

The background image shows a close-up of a woman with dark hair tied back, wearing a light blue surgical mask and an orange long-sleeved shirt. Her eyes are closed. A healthcare worker, whose face is blurred, is wearing blue nitrile gloves and is applying a pink adhesive bandage to the woman's left shoulder. The scene is set in a clinical or healthcare environment.

Impacting Immunization Implementation Through Quality Improvement

Steps to starting a quality
improvement project

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Introduction to Quality Improvement

Within health care, quality improvement (QI) is a framework used to systematically streamline processes and improve patient care and outcomes. QI efforts are often described as continuous quality improvement (CQI) as the process is cyclical and ongoing. The National Academy of Medicine (formerly, the Institute of Medicine) defines six dimensions of quality: safe, effective, patient-centered, timely, efficient, and equitable.ⁱ QI projects may be established with the goal of making improvements in any one or more of these domains.

Conducting a QI project is a required activity for community-based residents. These projects assist residents in developing their ability to identify, implement, and evaluate a QI project, and also foster their leadership, communication, team building, and project management skills along the way. CQI projects may address issues within the medication use system or may be related to a patient care service, such as immunizations.

Several frameworks for conducting CQI initiatives exist, including Lean, Six Sigma, Model for Improvement, and more.ⁱⁱ Before the resident begins their QI project, determine if the organization has a preferred method for QI already established. The Institute for Healthcare Improvement (IHI) recommends using the [Model for Improvement](#) framework developed by the Associates in Process Improvement (Figure 1).ⁱⁱⁱ This framework can be broken down into the “thinking” phase and the “doing” phase, which will be described later. The Model for Improvement may be an ideal process for a PGY-1 community-based resident to follow as it can be applied to a variety of QI situations and does not require advanced training.

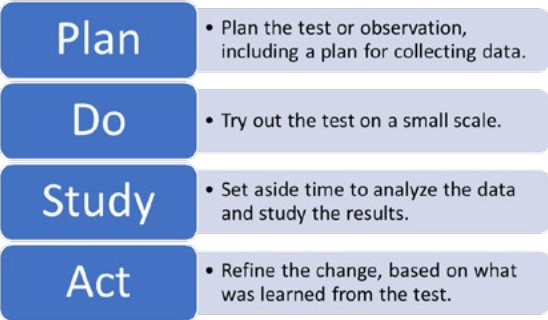
There are also a number of tools that can be utilized within a QI framework. A process map or flow diagram can assist the QI team in visually depicting a complex process and where improvements can be made in the process. A root cause analysis (RCA), a cause-and-effect diagram, process mapping, or the Plan–Do–Study–Act (PDSA) cycle can be used to identify potential or actual core issues that may lead to a problem or unwanted effect. The PDSA cycle (Figure 2) is a simple, yet powerful, process utilized by many QI frameworks to imple-

ment and test changes quickly and can be repeated with no defined end. Templates and worksheets for these QI tools may be available through your organization or through a health care quality organization, such as IHI.^{iv}

Figure 1. Model for Improvement (developed by Associates in Process Improvement).



Figure 2. Plan–Do–Study–Act (PDSA) cycle.



Tips for Developing QI Project Ideas

When deciding on a topic for the community-based resident's QI project, the concept of SMART (Specific, Measurable, Achievable, Relevant, and Time-Bound) goals should be applied. This will help ensure that the project can realistically be implemented within the residency year. One option is for the resident to come up with an idea for their QI project independently. This strategy allows the resident to choose something they are truly passionate about. However, if it does not align well with the strategic plan or goals of the organization, it could result in a lack of support for the resident. Although it is very important that the resident be passionate about the topic for their QI project, it is also important to have buy-in from the organization. Additionally, the orientation period can be an overwhelming time, and it can take time to get comfortable with the practice site enough to come up with ideas. Residents have many competing demands and are learning how to balance those demands.

If not already an established part of the orientation, the resident should request to be oriented to the quality assurance process and strategic plans of the organization early in the residency year. It is important that the resident learn how the organization approaches potential issues, ranging from small to larger scale problems. The resident should consider seeking out a quality assurance officer within the organization for a brief discussion. Most community pharmacies have a protocol in place to address errors that occur, for example. By being oriented to these processes early, the resident will feel more comfortable with topic identification and project implementation. This could allow for a hybrid approach where the resident develops an idea for a QI project based on what they have learned from their orientation to QI processes within the organization.

The residency site may have alternatively created a predetermined idea or list of project ideas from which the resident can choose. This strategy can potentially help the resident to hit the ground running earlier. This list may have even been created prior to interviewing applicants by residency leadership. The site may consider also sharing potential project ideas with residency candidates early during the interview process to help ensure a good fit and mutual interests.

Additionally, tying the QI project in with other required residency projects (i.e., business plan, research project, marketing initiative, etc.) can be a beneficial strategy. This can result in a streamlined workflow, allowing the resident to delve deeper into the topic while also meeting several residency requirements. However, it is prudent to brainstorm alternate options in case the project is unsuccessful so that the resident does not run the risk of being unable to complete several projects when they are tied together in this way. The resident should also discuss potential project costs with the team. Consideration should be given to potential funding resources, such as grants, especially if cost is a barrier to a potential project idea.



