



# Pediatric and Adolescent Immunization:

Best Practices and Resource Guide for Federally Qualified Health Centers



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# Acknowledgements

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## Introduction

The National Committee for Quality Assurance (NCQA) convened a 12-month (2022–2023) Learning Collaborative with Federally Qualified Health Centers (FQHC), with the aim of improving rates of childhood immunizations. The Best Practices and Resource Guide for Federally Qualified Health Centers (the “Guide”) summarizes findings from the Learning Collaborative.

The Guide is written for FQHCs, care teams and organizations interested in using quality improvement (QI) principles to improve pediatric and adolescent immunizations rates. It contains strategies and best practices for improving performance on related measures, as well as ways to overcome barriers contributing to low vaccination rates, and is organized as follows:

- **Introduction.** The importance of pediatric and adolescent immunizations, and a summary of available performance measures to assess immunization rates.
- **Learning Collaborative Overview.** The structure of the Learning Collaborative; participating FQHCs.
- **Quality Improvement Methods to Improve Pediatric and Adolescent Immunization Rates.** The Model for Improvement; aim statements and drivers of FQHCs participating in the Learning Collaborative; a summary of the results of tested change ideas.
- **Lessons Learned from Pediatric and Adolescent Immunization Quality Improvement Projects.** Facilitators and challenges to improving immunization rates that emerged during the Learning Collaborative.

The Guide’s appendices contain additional resources, templates and worksheets readers can reference and use when conducting QI projects.

## WHY FOCUS ON PEDIATRIC AND ADOLESCENT IMMUNIZATIONS?

Child and adolescent vaccinations are one of the most effective public health strategies for supporting healthy communities. Vaccinating children and adolescents protects them from serious infectious diseases and prevents them from spreading disease to others.<sup>1</sup> The Centers for Disease Control and Prevention (CDC) publishes recommendations for children and adolescents from birth through 18 years, including ages for receiving vaccines, number of doses, timing between doses and precautions and contraindications.<sup>2</sup>

The United States Department of Health and Human Services “Healthy People 2030” program includes increased child and adolescent vaccination coverage as one of its data-driven national objectives to improving health and well-being over the next decade.<sup>3</sup> While vaccination coverage for infants and children in the U.S. is generally high for most types of vaccines, adolescent vaccination levels fall below recommended targets. Racial, ethnic, socioeconomic and geographic disparities in vaccination coverage persist for children and adolescents of all ages.<sup>4</sup> Moreover, the COVID-19 pandemic led to alarming declines in child and adolescent vaccination, and some studies found continued downward trends post-pandemic. A recent study found that national coverage of state-required vaccines among kindergarten students declined from 95% pre-pandemic to 93% during the 2021–2022 school year.<sup>5</sup> Although additional data are needed to determine whether vaccination coverage will continue to decline,<sup>6</sup> significant challenges remain to improving vaccination rates.

## USING MEASURES TO ASSESS PERFORMANCE

Health care clinicians, including FQHCs, use quality measures to track and improve performance on child and adolescent vaccination rates. Measures should be part of quality improvement efforts to understand if changes lead to improvements in care processes or outcomes. Measures can also encourage improvements in care by sharing clinicians’ performance information back to the clinicians, or by tying quality measure performance to payment or other incentives.

NCQA’s Healthcare Effectiveness Data Information Set †(HEDIS®) includes two quality measures related to childhood and adolescent immunizations (Figure 1). *The Childhood Immunization Status*<sup>7</sup> measure assesses whether children received recommended routine vaccinations by their 2nd birthday. *Immunizations for Adolescents*<sup>8</sup> assesses whether adolescents received recommended routine vaccinations by their 13th birthday. These measures are widely reported by health care organizations and are used in national programs, including in the Centers for Medicare & Medicaid Services (CMS) Medicaid Child Core Set. Additionally, the U.S. Health Resources and Services Administration requires FQHCs to report *Childhood Immunization Status*<sup>9</sup> annually as part of its Uniform Data System reporting program, which provides standardized information about the performance and operation of FQHCs. FQHCs that participated in the Learning Collaborative used both the child and adolescent immunization quality measures to track whether certain interventions led to better performance.

**+ FIGURE 1: HEDIS Childhood and Adolescent Immunization Quality Measures**

<b>Childhood Immunization Status Measure</b>	<b>Immunizations for Adolescents Measure</b>
Percentage of children who received routine CDC-recommended* vaccines by their 2nd birthday: <ul style="list-style-type: none"> <li>• 4 Diphtheria, tetanus and acellular pertussis (DTaP)</li> <li>• 4 Pneumococcal conjugate (PCV)</li> <li>• 3 Hepatitis B (Hep B)</li> <li>• 3 Haemophilus influenza Type B (Hib)</li> <li>• 3 Polio (IPV)</li> <li>• 2 or 3 Rotavirus (RV)</li> <li>• 2 Influenza</li> <li>• 1 Measles, mumps and rubella (MMR)</li> <li>• 1 Hepatitis A (Hep A)</li> <li>• 1 Varicella zoster virus (VZV)</li> </ul>	Percentage of adolescents who received routine CDC-recommended* vaccines by their 13th birthday: <ul style="list-style-type: none"> <li>• 1 Tetanus, diphtheria, and acellular pertussis (Tdap)</li> <li>• 1 Meningococcal</li> <li>• 2 or 3 Human papillomavirus (HPV)</li> </ul> <p><i>*Based on Centers for Disease Control and Prevention (CDC) Recommended Immunization Schedules for Infants, Children and Adolescents.<sup>10</sup></i></p>

6 †HEDIS® is a registered trademark of NCQA.



