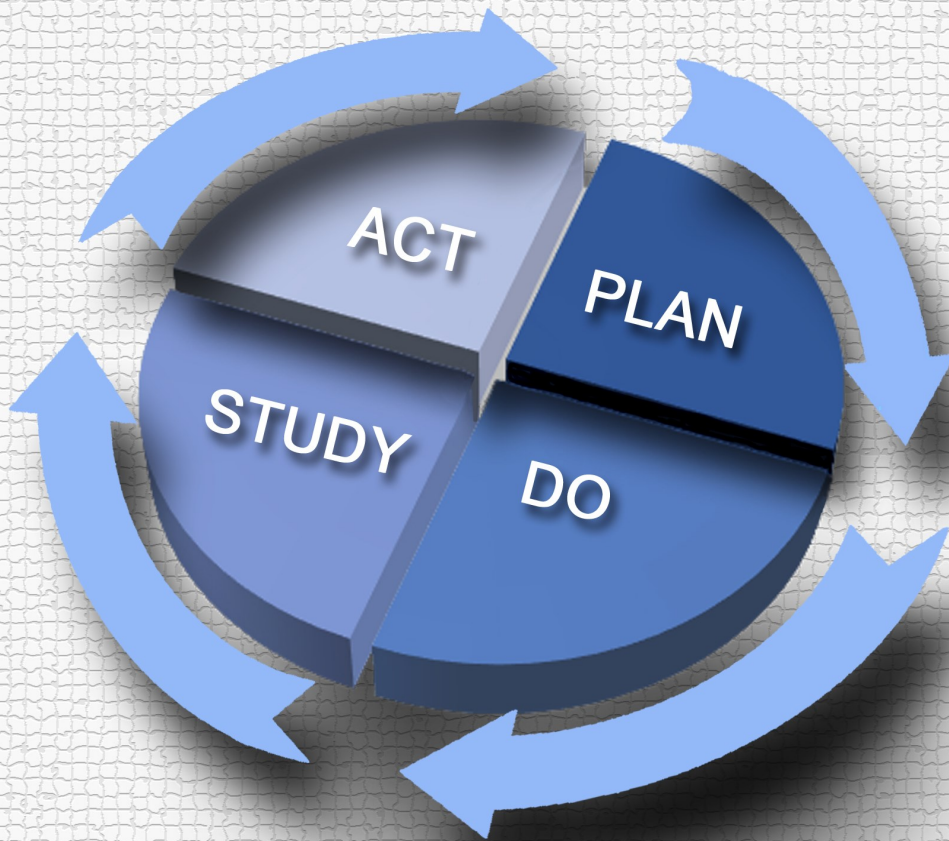


Rapid Cycle Quality Improvement (RCQI)

A Resource Guide to Accelerate Improvement Efforts for Health Resources and Services Administration (HRSA) Grantees



Health Workforce Technical Assistance Center

School of Public Health

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Rapid Cycle Quality Improvement Resource Guide

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QUALITY IMPROVEMENT OVERVIEW

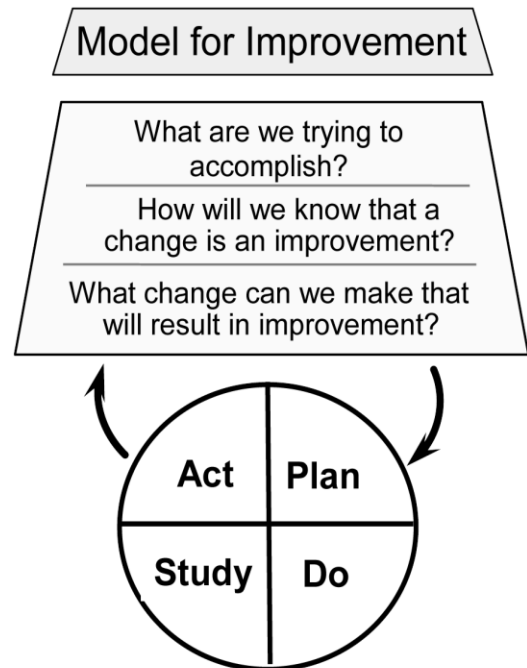
The Health Resources and Services Administration (HRSA) of the US Department of Health and Human Services characterizes *quality improvement* (QI) as systematic and continuous actions that lead to measurable improvement in health care services and the health status of targeted patient groups.¹ QI is a continuous process that employs rapid cycles of change over time. QI models create:

1. **The structure**, which represents the attributes of settings in which care is delivered
2. **The process** by which to determine whether good medical practices are followed
3. **The outcome**, or impact of care on health status

Several models create a specific framework for how QI skills and techniques can be applied to improve care and outcomes. This document will focus on the use of *rapid-cycle quality improvement* (RCQI), defined as a “quality improvement method that identifies, implements, and measures changes made to improve a process or a system.”² RCQI is based on the Model for Improvement developed by Thomas Nolan, PhD, and colleagues at Associates in Process Improvement. The Model for Improvement is a simple but powerful tool proven to accelerate improvement efforts and has been used successfully by hundreds of health care organizations as well as by educators, by community-based organizations, and in many other organizational settings to improve various processes and outcomes.³ The model consists of 2 parts: addressing 3 fundamental questions and engaging in tests of change.