Key points/Considerations for immunization-specific topics

Immunization practices are a great area for the resident to consider targeting for the QI project. One way to be oriented to safety practices at the site and identify potential gaps is for the resident to complete the [Institute for Safe Medication Practices \(ISMP\) Medication Safety Self-Assessment® for Community/Ambulatory Pharmacy](#). Issues identified stemming from questions specific to immunizations could be targeted as the subject of the QI project. Potential ideas could also be obtained from relating immunization practices at the site back to one or more of the National Academy of Medicine's six dimensions of quality.ⁱ Some potential examples include gaps in safety when administering vaccines, gaps in immunization status, areas for improvement in workflow, and improvement of patient-centered outcomes.

Step-by-Step Process for QI Project Implementation

After deciding upon a topic for the QI project, following a stepwise process can help to set the resident up for successful completion of the project from start to finish. Reviewing the Criteria within the required Competency Areas, Goals and Objectives can help the resident ensure that they are meeting all the requirements for completion of the QI project. The following steps have been categorized using the Model for Improvement, developed by Associates in Process Improvement.ⁱⁱⁱ

Prior to beginning any work on the project, the very first step should be to identify and [establish a team](#). The QI project should be a team-based approach, and the resident should not be working on this project alone. Meeting times should be established at regular intervals throughout the year (i.e., bi-weekly). Time should be dedicated for preceptors to introduce strategies for project management when working with team members, such as developing timelines, communicating clear deadlines, incorporating adequate time for the responsible party to review materials after revisions have been made, and preparing agenda items prior to each meeting to stay on task.

Part 1 “THINKING” Phase

Prior to embarking on the planning stage, begin by responding to the following fundamental questions as part of the needs assessment. This allows the team to brainstorm an overview of the QI project in preparation for the more detailed planning stage.

Question 1: What are we trying to accomplish?

After having decided on a topic and creating a team, the resident should develop aims for the project. As discussed earlier in this resource guide, it is important to apply the concept of SMART goals here.

CASE STUDY EXAMPLE: Decrease number of patients lost to follow-up for vaccines that are administered as a series with multiple doses

Question 2: How will we know that a change is an improvement?

List the quality measures that will need to be collected to determine whether the implemented changes will result in a positive impact.

CASE STUDY EXAMPLE: Identify and track vaccine administrations for multi-dose schedules during a predetermined time frame that is appropriate for vaccine schedules. Compare pre- and post-implementation outcomes to determine impact.

Question 3: What change can we make that will result in improvement?

List ideas for changes that could be implemented to reach the desired positive outcome. It may benefit the resident to perform a literature review to determine if other institutions have implemented similar QI measures to use as a guide for planning changes to the current system. Discussing the issue with colleagues at the organization, particularly those who are in close contact with the identified issue(s), could also be a way of gathering ideas.

CASE STUDY EXAMPLE: From literature reviews and medication use evaluations, the resident identified potential operational and clinical interventions.

Part 2: “DOING” Phase

It is important to remember that the PDSA cycle is cyclical! A QI project does not have to only include one pivotal and clear change, followed by evaluation of that change. There will likely be several small changes that work or do not work along the way. Documentation is a key component of a QI project, and the resident should take care to detail all changes that occur throughout the course of the project, both small and large scale.



Stage 1: Plan

Step 1: Design the plan and timeline.

The plan should be written out in a stepwise process, including specific timing for each step. By writing out every step they plan to take and sharing this with the team, it gives the resident an opportunity to ensure that they have a comprehensive and thorough understanding of the process. The resident can work with the team to fill any identified gaps before action is taken in subsequent steps.

Step 2: Conduct a “pre-mortem” discussion with the resident.

The “pre-mortem” discussion allows the resident and team to dissect the plan and identify potential areas (weak points) where the project might go wrong. Make sure all team members are on the same page in knowing when to pivot if at any point it is evident that the plan is not going to work out. Especially for larger scale projects, it may be helpful to have potential smaller scale project ideas ready in case the resident must change directions in the middle of their residency year to ensure completion of residency requirements.

Step 3: Determine what data will be collected.

As described above, the resident can utilize the National Academy of Medicine’s six dimensions of quality (safe, effective, patient-centered, timely, efficient, and equitable) when creating a list of the data that will be reviewed.ⁱ

Step 4: Seek appropriate approvals.

The resident will need guidance from the team to ensure that approvals are obtained at the appropriate timeline from organizational leadership.

Stage 2: Do

Step 5: Follow the designed implementation plan.

At this stage, the resident is often piloting or trying out their plan on a smaller scale. Pertinent data should be collected and documented. This should also include descriptive notes, such as overall observations, issues that arise, deviations from the plan, and unexpected occurrences.

Stage 3: Study

Step 6: Review the plan and data gathered.

