Introduction

Improving clinical practice is done primarily through the implementation of a continuous quality improvement process (QI). The key to any continuous QI initiative is using a structured planning approach to continuously evaluate and improve the current practice processes to achieve the desired outcome. Immunization QI projects are often selected because immunization is a dynamic, critical, and measurable area of health care. CDC encourages health care providers to consider immunization QI projects that:

- Implement measurable increases in adult immunization rates,
- Bring about measurable increases in HPV vaccination rates, particularly co-administration rates with other adolescent vaccines at the 11-12-year-old visit,
- Bring about measurable increases in vaccination rates of pregnant women, specifically against influenza and pertussis, and/or,
- Reduce disparities in immunization rates, whether associated with race, ethnicity, lack of insurance coverage, or any other factor resulting in suboptimal rates.

The 64 state, local, and territorial immunization programs (IPs) have historically conducted a continuous QI process called the Assessment, Feedback, Incentive, and eXchange of information (AFIX) program, but as of July 2019, AFIX has been replaced by the Immunization Quality Improvement for Providers (IQIP) program. IQIP is CDC’s national Vaccines for Children (VFC) immunization QI program that promotes and supports implementation of provider-level strategies. IQIP is designed to help increase on-time vaccination of children and adolescents.

Immunization programs can increase vaccine uptake by using strategies that prioritize improving and enhancing immunization workflow. The activities highlighted in this chapter related to improving clinical practice include:

- **Getting Started**: Physician detailing visits regarding HPV vaccine (New Mexico)
- **Moving Forward**: AAP partnership to educate providers about QI (Mississippi)
- **Taking It to the Next Level**: Expanding a QI initiative to include adolescent ages 13-18 (Philadelphia)

**AIM QI Webinar**

Learn more about the changing healthcare environment and the role of QI.

On November 5, 2019 AIM partnered with Sanofi Pasteur to review how the changing healthcare landscape impacts providers’ QI efforts and how these changes can help immunization programs achieve their goals of increasing immunization rates, improving IIS participation, and increasing VFC participation.

Presenters Dr. Sharon Humiston (Children’s Mercy), Kevin Farrell (Sanofi Pasteur), and Kristina Berte (Sanofi Pasteur) provided QI insight and offered an example from Texas Children’s Hospital. The event was part of Sanofi Pasteur’s benefits as a platinum member of AIM’s Corporate Alliance Program. The event was for educational purposes only and does not include brand-specific information.

https://www.immunizationmanagers.org/QIintheChangingHealthcareLandscape
Resources and Tools for QI

- **CDC Immunization Quality Improvement for Providers (IQIP)**
  IQIP is CDC’s national Vaccines for Children (VFC) provider-level immunization quality improvement (QI) program. IQIP promotes and supports implementation of provider-level strategies designed to help increase on-time vaccination of children and adolescents. [https://www.cdc.gov/vaccines/programs/iqip/](https://www.cdc.gov/vaccines/programs/iqip/)

- **AAP EQIPP Online QI Learning System for Pediatricians**
  Education in Quality Improvement for Pediatric Practice (EQIPP) has information, tools, and guidance, including one module on immunization. Maintenance of Certification and continuing education credit available. [https://brightfutures.aap.org(states-and-communities/implementation-models/Pages/EQIPP-Online-Modules-.aspx](https://brightfutures.aap.org(states-and-communities/implementation-models/Pages/EQIPP-Online-Modules-.aspx)

- **AAP Immunization QI Resources**

- **The 4 Pillars™ Practice Transformation Program for Immunization**
  A guide for physicians and their support staff through clinical QI. The step-by-step guide from the University of Pittsburgh reflects evidence-based research to improve immunization rates in outpatient practice settings. In addition to the QI program, vaccination resources, videos, links, and flyers are available in the toolkit. [http://4pillarstoolkit.pitt.edu/](http://4pillarstoolkit.pitt.edu/)

- **National Foundation for Infectious Diseases (NFID) Adolescent Immunization Website, Tools, and Resources for Providers**
  NFID’s tools and resources are designed to help professionals implement key strategies for improving adolescent vaccination rates. [http://www.adolescentvaccination.org/professional-resources/hcp-tools-resources](http://www.adolescentvaccination.org/professional-resources/hcp-tools-resources)