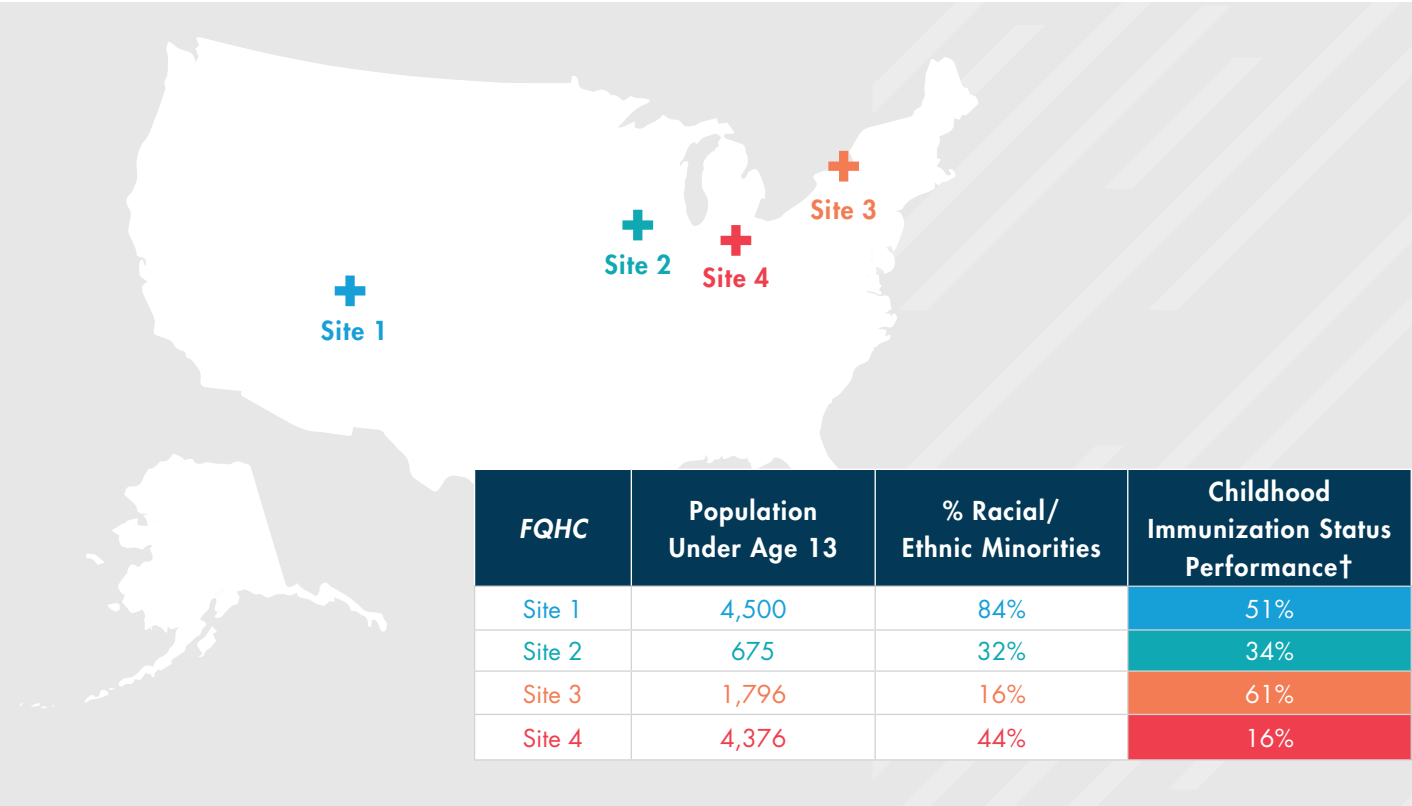
# Learning Collaborative Overview

## FQHC PARTICIPANTS

NCQA used targeted email outreach to recruit interested FQHCs to participate in a Learning Collaborative to improve pediatric and adolescent immunization rates. The recruitment process resulted in four geographically diverse FQHCs (Figure 2) with at least 30% of the patient population under the age of 18 years.

The Learning Collaborative’s structure was based on the Institute for Healthcare Improvement (IHI) Breakthrough Series Collaborative Model for Achieving Breakthrough Improvement.<sup>11</sup> Each participating FQHC site assembled a QI team (including a QI lead, a clinical lead and a data analyst) to participate in the Learning Collaborative. Sites were asked to also identify patient and family representatives to advise and give feedback on potential QI interventions. Refer to [Appendix B: Quality Improvement Templates and Worksheets](#) for resources for forming QI teams.

**+ FIGURE 2: Participating FQHC Sites**



† Performance on the Childhood Immunization Status Combination 10 rate, HRSA Uniform Data System, 2020. The Combination 10 rate includes all vaccines specified in the measure.



## ABOUT THE LEARNING COLLABORATIVE

NCQA initiated the Learning Collaborative by holding a kick-off call with the four participating FQHC sites. The call included orientation to the project timeline and the Learning Collaborative curriculum. Over the next 12 months, sites identified drivers of pediatric and adolescent vaccination, developed an aim statement and engaged in Plan-Do-Study-Act (PDSA) cycles to test change ideas. Sites met with the NCQA team for monthly coaching calls to discuss successes and challenges, and attended bimonthly webinars to share lessons learned with other participants.

NCQA convened quarterly webinars with subject matter experts to enhance learning in vaccine hesitancy, patient and family engagement and data collection for QI. Webinar topics were selected based on challenges identified by sites during their QI efforts.

### The Learning Collaborative was divided into three phases:

- **Phase 1:** Pre-Work: Convene kick-off meeting; establish QI teams; identify patient and family representatives; develop driver diagrams following the IHI Model for Improvement (~2 months).
- **Phase 2:** Implementation and Spread: Complete multiple PDSA cycles, collect data and spread successful changes to additional sites; bi-monthly shared learning webinars and quarterly expert webinars (~10 months).
- **Phase 3:** Close-Out: Final meeting to share successes and lessons learned.



# QI Methods to Improve Pediatric and Adolescent Immunization Rates

## QI AND THE MODEL FOR IMPROVEMENT

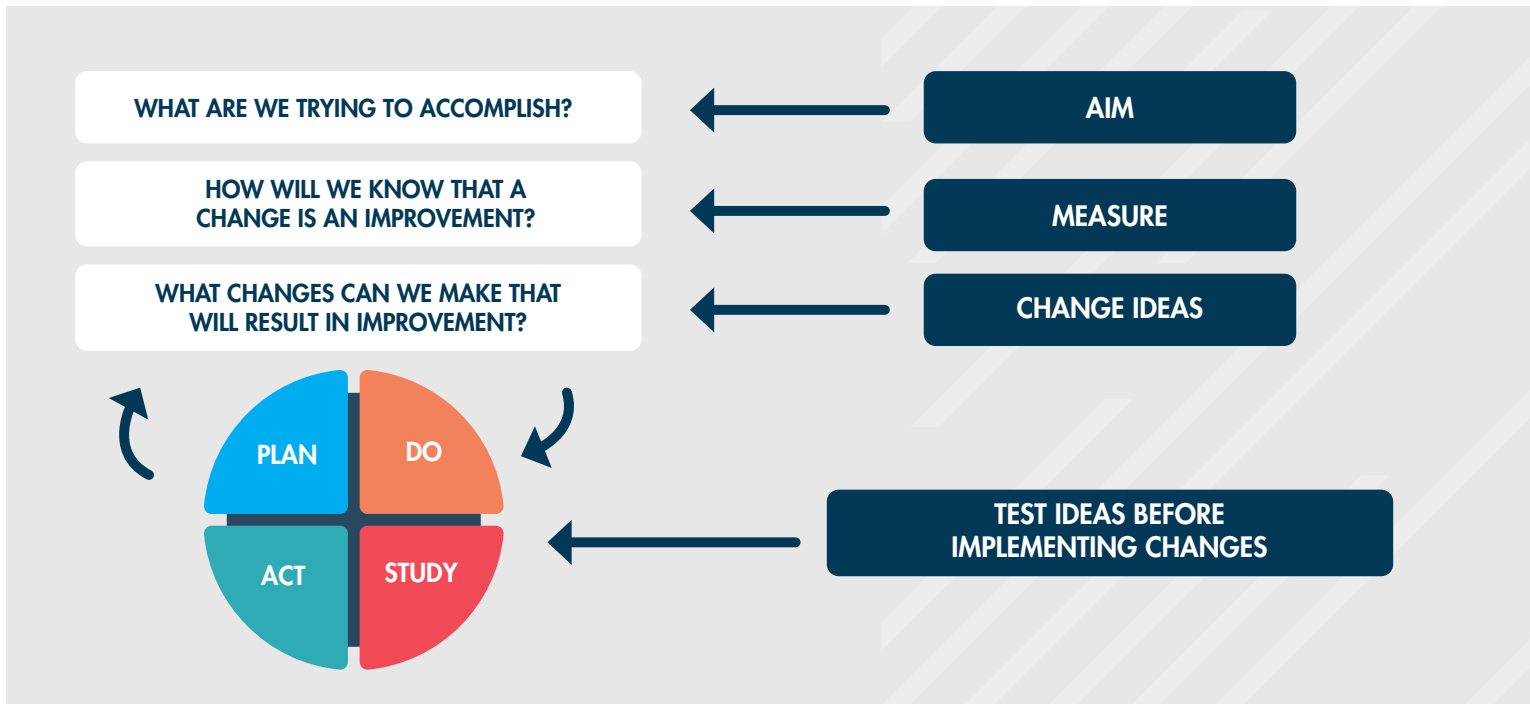
QI comprises activities to improve health outcomes for patients, health care systems and organizations.<sup>12</sup> The National Academy of Medicine defines health care quality as “the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge.”<sup>13</sup> QI in health care can help clinicians, care teams and organizations:

- Identify potential areas of improvement.
- Align services with patient needs.
- Improve communication between patients and clinicians.
- Ensure that patients fully participate in their health care.
- Respond to patient and community needs.

IHI aims to use improvement science to advance and sustain better outcomes in health and health care.<sup>14</sup> IHI’s Model for Improvement (Figure 3) is a tool to accelerate QI. The model uses three questions to facilitate small tests of change, learning and improvement:

- What are we trying to improve?
- How will we know that a change is an improvement?
- What changes can we make that will result in improvement?

**+ FIGURE 3: IHI’s Model for Improvement\***



\*How to Improve. Institute for Healthcare Improvement. (2023). <https://www.ihl.org/resources/Pages/HowtoImprove/default.aspx>.

## PEDIATRIC AND ADOLESCENT IMMUNIZATION IMPROVEMENT AIMS

Developing an aim statement helps QI teams answer the first question in the Model for Improvement: What are we trying to accomplish?

Each FQHC began its QI work by reviewing baseline performance on the childhood and adolescent immunization measures and determining specific vaccines and age ranges to prioritize. The FQHCs then developed an aim statement that was 1.) specific (identified a specific vaccine(s), included a baseline rate, desired rate of change, population of focus and end date) and 2.) realistic to achieve and in alignment with their organization’s readiness to change. Refer to [Appendix B](#) for resources for constructing aim statements.

Two sites chose to focus on the influenza vaccine; two sites chose to focus on the rotavirus and human papillomavirus (HPV) vaccines. Figure 4 illustrates the FQHCs’ aim statements.

**+ FIGURE 4: Example FQHC Aim Statements**

FQHC	AIM STATEMENT
Site 1	By March 2023, increase the rate of children 9 to 18 years of age receiving recommended HPV vaccine from 54% to 69%.
Site 2	By March 2023, increase the rate of children 4 to 8 months of age receiving recommended rotavirus vaccine from 58% to 68%.
Site 3	By March 2023, increase the rate of children 6 months to 2 years of age receiving recommended influenza vaccine from 57% to 65%.
Site 4	By January 2023, increase the rate of children 6 months to 17 years of age receiving recommended influenza vaccine from 11% to 23%.

## IMMUNIZATION RATE DRIVERS

The next step in the QI process is to identify drivers that can lead to improvement. After sites developed their aim statements, they identified drivers and change ideas to improve pediatric and adolescent immunization rates in their organization. The sites created driver diagrams, powerful visual aids that support QI by:

- Providing a bird’s-eye visual of the full scale and scope of a QI project.
- Highlighting primary and secondary drivers of improvement:
  - » *Primary drivers directly contribute to achieving the aim statement.*
  - » *Secondary drivers indirectly contribute to achieving the aim statement.*
- Organizing change ideas for testing in PDSA cycles.
- Demonstrating the link between the aim statement, drivers and change ideas.

Refer to [Appendix B](#) for resources for constructing driver diagrams.

The FQHCs identified several drivers that contribute to low levels of childhood and adolescent immunization rates:

- Vaccine hesitancy among parents or caregivers, patients, clinicians and clinic support staff (e.g., medical assistants).
- Misinformation regarding recommended pediatric and adolescent vaccines.
- Initiating, but not completing, a recommended vaccine series.
- Missed opportunities to vaccinate (e.g., appointment no-shows, reluctance to vaccinate children or adolescents who are sick during their appointment).

## CHANGE IDEAS FOR IMPROVING IMMUNIZATION RATES

Change ideas are new interventions that may or may not lead to improvement.<sup>15</sup> In the QI process, teams are encouraged to think of change ideas that address identified drivers, and to run repeated small tests of the changes. Some change ideas might be successful after repeated tests and can be spread to additional sites; some might prove unsuccessful, but can still provide new insights on how to drive improvement.

The FQHCs conducted PDSA cycles to test the effectiveness of their change ideas. Change ideas tested during the Learning Collaborative are listed below. Refer to [Appendix B](#) for resources for conducting PDSA cycles.

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### Changes tested with confirmed success

- **Conduct telephone reminder calls to parents or caregivers to schedule HPV vaccine appointments.** Site 1 utilized support staff (e.g., medical assistants, student interns) to identify adolescents who were 1 week away from being due for their first or second dose of the HPV vaccine but did not yet have an appointment, and call caregivers to schedule an appointment. This team observed a 14% increase in HPV vaccine performance, and specifically noted that breaking down this task by week may have contributed to success.
- **Reconcile patient vaccine records accessed through the FQHC's EHR system with state immunization registry data.** Site 4 observed a 10% increase in influenza vaccine performance following reconciliation of patient vaccine records with state registry data. This intervention facilitated accurate data reports for tracking patients due for vaccination, and enabled the site to focus resources on patients most in need of outreach.
- **Prepare for flu season through multi-intervention communication.** Site 4 also tested a stepped approach to achieve a 20% improvement rate. Step 1 identified staff to be trusted advisors (i.e., answer questions, share positive insights about the flu vaccine). Step 2 coached clinical staff to use presumptive messaging when discussing vaccines with patients and families; for example, statements such as, "Your child is scheduled to receive their flu vaccine today," vs. "Would you like your child to receive the flu vaccine?"
- **Partner with dental clinics to provide additional venues for receiving HPV immunizations.** "Missed opportunities to vaccinate" was a common driver identified by sites in the Learning Collaborative. Site 1 started a partnership with an adjacent dental clinic to increase opportunities to offer and provide HPV vaccines to its adolescent patient population, with the idea that offering vaccines at more points of care, rather than only at well-child visits, might lead to performance improvements. The site was able to vaccinate roughly 10% of dental patients who were due for their HPV vaccine.