The resident should evaluate data gathered and their descriptive notes, discussing next steps with the team. It should be determined whether the changes made were successful or not in reaching a positive outcome.

Stage 4: Act

Step 7: Implementation based on data gathered.

If the changes were beneficial based on conclusions drawn from evaluation of data gathered, they should be continued. If more changes are required, the resident should move back up to “Stage 1: Plan” and repeat the cycle. The resident will likely go through several “mini” PDSA cycles throughout the course of their QI project. Eventually, if the changes were successful in achieving a positive outcome and no further areas of improvement have been identified that require additional changes, the resident can decide in conjunction with the team whether to conclude the pilot portion of the QI project and [implement on a larger scale](#).

Resources for QI

- IHI Model for Improvement: [How to Improve](#)
- Curtiss FR, Fry RN, Avey SG. Framework for pharmacy services quality improvement—A bridge to cross the quality chasm. *J Manag Care Spec Pharm*. 2020;26(7):798–816. doi:10.18553/jmcp.2020.26.7.798doi:10.18553/jmcp.2020.26.7.798
- Agency for Healthcare Research and Quality (AHRQ): Key Driver 2 - [Implement QI](#)
- AHRQ: Needs [Assessment Tool](#)
- Institute for Safe Medication Practices (ISMP)
- [Flip the Pharmacy: Immunization Progression](#)
- <https://www.jmcp.org/doi/10.18553/jmcp.2020.26.7.798> The Joint Commission: Resources [related to vaccination for health care settings](#)
- CDC: Strategies [for Increasing Adult Vaccination Rates](#)

Immunization-Focused QI Project Case Studies

Below are two short case studies to give the resident an idea of types of immunization QI projects that can be conducted in a community-based practice setting.

CASE STUDY 1: Improving immunization follow-up

HealthLinc Pharmacy identified that patients were being lost to follow-up for vaccines that are administered as a series with multiple doses (i.e., herpes zoster, hepatitis A or B, HPV). The pharmacy did not have a standardized workflow for following up with patients who needed a second or third dose of a vaccine series. The pharmacy resident gathered and analyzed baseline data for six vaccines resulting in 309 potentially missed doses. The resident and team conducted a root cause analysis to identify reasons for lack of vaccination follow-up and workflow inefficiencies. A list of potential workflow changes was identified including, improve vaccine reporting from pharmacy dispensing system; verification of completion of series in the state immunization registry; develop a plan for patient communication and education on need for completion of series; and send patient text message reminders in English (or Spanish when indicated as the patient's primary language).

The pharmacy implemented the workflow changes by initially focusing on herpes zoster vaccines only as this vaccine series type had the highest volume of initial doses administered within the pharmacy. The new workflow was evaluated at 3.5 months and it was found that 39 of 66 patients (59%) who received the text message communication from the pharmacy received their second herpes zoster vaccine. The new workflow required approximately 2 hours a week of staff time to run reports, analyze information, and send communications which was cost effective due to the increased revenue from vaccine administration.

CASE STUDY 2: Addressing vaccine gaps

Osterhaus Pharmacy set a goal to improve vaccination rates among their patients with a diabetes diagnosis. The pharmacy resident developed a screening tool to assess the recommended vaccines for individuals with diabetes. The screening tool was implemented within the pharmacy workflow when a prescription for a diabetes-related

medication was dispensed. During the pharmacy workflow process, the pharmacist accessed the patient's vaccination history via the statewide immunization registry. The pharmacist documented any potential gaps in recommended vaccines for each individual patient. The pharmacist then reviewed the vaccination history with the patient at prescription pick-up and further assessed if any of the vaccination history in the statewide immunization registry was incomplete. The patient's primary medical offices were contacted in situations where the patient was unsure about vaccination status. Once the vaccination status was determined and the pharmacist identified potential need for vaccination, the patient was offered a choice to have the immunization provided by the pharmacy or to have a recommendation made to the patient's primary medical provider. Vaccines administered at the pharmacy were documented in the pharmacy dispensing system, the state immunization registry, and shared with the patient's primary medical provider. Patients were also provided an updated vaccination record card.

A total of 193 patients identified as having diabetes were screened for completeness of immunization status during the 3-month pilot. Only three patients screened were deemed to be fully vaccinated based on ACIP guidelines. At the time of QI data evaluation, 44 individuals were fully, and four partially, brought up to date with all ACIP-recommended vaccines based on diabetes condition and age; 45 agreed to vaccines that had not yet been administered and 79 were awaiting follow up with the pharmacist. Eighteen individuals declined receiving recommended vaccines. A total of 108 vaccines were administered by either the community pharmacist or another medical provider via pharmacist referral based on patient preference. The process of screening patients for vaccines based on medical condition identified many gaps in vaccination status for patients with diabetes. Pharmacist were able to improve vaccination rates among their patient population by conducting vaccine histories, utilizing the state-based immunization registry, and collaborating with other medical providers.

Acknowledgments

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ⁱ Institute of Medicine (U.S.), ed. Crossing the quality chasm: A new health system for the 21st century. Washington, DC: National Academy Press; 2001.

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