
QUALITY IMPROVEMENT

**U. S. Department of Health and Human Services
Health Resources and Services Administration**

April 2011



Contents

| | |
|---|----|
| Part 1: Quality Improvement (QI) and the Importance of QI | 1 |
| Quality Improvement (QI) | 1 |
| Principles of QI..... | 1 |
| What Is a QI Program? | 5 |
| Why Is a QI Program Essential to a Health Care Organization? | 6 |
| Part 2: Before Beginning - Establish an Organizational Foundation for QI..... | 6 |
| The Role of Organizational Leadership..... | 7 |
| Key Staff Roles in a QI Program | 8 |
| Readiness Assessment – Preparing for Change | 9 |
| Part 3: QI Programs - The Improvement Journey..... | 10 |
| What Are the Desired Improvements?..... | 10 |
| How Are Changes and Improvements Measured?..... | 11 |
| How Is Staff Organized to Accomplish the Work? | 12 |
| How Can QI Models Be Leveraged to Accomplish Improvements Effectively and Efficiently? | 13 |
| How Is Change Managed?..... | 14 |
| Part 4: Supporting the QI Program - Keep the Momentum Going | 16 |
| How Is Performance Tracked Over Time?..... | 16 |
| Celebrating Success | 16 |
| Part 5: References | 17 |
| Part 6: Additional Resources | 17 |

QUALITY IMPROVEMENT

The purpose of this module is to provide a foundation and an introduction to quality improvement (QI) concepts and key topics for developing or improving a QI program within an organization.

Part 1: Quality Improvement (QI) and the Importance of QI

Quality Improvement (QI)

Quality improvement (QI) consists of systematic and continuous actions that lead to measurable improvement in health care services and the health status of targeted patient groups. The [Institute of Medicine](#) (IOM), which is a recognized leader and advisor on improving the Nation's health care, defines quality in health care as a direct correlation between the level of improved health services and the desired health outcomes of individuals and populations.¹

Principles of QI

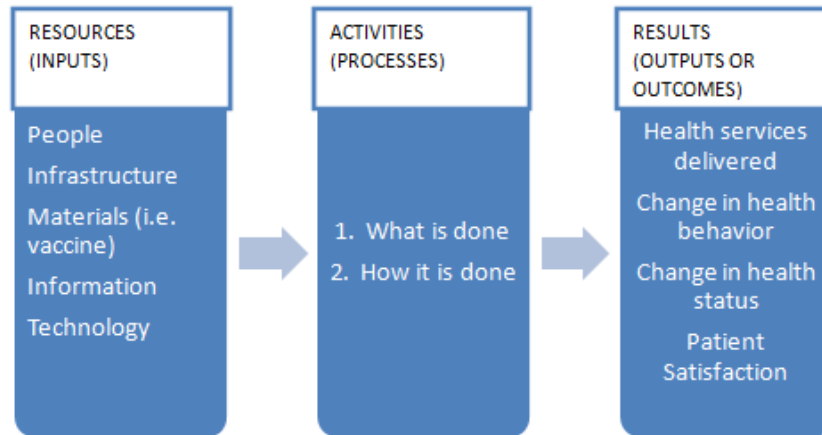
When quality is considered from the IOM's perspective, then an organization's current system is defined as *how things are done now*, whereas health care *performance* is defined by an organization's efficiency and outcome of care, and level of patient satisfaction. Quality is directly linked to an organization's service delivery approach or underlying systems of care. To achieve a different level of performance (i.e., results) and improve quality, an organization's current system needs to change. While each QI program may appear different, a successful program always incorporates the following four key principles:²

- QI work as systems and processes
- Focus on patients
- Focus on being part of the team
- Focus on use of the data

The next subsections describe these four QI principles in more depth.

QI Work as Systems and Processes

To make improvements, an organization needs to understand its own delivery system and key processes. The concepts behind the QI approaches in this toolkit recognize that both resources (*inputs*) and activities carried out (*processes*) are addressed together to ensure or improve quality of care (*outputs/outcomes*). A health service delivery system can be small and simple, such as, an immunization clinic, or large and complex, like a large managed-care organization. QI can assume many forms and is most effective if it is individualized to meet the needs of a specific organization's health service delivery system. **Figure 1.1** shows how a health care delivery system consists of resources, activities, and results; these key components are also called *inputs*, *processes*, and *outputs/outcomes*:



Source: Donabedian (1980)

Figure 1.1: Inputs, Processes and Outputs/Outcomes

Activities or processes within a health care organization contain two major components: 1) what is done (what care is provided), and 2) how it is done (when, where, and by whom care is delivered). Improvement can be achieved by addressing either component; however, the greatest impact for QI is when both are addressed at the same time.