- **National Immunization Partnership with the Academic Pediatric Association (NIPA)**

- **National HPV Vaccination Roundtable Resource Library**
  Search this CDC-funded database containing QI resources: [https://www.hpvroundtable.org/resource-library](https://www.hpvroundtable.org/resource-library)

- **Evidence-based Tools for HPV Vaccine QI via UNC Gillings School of Global Public Health**: [https://www.hpviq.org/](https://www.hpviq.org/)

- **MedConcert™ Online QI Tool**
  This website provides a central platform for individual and organizational data collection, performance measurement, and real-time gap analysis across all areas of care. American Board of Internal Medicine Maintenance of Certification credit is available. [https://www.medconcert.com/](https://www.medconcert.com/)

- **Institute for Healthcare Improvement (IHI) Online QI Courses for Providers**
  IHI offers a full catalog of more than 30 online courses for providers. [http://www.ihi.org/education/hiopenschool/courses/Pages/default.aspx](http://www.ihi.org/education/hiopenschool/courses/Pages/default.aspx)
Overview of activity
The New Mexico Immunization Program partnered with a local pediatrician to conduct educational one-on-one “detailing” visits to provider offices regarding HPV vaccine.

Ages targeted
All adolescents

Background/impetus for the activity
In 2011, the New Mexico IP began discussing ideas to improve practice-level adolescent immunization rates—especially for HPV vaccine—with its AFIX staff and existing physician consultant. One idea was to implement physician-led practice education activities, which had been used by another state IP. Based on these discussions, the IP worked with its partners to conduct several HPV-specific physician detailing visits.

Description of activity
The IP’s physician consultant agreed to visit individual practices and developed a standard presentation for the detailing visits, with input from the IP.

The IP developed a priority list of candidate sites for the detailing visits based on high patient volume, low HPV coverage rates (based on past AFIX visits), and broad geographic distribution. This list was then given to the physician consultant and the New Mexico Immunization Coalition (NMIC), who contacted the practices to gauge interest and arrange the detailing visits.

During a detailing visit, the physician consultant typically gave the presentation over lunch, the meal being provided through the NMIC. The presentation covered providing strong vaccination recommendations at ages 11-12 years, practice-focused strategies to educate staff and improve routine HPV vaccination within the practice, and using all available opportunities to educate clinicians and parents about the importance of on-time HPV vaccination.

Role of immunization program and other agencies/groups involved
• The IP identified a priority list of candidate sites for the detailing visits and gave feedback on the physician consultant’s presentation.
• The physician consultant developed the presentation and conducted the detailing visits.
• The University of New Mexico (UNM) is the IP’s contractor for the NMIC.
  » NMIC staff assisted the physician consultant, who was on the UNM faculty, with visit logistics (e.g., contacting practices, lunch arrangements).

Dissemination
Provider sites were contacted individually about participating in the detailing visits.
Intersection with other program activities
While physician detailing visits were taking place, the IP began conducting adolescent AFIX visits separately to improve adolescent immunization rates.

Funding
This activity was initially supported through the IP’s regular CDC cooperative agreement. Starting in 2013, a portion of this activity was funded through a Prevention and Public Health Fund (PPHF) sub-award specific to improving adolescent immunization rates.

Staffing
The IP’s AFIX coordinator was the primary staff person.

Implementation status
The PPHF funds that supported the detailing visits ended in September 2015. The physician consultant continues to provide HPV vaccine-related education to providers through the program’s partner organizations: the UNM’s Area Health Education Center (AHEC) has partnered with the NMIC on a grant to educate health care providers about HPV vaccine, funded by the National AHEC Organization.

Successes
- Ten detailing visits were completed during the PPHF funding period.
- Detailing visits were generally well-received by providers and their staff.
- Though the direct impact of this activity on immunization rates is difficult to separate from other possible influences, there was at least one case in which a practice (an Indian Health Service clinic) decided to focus on increasing their adolescent HPV coverage rates after hearing the presentation. Subsequently, the practice saw an improvement in rates.