Three Fundamental Questions

- ***What are we trying to accomplish?*** Develop a specific, time-limited, and measurable aim statement.
- ***How will we know that a change is an improvement?*** Identify process and outcome measures to be collected over time in order to track improvement and progress toward the aim statement.
- ***What change can we make that will result in improvement?*** Formulate ideas for changes to help accomplish the aim.



¹ Health Resources and Services Administration. <http://www.hrsa.gov/quality/toolbox/methodology/qualityimprovement>. Accessed June 9, 2016.

² Robert Wood Johnson Foundation. <http://www.rwjf.org/en/library/research/2013/04/quality-equality-glossary.html>. Accessed June 9, 2016.

³ See the Institute for Healthcare Improvement website (<http://www.ihf.org>) for stories on improved outcomes using the Model for Improvement.

The Model for Improvement uses a structured process whereby organizations focus on specific elements of care in need of improvement and conduct small tests of change while measuring the impact of those changes on key process and outcome measures.

RCQI VS RESEARCH

Research is defined in 45 CFR 46.102(d) and 45 CFR 164.501 as a “systematic investigation, including research development, testing, and evaluation, designed to develop or contribute to generalizable knowledge.”⁴ In contrast to research, RCQI has 2 potential focuses: (1) translating existing knowledge into clinical practice to improve health care quality and (2) discovering new innovations to improve health care quality that have not yet been researched.

RCQI takes a systems approach to support organizations and uses the theory of prediction to test ideas and identify those that lead to the greatest improvements within these systems. This philosophy centers on the process of discovery through experience, allowing organizations to alter or “tweak” their hypotheses and then test again. RCQI encourages the application of several tests over time to identify the most successful ideas—those that have the greatest impact on overall program outcomes.

RCQI AND GRANT PROGRAMS ADMINISTERED BY HRSA’S BUREAU OF HEALTH WORKFORCE

HRSA continues to encourage grantees to utilize RCQI principles and tools to accomplish the overarching goals associated with specific funding opportunities. Awardees are expected to incorporate RCQI into their work plan and evaluation efforts so that improved outcomes for patients, providers, and communities can be realized. This resource guide has been developed to support organizations that have received HRSA funding for programs such as:

- Advanced Nursing Education Program (funding opportunity number HRSA-15-046)
- Predoctoral Training in General, Pediatric, and Public Health Dentistry and Dental Hygiene (HRSA-15-050)
- Postdoctoral Training in General, Pediatric, and Public Health Dentistry (HRSA-15-051)
- Geriatrics Workforce Enhancement Program (HRSA-15-057)
- Primary Care Training and Enhancement Awards (HRSA-15-054)

⁴ Department of Health and Human Services. *Code of Federal Regulations*, 45 CFR 46. <http://www.hhs.gov/ohrp/humansubjects/guidance/45cfr46.html>. Accessed June 9, 2016.

THE MODEL FOR IMPROVEMENT

As noted above and as illustrated by the figure on page 3, the Model for Improvement comprises a set of 3 fundamental questions that drive all improvement efforts in addition to the *Plan-Do-Study-Act (PDSA) cycle*, also known as the Deming or Shewhart cycle.⁵ While the term “PDSA cycle” may be familiar to many, it is often misunderstood and misused. Although the 3 questions in the Model for Improvement may be answered in any order, all 3 must be addressed when embarking on improvement activities. Each of the 3 questions specified by the Model for Improvement will be reviewed in more detail below.

- View an [informational video](#) on the Model for Improvement from the Institute for Healthcare Improvement (IHI)

WHAT ARE WE TRYING TO ACCOMPLISH?

RCQI is a robust methodology that ensures organizations can accomplish measurable and meaningful results in a timely fashion. However, before an organization can achieve improvement, it must create a measurable description of its organization’s desired improvement. Doing so requires a critical evaluation of current systems and processes to identify where the greatest opportunity for improvement exists. Organizations also must make many decisions around what can feasibly be accomplished within a specific time frame. The first question in the Model for Improvement asks *What are we trying to accomplish?* The answer to this question is often referred to as an *aim statement*.

Aim Statement

A concise written statement that describes what a team expects to accomplish with an improvement effort. A good aim statement is:

- Unambiguous
- Time specific
- Population specific
- Measurable

Setting numerical goals clarifies the aim, helps create tension for change, directs measurement activities, identifies resources that will be needed, and focuses initial changes.

The purpose of an aim statement is to provide QI teams with clear, well-defined goals. It provides a sense of direction and allows your QI team to identify the steps that should be taken to meet the end goal. Organizations are more likely to successfully improve quality when they establish effective aim statements.⁶ A strong aim statement should include answers to the following questions:

1. **What** do you hope to accomplish with this improvement project?
2. **Who** is the target population for this improvement project?
3. **When** is the deadline for completing this improvement project?

⁵ Langley GJ et al. *The Improvement Guide: A Practical Approach to Enhancing Organizational Performance*. 2nd ed. San Francisco, CA: Jossey-Bass; 2009.

⁶ Health Resources and Services Administration. <http://www.hrsa.gov/quality/toolbox/methodology/readinessassessment/part5.html>. Accessed June 9, 2016.