## Changes tested with inconclusive results

- Partner with OB/GYN clinics to provide education on infant immunization schedules during prenatal visits.** Site 2 partnered with an adjacent OB/GYN clinic to provide education about the infant well-visit and vaccination schedule to pregnant individuals at their 36-week prenatal visit. The site theorized that helping new parents or caregivers navigate visit and immunization schedules before birth may reduce the number of infants who miss early wellness visits and subsequently miss the first recommended dose of the rotavirus vaccine (recommendations state that this vaccine be given within 15 weeks after birth, or the series cannot be completed<sup>16</sup>). This PDSA cycle was still in progress at the end of the Learning Collaborative.

## Changes tested and dropped due to poor results

- Provide a financial incentive (\$25 gift card) for receiving influenza vaccines.** Site 3 tested calling and texting parents/caregivers to encourage them to schedule a flu vaccination appointment for their child. To incentivize follow-through, they offered a \$25 gift card upon receipt of vaccination, but quickly abandoned this intervention due to high rates of refusal of the vaccine and gift card. The team attributed refusals to vaccine hesitancy and misinformation, noting that it has used gift cards as incentives for other preventive services, such as breast cancer screenings, and has not experienced the same levels of refusal.
- Mail postcard reminders about vaccinations due or upcoming vaccine appointments.** Site 4 tested this intervention targeted at children younger than 1 year of age, but abandoned it after the first round of mailings due to poor return on investment. The site concluded that the amount of preparation necessary (i.e., create recipient lists, mail postcards, track returned cards, create a follow-up plan) was not sustainable for future spread and scale-up efforts.

**+ FIGURE 5: Summary of Example Aims, Drivers, Change Ideas Across Four FQHCs**

FQHC	AIM STATEMENT	DRIVERS	CHANGE IDEAS
Site 1	By March 2023, increase the rate of children 9 to 18 years of age receiving recommended <b>HPV vaccine</b> from 54% to 69%.	Attitudes and beliefs about the HPV vaccine Initiation and completion of the HPV vaccinations	Offer vaccines at dental clinics Outreach calls to schedule HPV vaccination appointment
Site 2	By March 2023, increase the rate of children 4 to 8 months of age receiving recommended <b>rotavirus vaccine</b> from 58% to 68%.	Vaccine workflow and scheduling challenges Poor access to well-child visit	Outreach calls to caregivers of infants due for rotavirus vaccination Partner with OB/GYN clinics to provide early education on vaccine schedule
Site 3	By March 2023, increase the rate of children 6 months to 2 years of age receiving recommended <b>influenza vaccine</b> from 57% to 65%.	Vaccine hesitancy and mistrust Lack of vaccination records Language barriers Legal barriers to receiving biological parents or caregivers consent for children in foster care	Provide gift card incentive for vaccines Share educational videos with vaccine-hesitant patients/caregivers
Site 4	By January 2023, increase the rate of children 6 months to 17 years of age receiving recommended <b>influenza vaccine</b> from 11% to 23%	Vaccine hesitancy Reduce the number of missed opportunities to vaccinate	Use ASPIRE framework <sup>17</sup> to address vaccine hesitancy Provide anticipatory guidance flyers for parents or caregivers at visit discharge Schedule second flu shot appointment at discharge



# Pediatric and Adolescent Immunization QI Projects: Lessons Learned

The FQHCs tested multiple change ideas throughout the Learning Collaborative. Some teams observed success marked by quantitative improvements in their performance rates. Other teams noted qualitative learnings that provided meaningful insights on how to improve immunization rates. The following section summarizes facilitators and challenges that emerged during the Learning Collaborative (see also Figure 6).

**+ FIGURE 6: Immunization QI Projects: Facilitators and Strategies for Navigating Challenges**

Facilitators of Successful Immunization QI Projects	Conduct readiness assessments to support small-scale QI projects
	Remain flexible when faced with obstacles
	Break action items into small, manageable tasks
	Identify and engage QI champions to cultivate buy-in
	Incorporate patient and family advisors into QI projects
	Align QI initiatives with strategic organization priorities
	Leverage state immunization registries to highlight current performance
Strategies for Navigating Challenges	Overcome vaccine hesitancy and build vaccine confidence
	Maintain momentum when conducting QI projects during staffing shortages
	Alleviate FQHC resource constraints through partnerships with health plans

## FACILITATORS TO SUCCESS

- Conduct readiness assessments to support small-scale QI projects.** A common misconception is that QI should start with large, organization wide efforts. Starting small is preferred when beginning QI efforts, as this allows for rapid learning rather than waiting for completion of larger tests of change.<sup>18</sup> Some steps for success are:
  - » Start improvement efforts by confirming the QI team and organization’s readiness to change (e.g., willingness to move past the status quo, capacity to conduct PDSA cycles). Avoid testing a new change idea until assessments are complete.
  - » Conduct small, rapid tests of change involving minimal staff to facilitate early learning on a small scale. Spread successful changes to additional sites after implementation in the original test site.
  - » Focus on improving the rates of one or two vaccines first, instead of trying to improve on an entire immunization measure. This will require understanding areas for improvement in current vaccine performance rates.

**Learning Collaborative Success Story:** Site 4 initially began the Learning Collaborative with a broad focus on improving rates of all 10 vaccines in the Childhood Immunization Status measure. As the collaborative progressed, the site found it difficult to implement targeted interventions because all vaccinations were considered high priority. After reviewing vaccine performance data, the team decided to instead focus on increasing the rate of influenza vaccinations among children aged 6 months–17 years. This allowed the site to concentrate on a well-defined population, rather than on all vaccines in the measure. The site then focused on a successful, multi-step intervention to prepare for the upcoming flu season, which increased its influenza vaccine performance by roughly 20% compared to the previous year.



- **Remain flexible when faced with obstacles.** Sometimes a QI project experiences unexpected roadblocks. QI teams should view these situations as learning opportunities instead of failures.<sup>19</sup> For example, FQHCs can use them to assess the root causes of a breakdown, and to provide momentum for the next PDSA cycle. Strategies for remaining flexible during QI projects include:
  - » Stay open to pivoting to new focus areas or a new aim statement.
  - » Discontinue a change strategy or idea early if it is not feasible—instead of abandoning the QI project altogether.
  - » Utilize creative mindsets and develop new change ideas, as needed. Consult with patient and family advisors to support development of new change ideas.