Challenges
- In some areas of the state where there had been negative publicity around HPV vaccine, it was challenging to find practices willing to participate, as they were resistant to both the detailing visit and recommending HPV vaccine to their patients.

Other lessons learned/advice to other programs
- Developing relationships with active and engaged partners, like the immunization coalition, contributed to the success of its recent efforts to increase adolescent immunization rates.
- The state’s Immunization Practices Advisory Council has been the hub of collaborative activities among the UNM, the NM chapter of the AAP, and the Department of Health, and others.
“We will achieve high HPV vaccination rates by listening carefully to parents’ and teens’ fears and communicating clearly—using non-medical language—about the benefits of the vaccine. We have this amazing vaccine that can prevent six cancers and a lot of other misery. And we have parents who want the best for their kids and their communities. Harness that power by learning how to listen to their stories and respond with empathy, not by knowing all the answers.”

— Erica Martinez-Lovato, New Mexico Immunization Program Manager
Overview of activity
The Mississippi Immunization Program partnered with the state chapter of the American Academy of Pediatrics (MS AAP) to educate providers about immunization-related QI activities.

Ages targeted
All adolescents

Background/impetus for the activity
To address low immunization coverage rates among adolescents, the Mississippi IP discussed ideas to improve rates at the practice level. The IP was interested in promoting QI strategies using a model other than AFIX visits to individual practices. Discussions were held internally and with external partners, such as the MS AAP and the state chapter of the American Cancer Society (MS ACS).

Description of activity
The IP partnered with a part-time physician consultant for the Mississippi State Department of Health (MSDH) and the MS AAP to conduct presentations around the state on improving adolescent immunization rates. Any practice known to be providing pediatric care was invited to participate, and practices were encouraged to have a physician and other staff members (e.g., nurse managers, office managers) attend. Invitations were sent to VFC and non-VFC providers and AAP members and non-members. Meetings were free of charge. Three meetings were held (January, February, and May 2016), and a total of 18 practices participated.

At the start of each meeting, participants were given information on their practice-specific coverage rates and a survey to assess whether their practice was currently doing any immunization QI activities. The physician consultant then provided an overview of statewide coverage rates and Healthy People 2020 goals for HPV, Tdap, and MCV4 vaccines, as well as the background on the diseases they prevent. The IP’s VFC coordinator then spoke about immunization-related QI strategies, such as conducting reminder/recall and running coverage reports through the state’s immunization information system (the Mississippi Immunization Information Exchange, or MIIX). Each meeting lasted approximately 60-90 minutes. At the end of the meeting, participants were given a handout on HPV vaccine and cancer prevention from the MS ACS.

Following the meetings, the IP monitored the adolescent vaccine coverage rates of the participating practices over time (at 3 months, 6 months, 9-12 months). At the MS AAP meeting, the IP awarded the practice that showed the most improvement in rates in the 12 months since they attended a presentation. The IP also provided feedback on each practice’s rates since the presentation was given.
Role of immunization program and other agencies/groups involved

- The IP developed the QI presentation and prepared meeting materials (e.g., practice-specific coverage rate reports, survey for participants). The IP has monitored changes in rates at participating practices and communicated these data to the practices.
- The part-time MSDH physician consultant, who consults for both the immunization and epidemiology programs, developed the presentation on adolescent vaccines.
- The MS AAP handled the logistics of setting up the meetings, including sending out invitations, reserving the venues, and providing food for participants.
- The partners held regular meetings to arrange and conduct the practice education meetings.

Dissemination
The MS AAP sent out invitations to pediatric providers. Educational materials were provided to participants at the in-person meetings. The IP communicated directly with individual practices on any change in their adolescent vaccine coverage rates.

Intersection with other program activities
The IP and the physician consultant gave a similar presentation to residents at the University of Mississippi School of Medicine to educate them on immunization-related QI processes.

Funding
This activity was funded mainly through the IP’s regular immunization cooperative agreement with CDC. The MS AAP’s portion was funded through their own grant funding from CDC.