4. **How much** improvement do you plan to accomplish by your deadline, in specific and measurable terms?

An aim statement could be viewed as the “destination” for your improvement work. You may take several different paths to this destination, but the aim statement will keep the improvement team focused on what, specifically, it wishes to accomplish. An aim statement can be applied to anything one wishes to improve.

More information on developing project aim statements can be found on the [HRSA website](#).

AIM STATEMENTS AS THEY APPLY TO THE FOA

Many of HRSA’s Funding Opportunity Announcements (FOAs) ask applicants to create a logic model—that is, a 1-page diagram that represents the conceptual framework of the proposed work. A logic model has several components, but an aim statement will address the goals and outcomes described in the model. As goals are often written as general statements of improvement, the use of aim statement methodology to clarify these goals will allow you to clearly articulate what you seek to accomplish by the end of the FOA.

Similarly, the work plan needed for the “Response to Program Purpose” section of an FOA asks for “objectives and sub-objectives [for the project goals] that are specific, measurable, achievable, realistic, and time-framed.” These are the essential elements of an aim statement.

Examples of Aim Statements

1. Advanced Nursing Education

In response to the FOA on advanced nursing education, you would likely create several objectives and sub-objectives for your work plan. While your work within this FOA would include many different elements, one objective in your work plan might focus specifically on ensuring that all preceptors meet certain competency requirements. For this objective, you might craft an aim statement similar to the following:

By June 2017, XYZ University will ensure that 100% of clinical preceptors are prepared to facilitate a positive clinical experience for students. All preceptors will undergo an annual clinical competency evaluation and will score at least 90% competency in 4 domains:

1. *Student evaluation*
2. *Goal setting*
3. *Teaching strategies*
4. *Demonstration of organized knowledge*

By establishing this aim, you are stating specifically what it is that you hope to accomplish for this objective. Although you are not setting forth exactly *how* you are to accomplish this, you are giving yourself a measurable end.

2. Primary Care Training and Enhancement

In response to an FOA on primary care training and enhancement, you would likely create several objectives and sub-objectives for your work plan. While your work within this FOA would include many different elements, one objective in your work plan might focus specifically on improving provider effectiveness in working with disadvantaged patients. For this objective, you might craft an aim statement similar to the following:

By June 2020, XYZ University plans to partner with local federally qualified health centers (FQHCs) to develop a Family Medicine Residency Program that increases the number of primary care physicians committed to serving low-income populations in underserved communities such that:

- 1. Residents complete at least 128 hours of clinical time at the FQHC caring for disadvantaged populations*
- 2. At least 10 residents complete their residency training by 2020*
- 3. At least 50% of residents who complete training continue to work with disadvantaged populations upon entering practice*

By establishing this aim, you are stating specifically what it is that you hope to accomplish for this objective. Although you are not setting forth exactly *how* you are to accomplish this, you are giving yourself a measurable end.

3. Predoctoral Training in General Pediatric and Public Health Dentistry

In response to an FOA on predoctoral training in pediatric and public health dentistry, you would likely create several objectives and sub-objectives for your work plan. While your work within this FOA would include many different elements, one objective in your work plan might focus specifically on improving dental/medical integration within local service delivery systems. For this objective, you might craft an aim statement similar to the following:

By June 2018, XYZ University will partner with at least 3 local FQHCs to improve the integration of oral health and primary care services such that:

- 1. All medical and dental staff receive specialized training to enhance competencies across disciplines and improve the co-management of patients' medical and oral health needs*
- 2. At least 50% of patients with high-risk dental needs receive care coordination support to address both their dental and medical needs*

By establishing this aim, you are stating specifically what it is that you hope to accomplish for this objective. Although you are not setting forth exactly *how* you are to accomplish this, you are giving yourself a measurable end.

HOW WILL WE KNOW THAT A CHANGE IS AN IMPROVEMENT?

All QI endeavors begin with the identification of a need and the acknowledgment of a gap between the current performance of a system and the performance you strive to achieve. While QI is not all

Family of Measures

Process measures: Measures that drive the outcome and help a team to assess if parts/steps within a system are performing as expected

Outcome measures: Used to assess the intended impact on and/or improvement of the population of interest

about data collection and assessment, without those procedures, we are unable to determine whether we have accomplished the change we seek.

In RCQI work, measurement allows an organization to determine if a change or a new project is actually leading to improvement. This is based on the realization that not all change leads to improvement of a system. As discussed previously, the first step to beginning an RCQI project is to propose a specific and measurable aim. This identifies where an organization hopes their work will take them. To assess whether you are accomplishing your aim, you should establish a small set of measures to track over time. These are often referred to collectively as a “family of measures.” These

measures fall into 2 main categories: *process measures* and *outcome measures*. IHI has created a [video](#) that describes these types of measures.

While determining what process and outcome measures you may wish to track, a few points should be borne in mind:

1. The measures you select should help you to measure progress towards your aim.
2. The measures should be closely related to the system you are working to improve such that they are sensitive enough to indicate change to the system.
3. Avoid tracking too many process measures and losing sight of your outcome.
4. Identify measures that can be collected more frequently than quarterly or annually.
5. Ensure that the collection of these data is feasible and practical.