**Learning Collaborative Success Story:** Site 2 initially began the Learning Collaborative with a focus on improving DTaP vaccination rates. The team soon realized that the population of patients missing this vaccination was relatively small, compared to the overall population of patients who were noncompliant with one or more of the other vaccines in the recommended schedule. The team identified performance gaps for the rotavirus vaccine, and a larger population size, to observe meaningful improvement over several months of testing, and decided to pivot to improving rotavirus performance with this new information.

- **Break action items into small, manageable tasks.** FQHCs often experience competing priorities when conducting a QI project, such as other QI initiatives and patient care. Some QI projects may also require engaging clinical staff who are not directly involved on the QI team. Engaging these additional clinical staff may involve adding tasks to their day-to-day work. The Learning Collaborative sites shared this sentiment, and expressed difficulty supporting their larger teams while leading change. Breaking QI projects into small, manageable tasks can help FQHCs prioritize and balance QI tasks while providing care to patients. Strategies for breaking QI projects into manageable tasks:
  - » Use the “Plan” portion of the PDSA cycle to anticipate and prepare for tasks that may require adjustments.
  - » Use clear, well-defined task lists to help QI teams and clinic staff manage priorities.
  - » Delegate tasks to team members, and ensure that all team members understand their responsibilities.
  - » Prior to conducting a test of change, provide clear instructions and training for assigned tasks. Adjust task instructions, as needed, if trainings highlight potential pitfalls.

**Learning Collaborative Success Story:** Site 2 aimed to increase rotavirus immunization in children aged 4–8 months by revising appointment scheduling procedures. After examining current procedures, the team improved the recall system to help schedule appointments for children who had not received their rotavirus vaccine. Instead of working from the overall FQHC recall list that included patients across multiple clinic locations, the site split the list into smaller, targeted lists of patients for each clinic. Clinic staff were presented with a clear, manageable list of patients who needed to schedule an appointment or receive a vaccine appointment reminder for their rotavirus vaccine. Staff found it easier to manage the smaller patient list to schedule appointments rather than the universal list across all FQHC clinics.

- **Identify and engage QI champions to cultivate buy-in.** Maintaining stakeholder buy-in throughout a QI project is critical to its success. One facilitator to achieving buy-in is engaging champions—people who believe in the value of the project, and can effectively vocalize and spread its value to both internal and external stakeholders.<sup>20</sup> A QI champion can be someone from the organization’s leadership (e.g., medical director), or someone on the day-to-day QI team. Champions:
  - » Take ownership of the work and ensure that the focus on QI does not wane when competing priorities arise.
  - » Effectively communicate the rationale for new interventions.
  - » Share success stories to explain that building effective processes will lead to improvement.
  - » Forge partnerships with additional teams, as needed.

**Learning Collaborative Success Story:** Site 3 began testing gift card incentives and sharing educational videos with vaccine-hesitant caregivers to improve performance on influenza vaccination rates. Instead of implementing these change ideas across the entire FQHC at once, the site chose to test the change ideas first with a small group of staff who were familiar with QI methodology. The group then served as champions for other care teams that were resistant to change, helping the site share positive stories, and communicating the importance of the QI project to staff during the spread and scale-up phases.

- **Incorporate patient and family advisors into QI projects.** Incorporating the patient and family voice into pediatric immunization QI projects is paramount to success. Without patient input, QI teams might test and implement new interventions that lack buy-in from the populations they serve. Johann Chanin, a patient engagement expert who led an expert webinar for the Learning Collaborative, shared strategies for successfully including the patient voice in QI projects:
  - » Recruit patient and family voices that mirror the populations targeted by QI effort.
    - Also: Ask clinical staff to nominate patients and families that ask questions about vaccine recommendations; ask patients and families to nominate someone; post recruiting fliers in waiting rooms and exam rooms.*
  - » Train and support patient and family advisors to ensure their robust participation as key partners.
  - » Celebrate successes and challenges. Give credit to patient and family advisors for their achievements.
  - » Set clear, manageable and meaningful expectations for patients and families at the start of the project.
  - » Seek patient and family representatives who can provide constructive feedback and participate in meetings on a regular basis.
  - » Consider creative methods to include more than one patient and/or family.
  - » Incentivize patients and families for providing their perspectives (e.g., monetary incentives, food during meetings, travel reimbursements, childcare).<sup>21,22</sup>

**Learning Collaborative Success Story:** Site 1 used a patient engagement program, Providers And Teens Communicating for Health (PATCH), to solicit patient feedback on its QI activities.\* The PATCH program brings adolescents together in a group setting to ensure their perspectives are included in QI initiatives focused on adolescent health. Site 1 used the program to develop and receive feedback on change ideas prior to testing. These sessions helped the QI team understand adolescent attitudes and beliefs about the HPV vaccine.

\*About. *Providers and Teens Communicating for Health (PATCH)*. (2022, October 18). Retrieved April 1, 2023, from <https://patchprogram.org/>

- **Align QI initiatives with strategic organization priorities.** QI initiatives are more successful when they align with an organization’s strategic priorities. Leadership can remove roadblocks to QI by setting staff on a common goal for improvement, such as an organization HPV vaccination goal of 60%. QI teams that do not align their QI work with strategic priorities may experience burnout from dividing their attention across competing priorities. FQHCs can use the following methods to align with strategic priorities:
  - » Ensure that all FQHC staff are aware of the organization’s improvement goals prior to starting new QI projects.
  - » Increase resource allocation (e.g., staffing and funding) for QI projects that support strategic priorities.
  - » Develop a project schedule to plan current and future QI projects. Revise the schedule as the organization’s priorities shift.

**Learning Collaborative Success Story:** Site 1 aligned its QI initiative to improve its HPV vaccination performance rate with the organization’s strategic priorities. At the start of the Learning Collaborative, Site 1 developed an aim statement to align with the organization’s HPV vaccine improvement goal (60%). The site tested HPV vaccine appointment outreach phone calls and offered HPV vaccines at dental clinics. It also tested additional interventions outside the Learning Collaborative, such as motivational interview training for medical assistants and other clinical staff. The organization’s prioritization of the HPV vaccine helped Site 1 exceed its aim statement because multiple improvement initiatives occurred at the same time. By the end of the Learning Collaborative, Site 1 revised its aim statement goal to 69%, to account for its ability to exceed the original goal.

- **Leverage state immunization registries to highlight current performance.** Immunization records should align with a patient’s medical record, to give clinicians a comprehensive view of the patient’s history—but data exchange between immunization registries and FQHCs is not always seamless, and can lead to potential gaps in performance. FQHCs should reconcile patient immunization records with the state immunization registry, to fully understand a patient’s immunization history.