Staffing
The VFC coordinator and the physician consultant developed and gave the presentations. A part-time contract nurse assisted with running the practice-specific coverage reports from MIIX and preparing the presentations.

Implementation status
All three meetings have been held. Feedback to practices on any subsequent changes in their adolescent vaccine coverage rates is forthcoming. Their focus is to use a top-down approach (i.e., targeting administrators down to clerical level personnel) while continuing to target medical providers.

Successes
- The meetings were well received by participants, and all but one of the 18 clinics have shown a steady increase in immunization rates for each vaccine.
Challenges

- The program hoped for greater geographic reach for this activity, but there was not enough interest from a few areas of the state. The activity was implemented in central and southern areas of the state.

Other lessons learned/advice to other programs

- Though many of the immunization-related QI activities that the program covered in these presentations are also included in AFIX, the IP wanted to make the materials and terminology easier to understand. The IP also wanted participants to feel like the activities were simple enough to incorporate into their clinical practice.
- Because different staff members may be responsible for different types of activities, the program separated the discussion of QI strategies into administrative activities and clinical/medical activities.
- It was noted that participants in the same practice often answered the survey questions differently if they didn’t first confer with each other. For those that did, the discussion often illuminated incorrect assumptions. For example, the physician may have thought certain activities were being done that staff said were not. It proved to be a learning experience for physicians and their staff.
- Also observed was a different dynamic within smaller independent practices versus larger practices. Smaller practices seem to feel more personal ownership of their processes and have a greater degree of control over making improvements. For multi-site practices, staff at individual clinics seem less committed to making improvements and have their policies and procedures set at a higher level. One takeaway is that educating larger practices on immunization-related QI strategies should include those at a higher administrative/decision-making level.
- Partners were very important for the success of this activity. The MS AAP liaison was very proactive and had a strong working relationship with the program and the MSDH physician consultant. The physician consultant, who is a pediatric infectious disease specialist, is a long-standing, well-respected member of the medical community in the state.

Relevant resources

- Survey instrument (“Immunization Quality Improvement Recommendations”)
  https://drive.google.com/file/d/1F7l7qhuQ8GL97hy29GJAXVXLvOZqFWj/view?usp=sharing

For more information

Contact Sandor Feldman, M.D., Immunization and Epidemiology Consultant for the Mississippi State Department of Health at (601) 576-7751 or sfeld2222@aol.com.
“Throughout the initiative, whenever I said “quality improvement,” clinicians and staff would tune out. But really, QI is about identifying one thing to change, making that change, and figuring out whether it made things better. It might be a systemic change—like checking vaccination records for “every patient, every time,” or it might be stating the patient’s age when you make your presumptive announcement about the vaccine. It’s that simple—and it is rocket science. If we could use QI to get to the Moon and Mars, surely we can use it to improve HPV vaccination rates.”

— Erica Martínez-Lovato, New Mexico Immunization Program Manager
Overview of activity
The Philadelphia Immunization Program added adolescent AFIX to its combined VFC/AFIX provider site visit process.

Ages targeted
Adolescents ages 13–18

Background/impetus for the activity
In 2013, the Philadelphia Immunization Program applied for and received an HPV-specific PPHF funding award. Despite a concern with the completeness of adolescent data in its immunization information system (IIS), called KIDS Plus, the IP included adolescent AFIX as an activity under this PPHF award as a way to jumpstart adolescent AFIX among the IP’s VFC providers.

Description of activity
When considering the parameters for adolescent AFIX, the IP decided to include a large age cohort (ages 13-18) and every routinely recommended vaccine (HPV, MCV, Tdap, and catch-up Hepatitis B, MMR, and varicella). Based on the model for pediatric AFIX, the IP established a process for conducting adolescent AFIX and initiated this process for its VFC provider sites. The process included the following steps for eligible* VFC providers:

- A “provider quality assurance nurse” called the VFC provider to schedule an AFIX visit.
  - Adolescent AFIX visits are combined with pediatric AFIX where applicable.
- About a month before the scheduled visit, the IP pulled a list of the practice’s patients ages 13-18 from KIDS Plus. Patients are assigned to a practice in KIDS Plus based on the site of their last reported dose. This list was sent to the provider to review (i.e., to identify those they no longer consider their patients, to update addresses and vaccination records, etc.) and return to the IP in 2-3 weeks.
- After the provider returned its patient list, IP staff updated the patient data in KIDS Plus. Then the nurse reran the list and conducted another adolescent coverage assessment a few days before the visit.
- At the visit, IP staff went through the standard AFIX protocol with the provider.