Various Levels of Measurement

Organizations are accustomed to collecting and reporting data. These data may be used internally to make program decisions, reported to governing and accrediting bodies or to current or future funders, or used in a rigorous evaluation. It is important to understand that the types of data collected and reported for each of these purposes are vastly different. According to Solberg and colleagues,⁷ 3 major categories of measurement exist:

1. ***Measurement for research.*** The primary focus is seeking out new knowledge. These studies are often of long duration, expensive, and elaborate.
2. ***Measurement for accountability.*** The measures used for accountability often matter to external parties and focus on specific outcomes or results. While these data assess outcomes, they typically aggregate an outcome across a population and provide little insight into how process might be changed in order to improve the outcome.
3. ***Measurement of improvement.*** Measurement of improvement is exactly that—measures that help us determine whether improvements can be realized in care and outcomes for

⁷ Solberg LI et al. *Jt Comm J Qual Improv.* 1997;23(3):135-147.

patients. Improvement measurement is useful to (a) identify where a system might need focused improvement efforts, (b) collect measurement data over time to determine when improvement has been accomplished, and (c) assess the system’s ability to sustain improved outcomes.

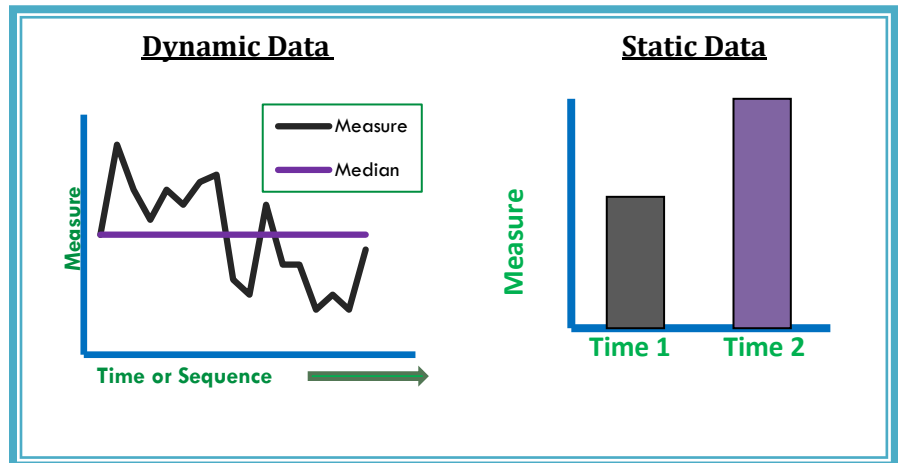
The following information from Solberg et al describes some of the specific differences between measurement for improvement, accountability, and research.

Aspect	Improvement	Accountability	Research
Aim	Improvement of care (efficiency and effectiveness)	Comparison, choice, reassurance, motivation for change	New knowledge (efficacy)
Test observability	Test observable	No test; evaluate current performance	Test blinded or controlled
Bias	Accept consistent bias	Measure and adjust to reduce bias	Design to eliminate bias
Data	“Just enough” data, small sequential samples	Obtain 100% of available, relevant data	“Just in case” data
Testing strategy	Sequential tests	No tests	One large test
Determining if a change is an improvement	Run charts or Shewhart control charts (statistical process control)	No-change focus (eg, computation of percent change or rank order of results)	Hypothesis, statistical tests (<i>t</i> test, <i>F</i> test, chi-square test), <i>P</i> values
Confidentiality of the data	Data used only by those involved with improvement	Data available for public consumption and review	Research subjects’ identities protected

Dynamic vs Static Data

RCQI focuses on the use of dynamic data, which are time-series data assessed over a period of time. This type of data is preferred over static data, which are data aggregated to represent less frequent time intervals (see graphs below). For this reason, data collection should be done in real time to track the impact of ideas over time. Run charts—graphs of data over time—are one of the most important tools in QI. For more information on run charts, please refer to the on-demand IHI course entitled [Using Run and Control Charts to Understand Variation](#).

RCQI data are always for learning, not judgment. The end goal is to improve outcomes for patients and/or health care providers. While the data collected through PDSA methods and other RCQI efforts indicate whether changes are being realized, they should not be used to



judge or analyze an organization. Rather, organizations should use these data to make informed decisions about whether their changes are leading to improvement.

Applying Improvement Measurement to the FOA

As we have discussed, HRSA FOAs ask applicants to submit a work plan that includes objectives and sub-objectives with specific and measurable goals. To do this, applicants should identify core outcome measures by crafting aim statements for these objectives and sub-objectives. Applicants also are asked to identify core activities associated with each of these objectives and sub-objectives. In the process, applicants have the opportunity to identify a core set of process measures that could be used to track progress in meeting the outcomes of each objective.

As also noted earlier, HRSA FOAs often ask applicants to construct a logic model, or a pictorial representation of the proposed activities, and explain how these activities will drive the intended outcomes. The “outputs” section of the logic model serves as another location in which to identify process measures. Similarly, the “outcomes” section is an ideal place to identify some core outcome measures for an objective.