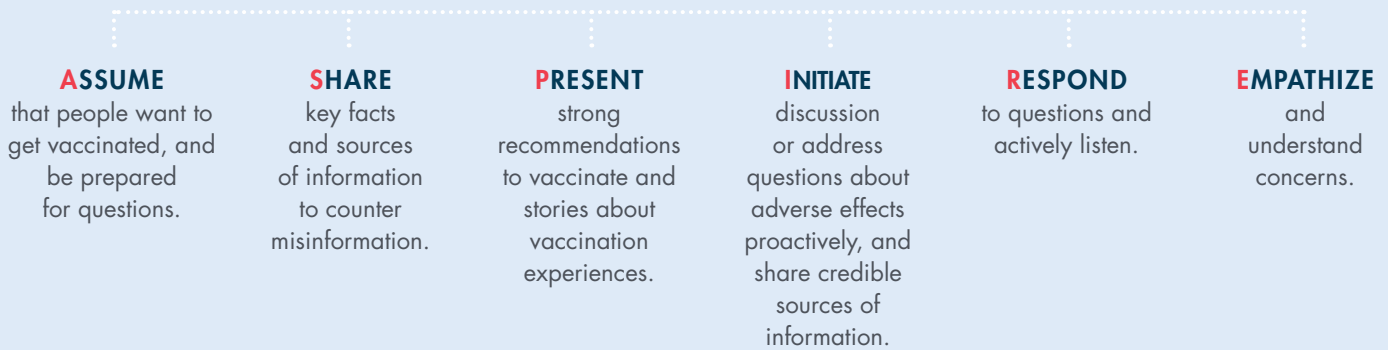
**Learning Collaborative Success Story:** Early in the Learning Collaborative, Site 4 conducted internal investigations and concluded that its electronic medical records did not align with data in the state immunization registry. The team reconciled electronic medical record immunization data with the state’s immunization registry to ensure both aligned. Reconciliation resulted in a 10% performance improvement on the *Childhood Immunization Status* measure.

## NAVIGATING CHALLENGES

Throughout the Learning Collaborative, FQHCs conducted PDSA cycles while navigating complex challenges such as the COVID-19 pandemic, vaccine mistrust and outbreaks of respiratory syncytial virus (RSV) and Mpox. These public health emergencies resulted in staff burnout, high turnover and, at times, low morale among FQHC staff. Some common immunization QI challenges and mitigation strategies gleaned from the Learning Collaborative are summarized below.

- Overcome vaccine hesitancy and build vaccine confidence.** Improving immunization rates can seem daunting during a time of unprecedented vaccine hesitancy and misinformation. Misinformation campaigns not only spurred mistrust of the COVID-19 vaccine and the systems responsible for licensing, recommending and administering it, but also did the same for vaccines routinely recommended for preventable diseases. Frameworks for communication, such as the ASPIRE framework, developed by Angela Shen et al.,<sup>23</sup> may help FQHCs talk about vaccination.

### THE ASPIRE FRAMEWORK



**Learning Collaborative Success Story:** Site 4 tested a multi-step intervention in a pilot test location, in preparation for flu season. The second phase of the intervention included utilizing the ASPIRE framework when communicating about the influenza vaccine with patients. Site 4 instructed its clinical staff to assume that patients want to receive the vaccine. Staff were coached on language to use with patients; for example, “You are getting your flu vaccine today, correct?” or “We have your flu vaccine available today.” Site 4’s pilot test location doubled its influenza vaccine performance from the previous year using this multi-step intervention in tandem with the ASPIRE framework. After this success, Site 4 spread the intervention to additional locations.

- **Maintain momentum when conducting QI projects during staffing shortages.** Staffing turnover can impact morale among QI teams and disrupt a team's ability to reach improvement goals. Although staff turnover became commonplace during the pandemic, FQHCs identified several strategies to maintain momentum when faced with these challenges:
  - » Actively listen to your QI team, to understand their concerns and ideas to improve processes during staffing shortages.
  - » Reiterate the rationale for the project, recalibrate PDSA plans and redistribute tasks from the Do phase of the PDSA cycle, as needed. Some teams may also develop and document standard operating procedures, to minimize the effort required to onboard new team members.
  - » Boost morale by giving grace when team members need emotional support.
  - » Model behavior for other QI team members to follow.
  - » Celebrate wins—even if they are small. Small gains from PDSA cycles facilitate learning and progression toward achieving your aim statement.

**Learning Collaborative Success Story:** Site 2 aimed to increase the rate of children 4–8 months of age receiving the rotavirus vaccine series. Recommendations state that children receive this vaccine within 15 weeks after birth, or the series cannot be completed. This makes rotavirus one of the more challenging vaccines to improve, and often drives down performance on the Childhood Immunization Status measure.\*

The site experienced increased staff turnover during the Learning Collaborative, which led to challenges to conducting QI efforts. To address these challenges, the site employed several strategies. First, the site realized that staff needed to understand the importance of the QI project and continue their work. To improve staff knowledge, the site reiterated the importance of ensuring that children do not miss the first rotavirus dose, given the lack of a catch-up schedule. Second, the site encouraged staff by explaining that small improvements on rotavirus vaccine performance could support improvement on the Childhood Immunization Status measure. Third, the site utilized staff champions to reiterate the rationale and boost morale when turnover occurred. Despite staffing challenges during the Learning Collaborative, Site 2 observed a 5% increase in its rotavirus vaccine performance rate.

\* Centers for Disease Control and Prevention. (2023, February 10). *Child and Adolescent Immunizations Schedule by Age*. Centers for Disease Control and Prevention. Retrieved April 1, 2023, from <https://www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html>



- **Alleviate FQHC resource constraints through partnerships with health plans.** Participating FQHC sites described past and current experiences collaborating with health plans to improve pediatric and adolescent immunization rates. Given the resource constraints faced by FQHCs, they noted that health plans could support FQHCs through the following strategies:
  - » Provide funding and other resources to support FQHC QI efforts. For example, many FQHCs in the Learning Collaborative partner with health plans on patient and member outreach (e.g., send reminders that certain vaccines are due). FQHCs may benefit from these types of partnerships because they can build on existing health plan outreach mechanisms without having to start from scratch.
  - » To promote successful patient outreach, health plans should connect with FQHCs early in the enrollment process, to ensure that FQHCs have accurate patient attribution lists. Participating FQHCs explained that health plans provide reports with patient immunization history to support immunization QI efforts, but reports are often inaccurate and include patients that are not in the FQHC's panel of patients. Inaccurate reports can lead to confusion, additional burden for FQHCs and delays in improving vaccine rates.
  - » Support FQHCs by designing outreach materials that use simple, patient-friendly language and are targeted to the patient population served by the FQHCs.