*Providers were required to have at least ten patients ages 13-18 years to be eligible for an adolescent AFIX assessment.

The IP has established a two-tiered process of official and “unofficial” AFIX. For official AFIX, the IP enters the visit data into the online AFIX tool and targets 25-30 percent of its VFC providers annually. Providers receiving official AFIX must review and return their patient lists. For the remaining “unofficial” VFC providers, the IP does not necessarily use the online AFIX tool but still provides them with a coverage assessment. They will also clean up the KIDS Plus patient records for those providers willing to review and return their patient list.
Role of immunization program and other agencies/groups involved
The IP initiated and developed the adolescent AFIX process.

Dissemination
VFC providers were informed of the additional adolescent AFIX component in the standard letter they receive upon scheduling their VFC/AFIX site visit.

Intersection with other program activities
Concurrent and complementary activities under the HPV PPHF funding award included peer-to-peer physician education visits and centralized IIS-based reminder/recall.

Funding
Though adolescent AFIX was included as an activity under the program’s HPV-specific PPHF funding award, it did not have a significant cost impact. The activity was added to the existing duties of staff conducting pediatric AFIX, which the IP already supports via its regular CDC cooperative agreement.

Staffing
The IP has three nurses responsible for provider quality nurses and one staff member responsible for data entry and preparing for and conducting VFC/AFIX site visits.

Implementation status
Adolescent AFIX was integrated into VFC/AFIX activities in 2014 and is ongoing.

Successes
- The IP conducted 122 adolescent AFIX visits during the PPHF HPV grant cycle, which is 60 percent of the 203 total VFC providers in Philadelphia that administer HPV vaccine.
- Providers have responded positively to seeing adolescent vaccine coverage assessments, which have shown areas for improvement (e.g., delay in starting age for HPV vaccine series) that they may not have recognized previously.
- This effort has greatly helped to increase completeness of adolescent data in KIDS Plus.

Challenges
- Initiating adolescent AFIX required significant time on the part of providers for reviewing their adolescent patient lists. These lists could contain hundreds of patients, some of whom hadn’t been seen at the clinic for many years. To reduce the impact on providers, the IP eased the requirements for patient list review. In the first year, providers were given the option of returning a corrected patient list, and many did not. In the second year, practices were strongly encouraged to provide an updated list, and more of them did. Currently, providers who are receiving official AFIX visits must return their patient lists.
• Initiating adolescent AFIX also required significant time on the part of IP staff; when a practice returned a corrected patient list to the IP, the changes had to be entered into KIDS Plus in time for the corrected coverage reports to be ready for its site visit.

Other lessons learned/advice to other programs
• In hindsight, the IP could have developed a better dissemination plan and given providers more advance notice.
• When doing adolescent AFIX, IPs should think through their goals and priorities to help determine how broadly to define the parameters. The Philadelphia IP included every VFC provider, a broad age cohort, and a comprehensive list of vaccines; starting on smaller scale might be a better fit for some programs. For example, an IP might want to focus on older adolescents to “catch” them before they age out of VFC.
• Having a process for adolescent AFIX has allowed the IP to give every provider some type of an adolescent assessment in a given year.

For more information
Contact Amber Tirmal, MPH, Immunization Program Manager, in the city of Philadelphia at (215) 685-6650 or Amber.Tirmal@phila.gov.

1 NLC. https://www.healthit.gov/sites/default/files/tools/nlc_continuousqualityimprovementprimer.pdf
2 CDC. https://www.cdc.gov/vaccines/ed/quality-improvement-proj.html
3 CDC. https://www.cdc.gov/vaccines/programs/iqip/at-a-glance.html

This resource was made possible through support from Sanofi Pasteur.