EXAMPLES OF MEASURES

Example 1: Advanced Nursing Education

In the example aim statement described earlier, we established an aim focused on assessing the clinical competency of all preceptors so that students have a positive clinical experience. This is the long-term goal, established with specific and measurable criteria. As an applicant working to accomplish this aim, it will be critical to set up a few relevant measures to be tracked over time in order to assess whether progress is being made. In establishing these measures, you will need to consider both process and outcome measures. The process measures help to ensure that you are making the changes needed to meet the objective, while the outcome measures will verify whether improvement has been realized in the population. For this example, there are 2 populations for whom you are working to improve outcomes: clinical preceptors and students. Below is a list of measures that you might track while working on this objective within your work plan.

Potential Process Measures	Potential Outcome Measures
Total number of preceptors	Total number of preceptors scoring at least 90% competency in each domain
Total number of preceptors completing annual competency evaluation	Total number of preceptors scoring at least 90% competency in all 4 domains
Total number of preceptors receiving education to improve clinical competency	Percentage of preceptors reporting that they feel prepared to supervise clinical students
	Percentage of students meeting clinical objectives

It should be remembered that the measures required for RCQI are different from those required for other types of projects, such as clinical research or program evaluation. RCQI measures should be specific for and sensitive to the system you are working to improve. The measures might incorporate validated tools, but this is not a requirement. What is more important when collecting data for RCQI is that the measures do 2 things: (1) inform your decisions regarding whether the proposed change is an improvement and (2) evaluate the system supporting the change to ensure that the necessary processes exist to sustain the work. Identifying sustainable improvement can be done by tracking data over a period of several months to verify that improved outcomes are not only accomplished but maintained.

Example 2: Primary Care Training and Enhancement

In the example aim statement described earlier, we established an aim focused on increasing the number of primary care providers committed to serving low-income populations in underserved communities. This is the long-term goal, established with specific and measurable criteria. As an applicant working to accomplish this aim, it will be critical to set up a few relevant measures to be tracked over time in order to assess whether progress is being made. In establishing these measures, you will need to consider both process and outcome measures. The process measures help to ensure that you are making the changes needed to meet the objective, while the outcome measures will verify whether improvement has been realized in the population. For this example, the work is focused primarily on improving process and outcomes for residents. Below is a list of measures that you might track while working on this objective within your work plan.

Potential Process Measures	Potential Outcome Measures
Total number of residents working with disadvantaged populations	Percentage of residents completing at least 128 hours of clinical time working with disadvantaged populations
Total number of hours worked with disadvantaged populations per resident	Percentage of residents indicating that they intend to continue to work with disadvantaged populations upon completing training
Number of matriculated students per year	Percentage of residents scoring at least 80% on a specific tool that measures comfort working with disadvantaged populations

It should be remembered that the measures required for RCQI are different from those required for other types of projects, such as clinical research or program evaluation. RCQI measures should be specific for and sensitive to the system you are working to improve. The measures might incorporate validated tools, but this is not a requirement. What is more important when collecting data for RCQI is that the measures do 2 things: (1) inform your decisions regarding whether the proposed change is an improvement and (2) evaluate the system supporting the change to ensure that the necessary processes exist to sustain the work.

Example 3: Predoctoral Training in General Pediatric and Public Health Dentistry

In the example aim statement described earlier, we established an aim focused on improving dental/medical integration within the local service delivery system. This is the long-term goal, established with specific and measurable criteria. As an applicant working to accomplish this aim, it will be critical to set up a few relevant measures to be tracked over time in order to assess whether progress is being made. In establishing these measures, you will need to consider both process and outcome measures. The process measures help to ensure that you are making the changes needed to meet the objective, while the outcome measures will verify whether improvement has been realized in the population. For this example, there are 2 populations for whom you are working to improve the outcome: (1) medical and dental staff and (2) patients. Below is a list of measures that you might track while working on this objective within your work plan.

Potential Process Measures	Potential Outcome Measures
Number of staff trained	Percentage of staff scoring at least 80% in cross-competency assessment
Number of interdisciplinary team meetings held for co-management	Percentage of patients with a dental/medical co-management care coordinator
Number of patients with a care coordinator	Percentage of patients receiving routine preventive oral health services

It should be remembered that the measures required for RCQI are different from those required for other types of projects, such as clinical research or program evaluation. RCQI measures should be specific for and sensitive to the system you are working to improve. The measures might incorporate validated tools, but this is not a requirement. What is more important when collecting data for RCQI is that the measures do 2 things: (1) inform your decisions regarding whether the proposed change is an improvement and (2) evaluate the system supporting the change to ensure that the necessary processes exist to sustain the work.

WHAT CHANGES CAN WE MAKE THAT WILL RESULT IN IMPROVEMENT?

Once your organization has established a specific aim statement and a family of measures to be tracked while you work to accomplish your aim, it is time to identify ideas through which your organization may accomplish this aim—often the easiest part of any improvement project. Such ideas are referred to as *change ideas*. A change idea is any idea you might try out to change or improve a specific system. Change ideas may be simple or complex and can be derived from a

number of sources, including the professional literature, professional associations, conferences, and colleague experiences. Change ideas are the heart of all improvement work. Organizations interested in doing RCQI must identify a series of ideas to try while working to accomplish the overall aim.