# Appendix A: Resources

ITEM	DESCRIPTION	SOURCE
Advisory Committee on Immunization Practices (ACIP)	Provides recommendations and guidance to the director of the Centers for Disease Control and Prevention regarding use of vaccines for vaccine-preventable diseases in the United States.	Centers for Disease Control and Prevention. (2023, February 22). Advisory Committee on Immunization Practices (ACIP). Centers for Disease Control and Prevention. Retrieved February 24, 2023, from <a href="https://www.cdc.gov/vaccines/acip/index.html">https://www.cdc.gov/vaccines/acip/index.html</a>
Alliance for HPV-Free Colorado	A campaign to bring about sustainable improvement in completion of the HPV vaccine series for children and adolescents across 15 counties in Colorado.	Immunize Colorado. (2023). Alliance for HPV-Free Colorado. Retrieved February 24, 2023, from <a href="https://www.immunizecolorado.org/healthcare-professionals/alliance-for-hpv-free-colorado/">https://www.immunizecolorado.org/healthcare-professionals/alliance-for-hpv-free-colorado/</a>
ASPIRE Framework	Actionable steps to increase vaccine adoption by facilitating conversations with communities and helping clinicians share trustworthy health information about vaccines with community members who may have concerns about vaccines.	Shen, A. K., & Tan, A. S. L. (2022). Trust, influence, and community: Why pharmacists and pharmacies are central for addressing vaccine hesitancy. <i>Journal of the American Pharmacists Association</i> , 62(1), 305–308. <a href="https://doi.org/10.1016/j.japh.2021.10.001">https://doi.org/10.1016/j.japh.2021.10.001</a>
Centers for Disease Control and Prevention (CDC)	Displays the recommended vaccine schedule for infants and children from birth through 6 years in a parent-friendly graphic.	Centers for Disease Control and Prevention (CDC). (2023, April 27). Child and Adolescent Immunization Schedule by Age. <a href="https://www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html">https://www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html</a>
Centers for Disease Control and Prevention (CDC)	Displays the recommended vaccine schedule for children ages 7–18 in a parent-friendly graphic.	Centers for Disease Control and Prevention. (2023b, February 10). Vaccine schedule for children, 7 to 18 years old. Centers for Disease Control and Prevention. <a href="https://www.cdc.gov/vaccines/schedules/easy-to-read/adolescenteasyread.html">https://www.cdc.gov/vaccines/schedules/easy-to-read/adolescenteasyread.html</a>
Children’s Hospital of Philadelphia—Online Learning for Healthcare Providers: Communicating About Vaccines	Contains vaccine-related learning modules that include vaccination communication best practices, information about the safety and efficacy of vaccines and additional resources for immunization champions and community members.	The Children's Hospital of Philadelphia. (2022, April 8). Online learning for healthcare providers: Communicating about vaccines. Children's Hospital of Philadelphia. Retrieved February 24, 2023, from <a href="https://www.chop.edu/centers-programs/vaccine-update-healthcare-professionals/online-learning-healthcare-providers">https://www.chop.edu/centers-programs/vaccine-update-healthcare-professionals/online-learning-healthcare-providers</a>
Florida Health—The Power to Protect	Offers educational resources to patients and families, to empower health care clinicians to improve their communication strategies and increase vaccination rates.	Florida Health. (2022, October 12). The Power to Protect. Retrieved February 24, 2023, from <a href="https://www.thepowertoprotect.org/">https://www.thepowertoprotect.org/</a>
Immunize Colorado	Includes fact sheets, flyers, articles and other resources for health care professionals, policy makers, school staff, advocates and families to help protect communities from vaccine-preventable diseases.	Immunize Colorado. (2022, December 16). Retrieved February 24, 2023, from <a href="https://www.immunizecolorado.org/">https://www.immunizecolorado.org/</a>
Institute for Healthcare Improvement (IHI)—How to Improve	Describes the Model for Improvement. Contains links to information about forming a team; setting aims; establishing measures; and selecting, testing, implementing and spreading changes.	How to improve: IHI. Institute for Healthcare Improvement. (n.d.). Retrieved February 24, 2023, from <a href="https://www.ihio.org/resources/Pages/HowtoImprove/default.aspx">https://www.ihio.org/resources/Pages/HowtoImprove/default.aspx</a>
Providers and Teens Communicating for Health (PATCH) Program	A program that engages adolescents and clinicians to collaborate on quality improvement initiatives to address adolescent health care issues.	About. Providers and Teens Communicating for Health (PATCH). (2022, October 18). Retrieved April 1, 2023, from <a href="https://patchprogram.org/">https://patchprogram.org/</a>
World Health Organization—Conversations to Build Trust in Vaccination: A Training Module for Health Workers	A training module for health workers to help them understand the key principles for communicating with vaccine-hesitant patients and families, build skills to listen and engage with these individuals and introduce motivational interviewing strategies.	Dhawan, S. (2017, May). Conversations to Build Trust in Vaccination: A Training Module for Health Workers. Retrieved February 24, 2023, from <a href="https://slideplayer.com/slide/14444842/">https://slideplayer.com/slide/14444842/</a>



# Appendix B: Quality Improvement Templates and Worksheets

# QUALITY IMPROVEMENT TEAM MEMBER DESCRIPTIONS AND EXPECTATIONS WORKSHEET



NAME	SUGGESTED ROLES	DESCRIPTION
	Leadership Sponsor	A member of executive leadership who assumes accountability for the project and has the authority to institute change across the organization.
	Team Lead	Project champion (ideally, with QI experience) who is accountable for the day-to-day aspects of the project. Understands the organization's workflow and processes, and can identify what to measure.
	Clinical Expert/Frontline Staff	Provides the front-line perspective to inform QI initiatives, as well as feedback at all stages of QI.
	Data Analyst	Collects and displays electronic data for QI. Provides and presents data reports and stratifications of measure elements.
	Patient/Family Partner	Collaborates on the project to enrich QI work with lived patient experience.
	Quality Improvement Analyst	Assists the Team Lead with the day-to-day aspects of the project, and helps implement QI changes.
	Coordinator	Organizes the team and assists with communication between team members.



## INSTRUCTIONS

An aim statement is a broad, overarching statement that directs improvement efforts in a targeted area. Aim statements should include the following attributes:

- **Measurable**, with a baseline and desired change.
- **Specific**, including a defined focus area, population and time frame.
- **Realistic**.

**1. Aim Statement:** Enter your aim statement in the field below.

### 2. Aim Statement Reflection

Why did your team select this aim statement for your quality improvement work?

Does your aim statement include a realistic goal? What challenges might you encounter, and how will you overcome them?





## INSTRUCTIONS

Use this worksheet to map out drivers and change ideas to reach your desired aim. Use the “Reflection” section to help you assess your drivers and change ideas.

**Use this form to draft multiple iterations of your driver diagram, as needed.**

- 1. Aim Statement:** Describe the aim your team will prioritize for the Learning Collaborative over the next year.
- 2. Primary Drivers:** Describe the drivers your team has prioritized, including the major processes, structures or barriers that contribute to your aim.