Process mapping is a tool commonly used by an organization to better understand the health care processes within its practice system. This tool gained popularity in engineering before being adapted by health care. A process map provides a visual diagram of a sequence of events that result in a particular outcome. By reviewing the steps and their sequence as to who performs each step, and how efficiently the process works, an organization can often visualize opportunities for improvement. The process mapping tool may also be used to evaluate or redesign a current process. Additional information, including tools and resources to assist an organization that wants to adopt process mapping as an improvement strategy, can be found in the [Redesigning a System of Care to Promote QI](#) module.

Specific steps are required to deliver optimal health care services. When these steps are tied to pertinent clinical guidelines, then optimal outcomes are achieved. These essential steps are referred to as the critical (or clinical) pathway. The critical pathway steps can be mapped as described above. By mapping the current critical pathway for a particular service, an organization gains a better understanding of what and how care is provided. When an organization compares its map to one that shows optimal care for a service that is congruent with evidence-based guidelines (i.e., idealized critical pathway), it sees other opportunities to provide or improve delivered care.

In this module, improvement strategies are presented based on what has worked for other health care organizations. Changes are applied throughout an existing critical pathway so it works more effectively. QI strives to enable an organization to achieve the ideal critical pathway, which is one that allows the care team and patient to interact productively and efficiently to achieve optimal health outcomes.

The following illustrative example reinforces the benefits of understanding systems and key processes in approaching a performance improvement project:

Focus on Patients

An important measure of quality is the extent to which patients' needs and expectations are met. Services that are designed to meet the needs and expectations of patients and their community include:

- Systems that affect patient access
- Care provision that is evidence-based
- Patient safety
- Support for patient engagement
- Coordination of care with other parts of the larger health care system
- Cultural competence, including assessing health literacy of patients, patient-centered communication, and linguistically appropriate care

A health care facility decided to target the accuracy of its medication lists as a way to improve patient safety. Based on its research, the facility staff understood the benefits of implementing information technology as an *input* or *resource* to improve the consistency and completeness of its medical documentation. The staff noted that technology adds more value when the focus also includes key *processes* or *activities*, such as, developing an effective workflow and staff proficiency in using the technology. The health care facility purchased an electronic medical record (EMR) system as its key component for *input* and also focused on *processes*; i.e., how the staff uses the system to improve the quality of medication documentation (*outcome*).

Focus on Being Part of the Team

At its core, QI is a team process. Under the right circumstances, a team harnesses the knowledge, skills, experience, and perspectives of different individuals within the team to make lasting improvements. A team approach is most effective when:

- The process or system is complex
- No one person in an organization knows all the dimensions of an issue
- The process involves more than one discipline or work area
- Solutions require creativity
- Staff commitment and buy-in are needed

In other words, virtually all QI projects involve a team process. Whether an organization is seeking to improve patient wait times, telephone service, diabetes care, or other goals it deems important, a team effort helps an organization to achieve significant and lasting improvements.

It is the responsibility of each individual to be an active and contributing member of the team. Each person on a team brings a unique perspective to the process; i.e., how things work; what happens when changes are made, and how to sustain improvements during daily work.

Contributions are made from each individual's skill set and the team's synthesis of ideas. Additional information, including tools and resources to assist an organization in developing and supporting a QI team within its organization, can be found in the [Improvement Teams](#) module.

In addition to staff, a key component of a well-functioning QI team is an effective infrastructure, such as, leadership, and policies and procedures to organize and facilitate the work of the team. Infrastructure support affords the team with tools, resources, clear expectations, and a forum for communication. More detail is provided in *The Role of Organizational Leadership* section of this module. This level of infrastructure helps a team to stay on a clear path, while being mindful of an organization's available resources and its goal.