The beauty of RCQI is that it involves a process of prediction-based testing to allow organizations to gain confidence that an idea is leading to improvement. Thus, organizations have the ability to try several ideas and see which works best. This level of adaptability and agility makes RCQI unique.

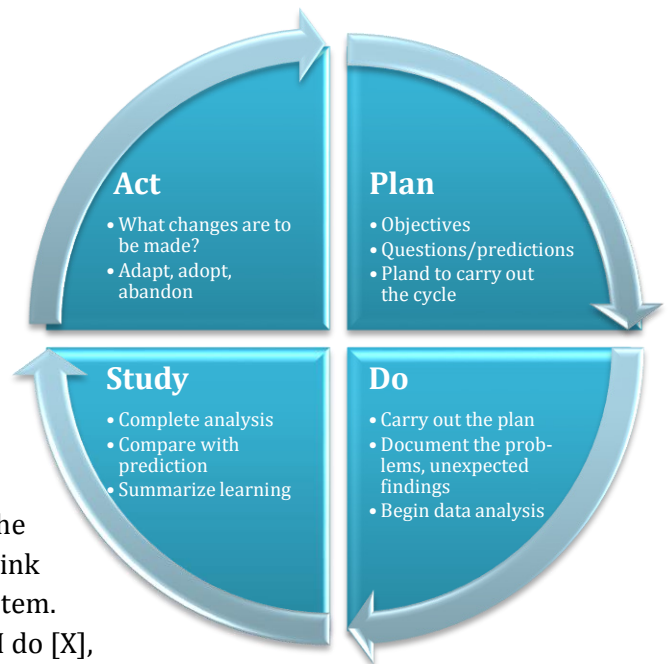
RCQI always begins with a change idea, but the manner in which that change idea is introduced to the system is what makes this model different from many others. RCQI encourages organizations to initially try an idea on a very small scale for the purpose of testing it out in the current system. By starting very small, organizations are able to try something new with a minimum of disruption to their current system. Moreover, organizations using this method have the opportunity to learn quickly whether the idea being tested is or is not well suited to their current system.

Tests of Change: PDSA Cycles

One of the most common tools for process improvement is the PDSA cycle. This method is well suited to a variety of improvement projects. The PDSA cycle is shorthand for *testing a change*—by planning it, implementing it, observing the results, and acting on what is learned. This is the scientific method used for action-oriented learning.⁸

The PDSA cycle starts at the “Plan” stage. During this phase, an organization has the opportunity to create a formalized plan on how they will test an idea. Any idea being tested with a PDSA cycle must have a prediction. The prediction is an organization’s best guess at what they think will happen when the new idea is introduced into the system. Predictions are often written as “if, then” statements: “If I do [X], then I predict [Y] will happen.” The planning phase of the PDSA also formalizes the details of your test—who will test, when, what data will be collected, and so forth. Plans should be manageable and within the control of the RCQI team. If a plan is developed that cannot feasibly be done without the approval of key leadership, then the plan is likely too large.

Once a plan has been developed, it is important that an organization move into the “Do” stage as quickly as possible. RCQI work is about learning rapidly through experience; therefore, organizations must initiate their plan in a timely fashion in order to gain rapid insight into whether



⁸ Health Resources and Services Administration. <http://www.hrsa.gov/quality/toolbox/methodology/testingforimprovement/part2.html>. Accessed June 9, 2016.

their prediction is accurate. While in the “Do” stage, organizations will collect the necessary data identified in the plan while also observing any problems or unexpected events in the process.

The focus of the “Study” stage is to further analyze the results and observations obtained during the “Do” stage and to compare these results with the original prediction. Organizations are seeking to determine if the change improves the system while also identifying other factors that influence their ability to continue testing the change. The learnings identified in the “Study” phase give direction to what the organization will do next.

The “Act” stage is critically important to PDSA cycles. Organizations must consider the findings and learnings from the current cycle and make some decisions regarding what will be done differently in the next cycle. Organizations “tweak” the idea and the process so that the best possible results can be accomplished. Each adjustment and PDSA cycle strengthens the case for why the new idea is effective and why it should become standard practice.

- View a [brief video](#) developed by IHI that describes PDSA cycles

While organizations should begin PDSA cycles on a very small scale, the intention is always to find ideas that improve the system so that superior outcomes can be realized. With that in mind, any idea tested should be able to be realistically incorporated into standard practice.

Applying PDSA Cycles to the FOA

While preparing a response to an HRSA FOA, applicants have the opportunity to identify a series of ideas they are interested in trying. These ideas might appear in the work plan as key activities and/or as deliverables or products. An applicant might identify a specific change idea and the proposed plan to test this idea. Any action on this test would come after the applicant has been awarded funding. If the applicant has previous experience using PDSA cycles in relation to the needs addressed by the current application, the applicant might include this information in the “need” section of the response.

EXAMPLES OF CHANGES

Example 1: Advanced Nursing Education

Continuing with our example of improving the competency of clinical preceptors, a quick literature review will find numerous assessments of clinical competency. Each of these is a potential change idea that you might try to accomplish your aim.

