cdc.gov/hpv/hcp/index.html)**

You might also apply to participate in AMGA and American Cancer Society's (ACS') Best Practice Learning Collaborative to improve HPV vaccination rates among adolescents.

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Between May and October 2018, 46 of the 74 sites (inclusive of family medicine and pediatric primary care) saw increases in their HPV vaccination rates. This resulted in a 40% relative increase in HPV vaccination rates over the 2016 baseline.

Advocate Health Care is now planning to expand their HPV vaccination efforts. They intend to add affiliated sites (those that belong to Advocate Physician Partners but are not employed by Advocate), outpatient sites (as a result of the merger with Aurora in 2018), and pediatric sites that are part of the Advocate Northshore Pediatric partnership. They are also working on a strategy to leverage mobile care units to provide initial as well as follow-up HPV vaccinations. Advocate is also advancing HPV prevention through participation in ACS' sponsored Communities of Practice learning collaborative beginning in fall 2019. Stakeholders from across the system will provide insights to develop and coordinate interventions in concert with community partners, including one or more local health departments.

Collaborating to Scale Up

These health systems are not working alone. Organizations across the country are collaborating to improve HPV vaccination rates. The National HPV Vaccination Roundtable (HPV Roundtable) is a coalition of over 70 organizations seeking to raise HPV vaccination rates and prevent HPV cancers. Managed by ACS, the HPV Roundtable was founded in 2014 and focuses on convening stakeholders, communicating information to members and the public, and catalyzing national efforts. Recently, the HPV Roundtable heard about AMGA's success in using a learning collaborative approach to improve adult immunizations[6] and invited AMGA to present at their Integrated Delivery Systems Task Group meeting to demonstrate how a successful learning collaborative on the topic of immunization is structured.

Following the January 2019 Task Group meeting, AMGA decided to jointly pursue funding for a Best Practice Learning Collaborative on HPV Vaccinations with the HPV Roundtable.

AMGA's interest was based on four primary missions:

- To leverage what had been learned in the adult immunization collaboratives
- To appeal to a wide AMGA member audience (e.g., those who specialize in care for children or adolescents)
- To address a population need and priority due to low HPV vaccination rates (< 50%) as compared with other child and adolescent vaccination rates (Tdap 89%; varicella 88%)
- To continue to support AMGA members in the transition from volume to value

From Volume to Value, from Treatment to Prevention

One meaningful way to move from volume to value is by preventing HPV-related precancers and cancers. To get started, review your health system's HPV vaccination rates, paying attention to how they compare to other adolescent vaccines (see "Taking Action").

Fourteen million Americans acquire HPV infections each year.[7] We do not know what infections will clear and which infections will not. We do know that HPV vaccinations prevent over 90% of HPV cancers, mitigating patient risk. Approximately 92 people each day are diagnosed with an HPV-attributable cancer.[8] These patients and their families face the emotional impact of a cancer diagnosis, the challenges of cancer treatment, and the possibility of death. Health systems with missions to improve health, provide high-quality care, and serve their communities have been caring for these patients as well as managing the high financial costs that accompany cancer care. Integrated health systems are well positioned to expedite HPV vaccine uptake and help eliminate HPV cancers. GPJ

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Data Source: *Data for the analysis included in this article used longitudinal electronic health record (EHR) data from 23 U.S. healthcare organizations that pool their EHR data as part of a national learning collaborative. All organizations in the collaborative use an Optum population health management and risk analytics platform which extracts data from multiple sources, cleans, normalizes, and validates it, making it possible to conduct accurate lateral analyses and comparisons. The Optum® clinical database comprises longitudinal ambulatory EHR data from 106 million patients treated by 84 U.S. healthcare organizations.*

Note: *For additional information about AMGA's Adult Immunization Best Practice Learning Collaborative, please see E.L. Ciemins, M. Jerry, J. Powelson, et al. 2019. Impact of a Learning Collaborative Approach on Influenza and Pneumococcal Immunization Rates in US Adults: A Mixed Methods Approach.* Population Health Management, *June 2019.*

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