Focus on Use of the Data

Data is the cornerstone of QI. It is used to describe how well current systems are working; what happens when changes are applied, and to document successful performance. Using data:

- Separates what is *thought* to be happening from what is *really* happening
- Establishes a baseline (*Starting with a low score is acceptable*)
- Reduces placement of ineffective solutions
- Allows monitoring of procedural changes to ensure that improvements are sustained
- Indicates whether changes lead to improvements
- Allows comparisons of performance across sites

Both *quantitative* and *qualitative* methods of data collection are helpful in QI efforts.

Quantitative methods involve the use of numbers and frequencies that result in measurable data. This type of information is easy to analyze statistically and is familiar to science and health care professionals. Examples in a health care setting include:

- Finding the average of a specific laboratory value
- Calculating the frequencies of timely access to care
- Calculating the percentages of patients that receive an appropriate health screening

Qualitative methods collect data with descriptive characteristics, rather than numeric values that draw statistical inferences. Qualitative data is observable but not measurable, and it provides important information about patterns, relationships between systems, and is often used to provide context for needed improvements. Common strategies for collecting qualitative data in a health care setting are:

- Patient and staff satisfaction surveys
- Focus group discussions
- Independent observations

A health care organization already has considerable data from various sources, such as, clinical records, practice management systems, satisfaction surveys, external evaluations of the population's health, and others. Focusing on existing data in a disciplined and methodical way allows an organization to evaluate its current system, identify opportunities for improvement, and monitor performance improvement over time.

When an organization wants to narrow its focus on specific data for its QI program, one strategy is to adopt standardized performance measures. Since performance measures include specific requirements that define exactly what data is needed for each measure, they target the data to be collected and monitored from the other data that is available to an organization. The clinical quality measures identified in this toolkit are examples of standardized measures that an organization, such as a safety net provider, may consider for adoption. They are designed to measure care processes that are common to safety net providers and are relevant to populations served. They narrow an organization's choices of what data to collect and measure.

Additional information, including tools and resources to assist an organization with effective data collection, use, and analysis are found in the [Performance Management and Measurement](#) and [Managing Data for Performance Improvement](#) modules.

Examples of specific data considerations for the clinical quality measures can be found in the modules below:

- [Breast Cancer Screening](#)
- [Cervical Cancer Screening](#)
- [Colorectal Cancer Screening](#)
- [Diabetes HbA1c {Poor Control}](#)
- [HIV Screening for Pregnant Women](#)
- [Hypertension Control](#)
- [Prenatal - First Trimester Care Access](#)

What Is a QI Program?

A QI program involves systematic activities that are organized and implemented by an organization to monitor, assess, and improve its quality of health care. The activities are cyclical so that an organization continues to seek higher levels of performance to optimize its care for the patients it serves, while striving for continuous improvement. A QI program typically envelops all QI activities within an organization. Clinically-related QI initiatives and activities to improve an organization's operations and finance are common examples. A QI program in a health care organization often begins with leadership considering these questions:

- Why is a QI program important to an organization?
- What does an organization need to know as it develops a QI program?
- How does an organization start its development of a QI program?
- How do QI processes work to support the success of the QI program?

The rest of this module provides a high-level discussion that assists an organization with answering these questions. This important content highlights:

- The importance of a QI program
- Considerations for building an infrastructure that supports quality
- Key components of the QI process

The module provides additional information for specific topics and can be accessed by clicking on their links.

Why Is a QI Program Essential to a Health Care Organization?

An organization that implements a QI program experiences a range of benefits:

- Improved patient health (clinical) outcomes that involve both process outcomes (e.g., provide recommended screenings) and health outcomes (e.g., decreased morbidity and mortality).
- Improved efficiency of managerial and clinical processes. By improving processes and outcomes relevant to high-priority health needs, an organization reduces waste and costs associated with system failures and redundancy. Often QI processes are budget-neutral, where the costs to make the changes are offset by the cost savings incurred. Additional information, including tools and resources to assist an organization with improving processes and outcomes can be found in the [Redesigning a System of Care to Promote QI](#) module.
- Avoided costs associated with process failures, errors, and poor outcomes. Costs are incurred when nonstandard and inefficient systems increase errors and cause rework. Streamlined and reliable processes are less expensive to maintain.
- Proactive processes that recognize and solve problems before they occur ensure that systems of care are reliable and predictable. A culture of improvement frequently develops in an organization that is committed to quality, because errors are reported and addressed.
- Improved communication with resources that are internal and external to an organization, such as, funders, civic and community organizations. A commitment to quality shines a positive light on an organization, which may result in an increase of partnership and funding opportunities. When successfully implemented, a QI infrastructure often enhances communication and resolves critical issues.