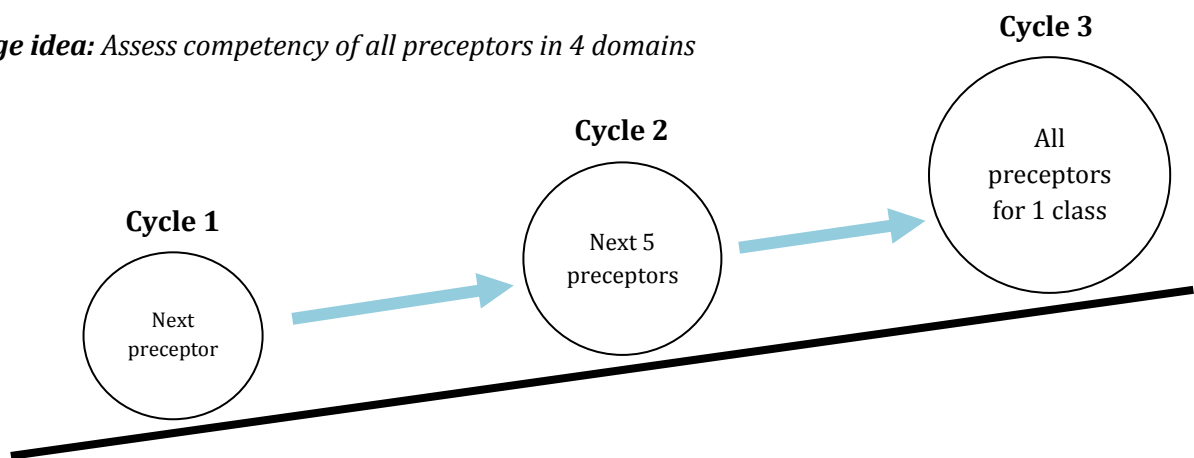
For this example, let us say that a grantee selects a specific instrument already developed to assess clinical competency. By selecting this tool, the grantee is beginning the process of testing a change idea. The specific change idea is the tool, and this idea is being tested with a prediction. For this example, the prediction would be:

If I use a specific tool to assess the competency of clinical preceptors, I will be able to ensure that all preceptors have a common baseline competency and thereby increase my confidence that students have access to high-quality preceptors.

RCQI is a prediction-based trial-and-error process. Whether you begin with a specific tool that you have created or one that was developed and validated by others, your prediction remains the same. The next step in RCQI is to use a PDSA process to test your hypothesis. In doing so, you would try out the use of your tool on a small scale. The scale is important in RCQI because it is meant to be “rapid”—something you can do quickly to see if your idea works. For this example, a PDSA cycle would involve the specifics outlined in the figure and table below.

In order for this to be an iterative process, it is critical that the next steps for action be determined at the end of each PDSA cycle. While trying out new ideas is common, doing so within the constructs of this process is, unfortunately, rare. This is a common pitfall of RCQI work: organizations often begin to try a new idea without ever reflecting back on whether their prediction is true. Doing so often leads to frustration, and it fails to meet the outcomes originally set forth.

Change idea: *Assess competency of all preceptors in 4 domains*



	PDSA Cycle 1	PDSA Cycle 2	PDSA Cycle 3
Plan	Use evidence-based tool with 1 preceptor. Prediction: I will better understand preceptor competency and can support preceptor where limitations are found.	Meet with next 5 preceptors and explain that meeting will take at least 1 hour. Prediction using the tool will provide better information, and giving specific time information will allow for completion of tool.	Reorganize tool to address 2 weakest domains first. Allow preceptors to review tool in advance and let them know it will take at least 1 hour to complete. Test with all preceptors for 1 class for 1 semester.
Do	Used tool with preceptor; found it to be somewhat time consuming, and preceptor was not able to finish entire tool.	Used tool with all 5 preceptors; 4 completed tool, 1 ran out of time and thought tool was unnecessary.	Tests continue to be successful; 80% of preceptors completed tool. Same 2 domains continue to be weakest.
Study	Preceptor was not expecting to meet for so long. More information gained in 2 domains completed, but was not able to complete tool.	Tool worked well with 4 preceptors. One preceptor thought tool was not needed. All preceptors seem to score lowest in same 2 of 4 total domains.	2 of 4 domains are consistently weakest. Preceptors seem to have similar struggles with these. Education needed to improve them.
Act	Test with next 5 preceptors, but will tell preceptors that we need to meet for longer time to ensure completion.	Continue testing tool, but will reorganize domains to get through 2 weakest first. Will also provide tool to preceptors in advance for review.	Plan educational session to address 2 weakest domains. Test with tool more frequently but assess only 2 weakest domains to see if improvement is realized.

Example 2: Primary Care Training and Enhancement

Continuing with our example of increasing opportunities for family practice residents to work with patients from disadvantaged backgrounds, it is clear that there are several tasks and processes that must be completed to establish a residency program. While most of these tasks are not conducive to QI, many other activities are. Once the first residents have been recruited, the greatest opportunities for integrating RCQI will be realized. For the purposes of this example, we will focus on establishing clinical rotations for the residents at the collaborating FQHC. Changes could include incorporating feedback into the resident recruitment plan for applicants who chose not to attend that residency program or feedback based on evidence (if available) on how to recruit residents who are more likely to wish to remain practicing in underserved settings.