Primary Driver #1:

Primary Driver #2:

Primary Driver #3:

Primary Driver #4:

- 3. Secondary Drivers:** Describe the secondary drivers that are necessary to impact the primary drivers and the aim.

Secondary Driver #1:

Secondary Driver #2:

Secondary Driver #3:

Secondary Driver #4:

- 4. Change Ideas:** Describe the change ideas your team identified to address drivers and the desired aim.

Change Idea #1:

Change Idea #2:

Change Idea #3:

Change Idea #4:



## REFLECTION

- 1. Strengths (related to implementing drivers):** What demonstrated strengths can your team or your organization use to make progress on drivers?
  
- 2. Weaknesses (related to implementing drivers):** What weaknesses or gaps in your team or your organization might hinder your progress on drivers?

### 3. Anticipated Challenges

WHAT COULD GO WRONG?	HOW/WHEN WILL YOU KNOW?	HOW MIGHT YOU REACT?

### 4. Engagement

WHO WILL YOU ENGAGE?	WHAT STRATEGIES WILL YOU USE TO ENGAGE THIS STAKEHOLDER?	WHEN WILL YOU ENGAGE THEM?

# PLAN-DO-STUDY-ACT PLANNING WORKSHEET



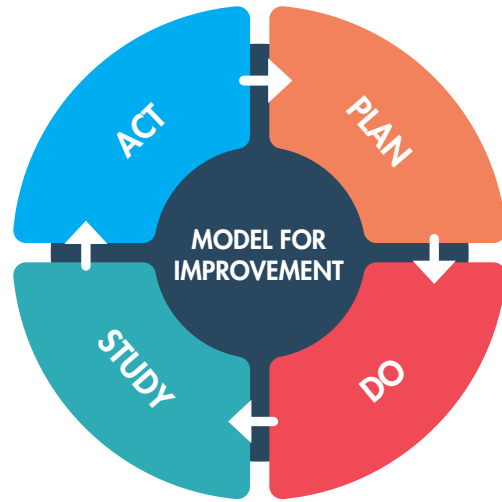
\*Adapted from Institute for Healthcare Improvement (IHI). (n.d.). QI Essentials Toolkit: PDSA Workbook.  
[https://fhop.ucsf.edu/sites/fhop.ucsf.edu/files/custom\\_download/QIToolkit\\_PDSAVorksheet.pdf](https://fhop.ucsf.edu/sites/fhop.ucsf.edu/files/custom_download/QIToolkit_PDSAVorksheet.pdf).

## 1. Objectives for this Plan-Do-Study-Act (PDSA) Cycle:

What questions do we want to answer in this PDSA cycle?

## 2. Predictions

What do you think will happen in this PDSA cycle?



## 3. Plan

Plan to answer the following questions:

- Who?
- What?
- When?
- Where?



## 4. Data Collection Plan

Plan to answer the following questions:

- Who?
  
- What?
  - » Process measures:
  
  - » Balancing measures:
  
  - » Outcome measures:
  
- When?
  
- Where?

## 5. Do

Perform the change or test; collect data and begin analysis; note your observations.

## 6. Study

Complete your analysis of data; compare the data to your predictions; summarize your findings.

## 7. Act

Are we ready to make a change? Yes

Our plan for the next PDSA cycle:

# SPREADING AND SCALE-UP WORKSHEET



Use this worksheet to think about your plan for spreading and scaling up successful strategies, and how you will measure progress.

## KEY STEPS IN THE QI PROCESS

**Phase 1: Test.** Try, and adapt, changes to the system on a small scale. Learn what works in your system.

**Phase 2: Implement.** Make the change part of the system’s routine, day-to-day operations.

**Phase 3: Spread.** Take change that leads to improvement and replicate it at other sites.

**Phase 4: Scale Up.** Overcome system/infrastructure issues that arise during implementation to spread change at the system level.

MEASURE SPREAD PROGRESS	
<p><b>Rationale</b> What is the rationale for spreading?</p>	
<p>What improvements do you want to see before spreading? (Include data from metrics, if available.)</p>	
<p><b>Aim Statement</b> What do you want to achieve by spreading?</p>	
<p>What is your time frame?</p>	
<p><b>Measure the Spread Plan’s Success</b> How will you know if the spread plan was successful?</p>	
<p>What metrics will you collect to measure success?</p>	
<p>What is your target level of performance?</p>	
<p>Will you stop collecting any metrics?</p>	
<p>What will you do if you begin to see negative signs (e.g., revert to the old way)?</p>	



# SPREADING AND SCALE-UP WORKSHEET



MEASURE SPREAD PROGRESS	
<p><b>Leadership and Key Stakeholders</b> Who will you need to engage as new team members, stakeholders or leadership?</p>	
Who will own the new spread work, moving forward?	
Will this person have been involved with the QI work previously? If so, how?	
How will this person be onboarded?	
How will you train and support owner(s) in the long term?	
<p><b>Reassess the Spread Population</b> What factors would lead you to consider spreading to another site (e.g., another practice, more clinicians) before scaling up?</p>	
<p><b>Action Plan</b> How will you spread? (Provide an action plan to accomplish the aim statement.)</p>	
How will you ensure that the change is standardized?	



## MEASURE SPREAD PROGRESS

<p><b>Communication Plan</b> How will you communicate the need to spread and the spread plan?</p>	
<p>How will you communicate progress to others in the organization?</p>	
<p>What will be communicated (e.g., “x, y, z metrics” on a monthly basis via email update)?</p>	

## SCALE-UP PLANNING

<p><b>Rationale</b> What is the rationale for scaling up?</p>	
<p>What improvements do you need to see before scaling up? (Include data from your metrics, if available.)</p>	
<p><b>Aim Statement</b> What would you like to achieve through scaling up?</p>	
<p>What is your time frame?</p>	
<p><b>Measure the Scale-Up Plan’s Success</b> How will you know if the scale-up plan was successful?</p>	



SCALE-UP PLANNING	
What metrics will you collect to measure success?	
What is your target level of performance?	
Will you stop collecting any metrics?	
What will you do if you begin to see negative signs (e.g., revert to the old way)?	
<b>Leadership and Key Stakeholders</b> Who will you need to engage as new team members, stakeholders or leadership?	
Who will own the new scale-up work, moving forward?	
Will this person have been involved with the QI work previously? If so, how?	



## SCALE-UP PLANNING

<p>How will this person be onboarded?</p>	
<p>How will you train and support owner(s) in the long term?</p>	
<p><b>Action Plan</b> How will you scale up? (Provide an action plan to accomplish the aim statement.)</p>	
<p>How will you ensure that the change is standardized?</p>	
<p><b>Communication Plan</b> How will you communicate the need to scale up and the scale-up plan?</p>	
<p>How will you communicate progress to others in the organization?</p>	
<p>What will be communicated (e.g., "x, y, z metrics" on a monthly basis via email update)?</p>	



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