When an organization implements an effective QI program, the result can be a balance of quality, efficiency, and profitability in its achievement of organizational goals.

Part 2: Before Beginning - Establish an Organizational Foundation for QI

An effective QI program requires changes in an organization's culture and infrastructure to overcome its traditional barriers and works toward a common goal of quality. This occurs when all staff embraces the philosophy of QI and understands their roles in supporting an organization-wide focus on QI. Hierarchical roles that are important in clinical settings, and include licensure and appropriate supervision, are different from roles that support effective QI. Therefore, a paradigm shift is needed from their standard care-team roles to those that also include quality improvement.

Each of these foundational topics needs to be discussed within the management team before beginning a quality program and then periodically thereafter. Assessing leadership support of quality, staff engagement in the quality process, and the ability of an organization to manage change, provides the context for an effective QI program that may evolve over time. An organization may step back to reflect on these topics annually or, at minimum, conduct a biennial review.

The Role of Organizational Leadership

The leader's role in promoting and developing QI begins with creating and sustaining a personal and organizational focus on the needs of internal and external customers. Through actions, a leader demonstrates a clear commitment to the organizational mission, values, goals, and expectations that promote quality and performance excellence. The customer-oriented mission, vision, values, and goals of an organization are best integrated into all aspects of management through effective leadership.

An organization that experiences success in the development and implementation of its QI program understands that the organization's chief officer or senior leader creates energy, synergy, and focused leadership for the QI program. Under his or her leadership, all other managers or leaders work together to:

- Set the direction for QI by creating a strong patient focus
- Create clear statements that define the organization's mission and values, and identify operational objectives, and short- and long-term expectations
- Demonstrate continuous commitment to achieving the organization's QI goals

Achieving high levels of performance requires that an organization's leaders develop a strategic quality plan to fulfill the mission of integrating QI into their organization. A strategic quality plan provides guidance for delivering safe and quality care. The plan is often updated annually by clinical, administrative, and executive leadership to ensure the organization is continuously making improvements to meet the needs of its patients and families. The strategic quality plan:

- Identifies clear goals that define expected outcomes of the overall QI effort
- Is fact-based using indicators to measure progress
- Includes systematic cycles of planning, execution, and evaluation
- Concentrates on key processes as the route to better results
- Focuses on patients and other stakeholders

In addition to the vision and strategy, a leader needs to create and support an infrastructure that organizes and supports the work. Successful leaders found these actions helpful in creating their quality infrastructures:

- Become a QI champion and actively support the team; i.e., strong endorsement, support, participation, and resources from organizational leadership to facilitate ongoing QI activities
- Cultivate a spirit of QI within the organization that encourages continuous improvement of services and programs
- Identify internal experts or external consultants with experience and training in QI to help get teams started
- Develop staff members' skills in data collection and analysis
- Develop staff members' skills in information retrieval, such as, conducting literature searches and accessing databases

Key Staff Roles in a QI Program

For quality to be effectively managed, individuals and groups in an organization should have a clear understanding of their roles and responsibilities relative to QI. Each staff member has a role in ensuring that QI objectives set by the organization are met. Ideally, all contributions are equally valued on the QI team. Although the medical assistant may be supervised by the physician when providing patient care, the medical assistant's perspective and input within the context of the QI team are very important. Since individuals on the QI team work in fundamentally different ways when doing improvement work compared with actual patient-care delivery, it is important to formalize their roles within the committee. Common roles within a QI team include:

- **Day-to-day leader** organizes and drives the ongoing work, measurement, and team. This person needs to work effectively with the executive leadership and members of the improvement team. The day-to-day leader also serves as the "key contact" responsible for coordinating communication on the progress on a QI project to the overall organization, staff, and board of directors.
- **Data entry person** carries out the data-entry function, and needs sufficient time and computer access to enter data and submit reports regularly. It is often recommended to train a backup person, who also learns to aggregate monthly and quarterly reports, so that reporting is not interrupted for vacations, illnesses, or other unexpected events.
- **Provider champion** is an essential member of the QI team due to the clinical nature of the work. The provider champion works regularly with those patients whose care is directly affected by QI efforts. As a leader to help drive change, the provider needs to be an individual who is well-respected and influential among the medical staff, works well with management, and is open to change and new approaches.
- **Operations person** is integrally involved in current processes and needs to be part of the team, because much of the innovative work involves designing new processes and streamlining old ones. Operations personnel may include: nurses, nutritionists, social

workers, pharmacists, or others. The appropriate specialty of the operations person becomes apparent when areas for improvement in the current processes are identified.

- **Data specialist** collects and analyzes data, and uses QI tools. The person selected does not necessarily need to work in a QI department or hold a specific title as long as he or she is well-versed in QI concepts and tools.

Depending on the focus of improvement, other individuals in an organization may bring valuable insight to the process. Any individual may be considered a candidate for a QI team if he or she is willing to be part of a team that is committed to improving quality. In a smaller organization, one person may engage in multiple roles.

While the role of the team in a QI program is significant, total quality commitment involves all levels of an organization's structure. An organization needs to build ongoing training opportunities for staff and teams into its QI framework to sustain and advance its QI efforts. Quality patient care services are achieved through positive interactions among departments that work together to build a dynamic mechanism for continuously improving processes and outcomes of health care services. Additional information, including tools and resources to assist an organization with developing and supporting a QI team, can be found in the [Improvement Teams](#) module.

Readiness Assessment – Preparing for Change

Successful implementation of a QI program begins with an honest and objective assessment of an organization's current culture, and its commitment to improving the quality of its care and services. An organization may ask its staff to participate in the assessment process to determine their level of understanding about its existing QI processes. Understanding an organization's strengths and weaknesses around QI is a good starting point to assess its readiness for change. Questions that an organization may want to consider in determining its readiness are:

- Does the organization have a structure to assess and improve quality of care?
- Do providers and staff have a basic understanding of QI tools and techniques?
- Do providers and staff understand their roles, responsibilities, and expectations regarding QI activities?
- Does the organization routinely and systematically collect and analyze data to assess quality of care?
- Does the organization have resources dedicated to QI activities?
- Has the organization identified barriers to fully implement a QI program?

The questions above are provided as examples to demonstrate the assessment process; however, a team may list others specific to its organization. A key point is for an organization to understand that assessing readiness for change increases its ability to support its identified QI goals.

When assessing an organization's readiness to undertake organization-wide practice and culture changes for QI, consider traits fundamental to the success of QI, such as:

- Organizational commitment to QI
- Leadership's knowledge of QI principles, methodologies and change management
- Communication channels between leadership, staff and teams that are effective and functional
- Teamwork

Part 3: QI Programs - The Improvement Journey

When the QI team is assembled and prepared to integrate quality improvements into its organization, the focus then becomes the actual implementation. This section describes QI processes at a high operational level. The content is intended to provide answers for these reflection questions, as an organization makes specific decisions about what it wants to improve and how to actually accomplish the work:

- What are the desired improvements?
- How are changes and improvements measured?
- How is staff organized to accomplish the work?
- How can QI models be leveraged to accomplish improvements effectively and efficiently?
- How is change managed?

More detailed and advanced content can be accessed by clicking on specific links to other modules.

What Are the Desired Improvements?

In a health care organization, team members may suggest multiple areas that need ongoing measurement or improvement. The first task is to focus on one or more improvement areas, but it is recommended that no more than a few be selected. The following may be considered during the process of selecting opportunities for improvement:

- What are the funding agency's expectations; e.g., Bureau of Primary Health Care?
- What are the regulatory or monitoring agency's requirements; e.g., OSHA and accreditations agencies?
- What are the patients' issues and concerns?
- What are the staff's issues and concerns?
- What are the leadership's priorities?