Another RCQI change might focus on what community health centers or which preceptors the residents work with. Questions to consider include whether the community health centers are welcoming environments for the residents, whether the residents are treated as members of the team, and whether the faculty in those centers are spending time teaching the residents.

Capturing this information through rotation or site evaluations could prove valuable in addressing which centers might need additional clinician educator or faculty development training as a way to improve the experience of the residents at these medically underserved sites.

In addition, while spending more clinical time at the FQHC is a clear goal of this effort, as a grantee, you want to ensure that residents are building on their skills and having the best possible interactions with their patients. If you believe that enhancing the ability of residents to communicate with patients is an important consideration, and the FQHC with which you are partnering trains its providers in motivational interviewing, then you may decide to try the idea of training residents in motivational interviewing to determine whether it improves their ability to help patients set personal health goals.

By deciding to train residents in motivational interviewing, a grantee is beginning the process of testing a change idea. The specific idea you are testing is motivational interviewing, and this idea is being tested with a prediction. For this example, the prediction might be:

If residents are proficient in motivational interviewing, they will have better communication with patients and be better able to help patients set personal health goals.

RCQI is a prediction-based trial-and-error process. The next step in RCQI is to use a PDSA process to test your hypothesis. In doing so, you would try out the use of your tool on a small scale. The scale is important in RCQI because it is meant to be “rapid”—something you can do quickly to see if your idea works. The “rapidness” of testing will vary with the institution utilizing RCQI and the context of the specific work. It is important for organizations to consciously work to find ways to test ideas in the most expedited fashion so that the value of RCQI can be realized. Without this effort, it is easy to fall into a familiar pattern that does not include rapid testing of ideas.

In order for this to be an iterative process, it is critical that the next steps for action be determined at the end of each PDSA cycle. While trying out new ideas is common, doing so within the constructs

of this process is, unfortunately, rare. This is a common pitfall of RCQI work: organizations often begin to try a new idea without ever reflecting back on whether their prediction is true. Doing so often leads to frustration, and it fails to meet the outcomes originally set forth.

Example 3: Predoctoral Training in General Pediatric and Public Health Dentistry

Continuing with our example of increasing medical/dental integration, it is clear that there are several tasks that must be accomplished to complete integration. While most of these tasks are not conducive to QI, many other activities are. For the purposes of this example, we will focus on the integration of care coordination services.

Full medical/dental integration will require time and significant structural changes. But because this FQHC partner already has care coordinators, it is much easier to begin to think about how to use these personnel to support those dental patients in the greatest need.

By deciding to work with care coordinators, you have begun the process of testing a change idea. The specific idea you are testing is the utilization of care coordinators for dental health patients, and this idea is being tested with a prediction. For this example, the prediction might be:

If care coordinators begin to work with patients with the greatest dental care needs, they will find that:

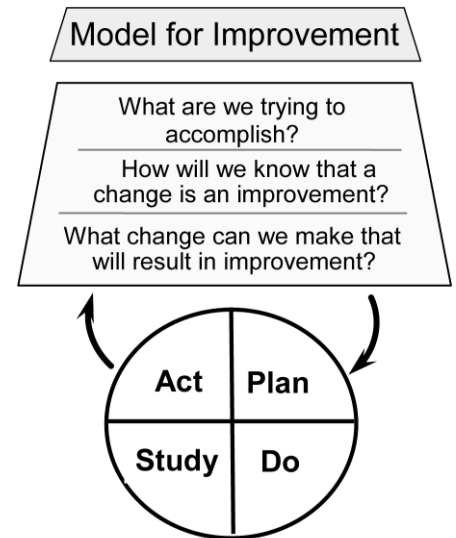
- 1. Many of these patients are currently receiving care for their medical needs only*
- 2. Patients will be more likely to follow through with clinical and lifestyle changes to improve overall oral hygiene as a result of the care coordinator*

RCQI is a prediction-based trial-and-error process. The next step in RCQI is to use a PDSA process to test your hypothesis. In doing so, you would try out the use of your tool on a small scale. The scale is important in RCQI because it is meant to be “rapid”—something you can do quickly to see if your idea works.

In order for this to be an iterative process, it is critical that the next steps for action be determined at the end of each PDSA cycle. While trying out new ideas is common, doing so within the constructs of this process is, unfortunately, rare. This is a common pitfall of RCQI work: organizations often begin to try a new idea without ever reflecting back on whether their prediction is true. Doing so often leads to frustration, and it fails to meet the outcomes originally set forth.

CONCLUSIONS

RCQI is a simple but powerful tool that supports professionals and students in achieving improved outcomes. When embarking on any improvement endeavor, it is important to remember the need for balance in the Model for Improvement. No single question can reflect the depth required for an improvement effort. Staying focused on these 3 questions and using the iterative process of testing through PDSA holds the greatest potential for improved outcomes and processes. This model has been successfully used by a wide array of health care professionals and educators across the county and around the world. RCQI can support improved educational experiences, which can, in turn, ensure positive student outcomes—preparing students to excel as health professionals upon completion of their education and training.



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