An organization's processes that are weighted more heavily for improvement have one or more of the following characteristics:

- High volume, affecting a large number of patients

- High frequency
- High risk, placing patients at risk for poor outcomes
- Longstanding
- Multiple unsuccessful attempts to resolve in the past
- Strong and differing opinions on cause or resolution of the problem

Brainstorming is a valuable approach for generating ideas on additional opportunities for improvement. When performed in a structured manner, in a lively roundtable session led by a facilitator, it allows ideas to flow freely without debate or judgment. Subsequently, the ideas are reviewed, discussed, and clarified. During this stage, ideas are considered based on their projected time and resource requirements. Data collection efforts that may involve staff members outside the team are also taken into account. Then the team members rank and prioritize the areas based on organizational goals and needs, and a list of areas for improvement is identified.

For most teams, choosing improvement opportunities is an iterative process. After an organization creates a prioritized list using the methods described, it performs as many areas as feasible, considering the reality of its available resources and organizational constraints.

How Are Changes and Improvements Measured?

Data Infrastructure, Monitoring, and Evaluation

The first QI principle, *QI Work as Systems and Processes*, discussed in **Part 1: Principles of QI**, involves changes to the health system to improve performance. As patient outcomes may be affected, an organization wants to ensure that changes applied are true improvements. An effective way to accomplish this is to apply the fourth principle, *Focus on Use of the Data*.

An organization may already have existing data to track improvement. It needs to monitor the data that accurately reflects how a particular system is functioning, which requires an organization to focus on specific and well-defined data sets when monitoring QI.

To know which data to use and how to use it, understanding these three related concepts is important. The terminology for the concepts is introduced here, and more detail can be found in the [Performance Management and Measurement](#) module.

- *Performance measures* in a health care setting are derived from practice guidelines. Data that is defined into specific measurable elements provides practitioners with a meter to measure the quality of their care. Performance measures are designed to measure systems of care.³
- *Performance measurement* is a process by which an organization monitors important aspects of its programs, systems, and processes. In this context, performance measurement includes the operational processes used to collect data necessary for the performance measure(s).³

- **Performance management** is a forward-looking process used to set goals and regularly check progress toward achieving those goals. In practice, this involves goal setting, looking at the actual data for performance measures, and acting on results to improve the performance toward those goals.³

Used together, these three concepts form the basis for a QI data infrastructure. An organization should choose performance measures that reflect the care system targeted for improvement, and then set up a data collection system to document its performance. After the data is collected, then an organization analyzes the performance data and acts on that information. The ongoing process of collecting data, analyzing the data, introducing change based on that analysis, and again collecting data, is referred to as the improvement cycle.

Before choosing performance measures, a QI team first reviews its organizational topics of interest, as discussed in the previous section, ***What Are the Desired Improvements?*** In addition, it needs to consider parameters specific to its organization, such as, resources, constraints, and the population served. Good performance measures are always:

- **Relevant** and based on a condition that frequently occurs and/or has a great impact on the patients at their facility
- **Measurable** and can be realistically and efficiently measured with the facility's finite resources
- **Accurate** and based on accepted guidelines or developed through formal group decision-making methods
- **Feasible** and can realistically be improved given the capacity of the organization's clinical services and patient population

Once measures are identified, an organization then determines its data collection frequency and sampling. More frequent data collection allows an organization to focus its QI efforts more aggressively. Monthly data collection is suggested, but collection on a quarterly basis is adequate, if necessary. A more advanced discussion on data collection and sampling considerations can be found in the [Managing Data for Performance Improvement](#) module.

An organization's processes and procedures needs to be established for consistent reviews and analyses of the performance measurement data by the staff. The data is analyzed to identify trends and progress toward an organization's goals. This type of analysis also identifies opportunities for improvement, allowing the QI team to focus its efforts and ensure that system changes result in improvement. Additional information, including tools and resources to assist an organization with data analysis, can be found in the [Managing Data for Performance Improvement](#) module.

How Is Staff Organized to Accomplish the Work?

QI is a method for continuously finding ways to provide better patient care and services, and at its core, QI is a team process. Most QI initiatives benefit from having a team of individuals who are focused and accountable for clearly-defined improvement aims. Under the right

circumstances, a team applies the knowledge, skills, and perspectives of different individuals to make lasting improvements. A diverse QI team is even more effective, because its members bring their varying backgrounds, viewpoints and experiences to the QI process. A small QI team of six or fewer members also works well and is easier to manage. When recruiting new members for a team, selecting enthusiastic members who are interested in QI produces better outcomes. In a smaller organization, it is common for one individual to fill multiple roles on the QI team. A more advanced discussion on developing a QI team can be found in the [Improvement Teams](#) module.

How Can QI Models Be Leveraged to Accomplish Improvements Effectively and Efficiently?

After an organization identifies opportunities for performance improvement through data analysis, it then can make changes to the underlying system targeted for improvement. Using quality improvement (QI) models, either alone or in combination, is an effective approach for categorizing potential changes to an organization's system, and identifying changes that worked in other similar settings. QI models help an improvement team to focus on changes that have already proven to be effective, and they also provide guidance on different ways to approach change. This section provides a brief introduction to specific models that many health care organizations use to successfully shape their quality program infrastructures and guide their QI activities to improve care for their patients.

Introduction to QI Models

There are a variety of QI models currently in use and five are highlighted here. Two of the models highlighted, *Care Model* and *Lean Model*, provide a framework to improve patient care. The other three models, *Model for Improvement*, *FADE*, and *Six Sigma*, focus on processes that monitor the results of measures:

1. **Care Model:** There are six fundamental aspects of care identified in the Care Model, which creates a system that promotes high-quality disease and prevention management. It does this by supporting productive interactions between patients, who take an active part in their care, and providers, who have the necessary resources and expertise.
2. **Lean Model:** This model defines value by what a customer (i.e., patient) wants. It maps how the value flows to the customer (i.e., patient), and ensures the competency of the process by making it cost effective and time efficient.
3. **Model for Improvement:** This model focuses on three questions to set the aim or organizational goal, establish measures, and select changes. It incorporates Plan-Do-Study-Act (PDSA) cycles to test changes on a small scale.
4. **FADE:** There are four broad steps to the FADE QI model:
 - **Focus**—define process to be improved
 - **Analyze**—collect and analyze data
 - **Develop**—develop action plans for improvement
 - **Execute**—implement the action plans, and **Evaluate**—measure and monitor the system to ensure success

5. **Six Sigma:** Six Sigma is a measurement-based strategy for process improvement and problem reduction. It is completed through the application of the QI project and accomplished with the use of two Six Sigma models: 1) DMAIC (define, measure, analyze, improve, control), which is designed to examine existing processes, and 2) DMADV (define, measure, analyze, design, verify) which is used to develop new processes.

Note: Experts are beginning to combine Six Sigma and Lean models into the one term, Lean Six Sigma. This is because they both require a focus on analyzing processes, and use mapping as a means to achieve improvement.

While it is not essential for an organization to understand all of the QI models listed in this module, a thorough understanding ensures a more versatile approach to QI. Each QI model and method offers a systematic approach for assessing and improving care services.

How Is Change Managed?

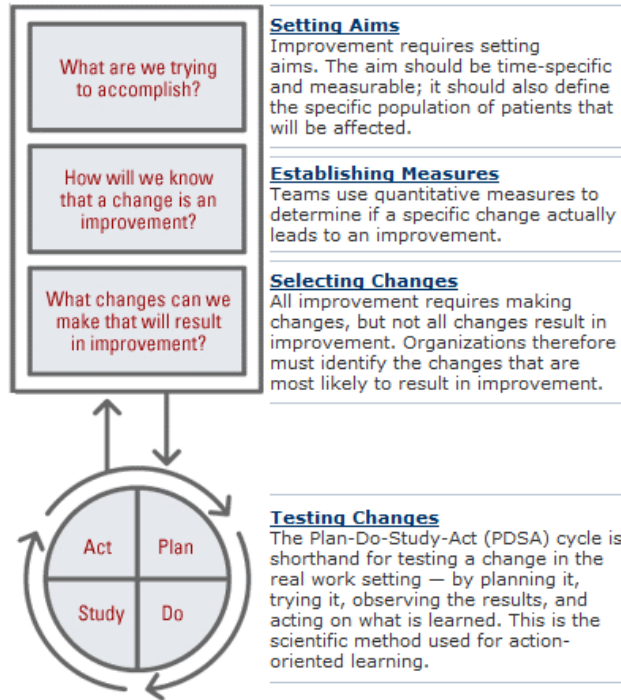
Improvement requires change, but not every change is an improvement. The approach used by most organizations is to adopt a strategy for managing change and train their staff to facilitate the improvement process. There are a number of change processes being used, including:

- Trial-and-error or jumping to solutions without sufficient study
- Extensive study of a problem which can lead to “analysis paralysis”
- Best practices by adopting someone else’s success
- Top-down—leaders decide what changes are made

All of these change strategies have pros and cons and work under certain situations. When dealing with the high stakes of clinical care, a prudent approach has gained popularity with QI teams around the globe. **The Model for Improvement** is a strategy to systematically and effectively manage change, which stemmed from the work of William Edwards Deming, also known as the founder of continuous QI. The model has two parts, which are depicted in **Figure 3.1: Model for Improvement:**

- Part 1 presents three fundamental questions, which can be addressed in any order:
 - *What are we trying to accomplish?*
 - *How will we know that a change is an improvement?*
 - *What changes can we make that will result in improvement?*
- Part 2 is the Plan-Do-Study-Act (PDSA) cycle to test and implement changes in real-work settings. The PDSA cycle guides the test of change to determine if the change is an improvement.

Note: It is important to note that the Model for Improvement, and associated techniques for small changes tested over time, is strongly encouraged as a change methodology.



Adapted from Institute for Health care Improvement (www.ihl.org)

Figure 3.1: Model for Improvement

Note: Testing changes is an iterative process; the completion of each test cycle leads directly into the start of the next cycle. A team learns from the test; i.e., What worked and what didn't work? What should be kept, changed, or abandoned? The team uses the new knowledge to plan the next test, and continues linking tests in this way, refining the change until it is ready for broader implementation.

Tips for Testing Changes

The following suggestions may be used for effectively testing changes:

- Keep the changes small but continue to test
- Involve care teams that have a strong interest in improving care
- Study the results after each change. All changes are not improvements, so discontinue testing of anything that does not work.
- If help is needed, involve others who do the work—even if they are not on the improvement team
- Ensure overall performance is improving; changes in one part of a complex system may adversely affect another

Part 4: Supporting the QI Program - Keep the Momentum Going

It can be challenging for an organization to implement changes and sustain improvement, plus people within an organization make and adapt to changes at different rates. The key for pacing change is to strike a balance between what is needed to move forward to timely achieve a goal with the organization's comfort level for change. A successful QI team frequently communicates its changes, challenges, and progress with all of its stakeholders affected by the improvement process. Informal communication is also effective, but formal communication in staff meetings, business meetings, newsletters, and other venues is critical during the improvement process.

How Is Performance Tracked Over Time?

Overall, an organization's goal is to improve care delivery and improve patient outcomes. As complex systems underpin the clinical care change, it is important to ensure an organization's performance is improving toward its goal. Performance is generally tracked on a monthly, or at minimum, a quarterly basis. A graphic depiction of performance over time assists an organization to know that its efforts are resulting in improved performance. Examples of data displays used by other organizations can be found in the [Managing Data for Performance Improvement](#) module.

Celebrating Success

QI focuses on improvement and involves both prospective and retrospective reviews; i.e., measuring where an organization is currently, then identifying opportunities to improve. A QI program is not intended for attributing blame, but rather for creating systems that prevent errors and improve health outcomes. QI activities are designed to improve how things work. While the process of finding where the system can be refined or new ways to do things can be challenging, the process can also be fun. QI activities provide an organization with opportunities to "think outside the box" and promote creativity and innovation.

Celebrating an organization's success as it moves through the QI program is also very important. A celebration acknowledges that something positive occurred. Often when involved in a QI program, a team feels it is accomplishing little. Celebrating each success helps to overcome that feeling. QI is challenging work, and a celebration breaks the routine and sparks creativity. Accomplishments are easier to remember when marked with celebrations. Taking the time to commemorate a team's achievements also makes it easier to recollect them when it is time to list those accomplishments, such as, in a grant or proposal.

A more advanced discussion of QI methods, models, and techniques, including tools and resources to support an organization's implementation of QI activities, can be found throughout the modules in this toolkit.

Part 5: References

1. The Institute of Medicine of the National Academics; <http://www.iom.edu/About-IOM.aspx>
2. Advances in Quality Improvement: Principles and Framework, Spring 2001 issue of the Quality Assurance Project's QA Brief
3. Performance Measurement: Accelerating Improvement (Pathways to Quality Health Care Services) (2006) Board on Health Care Services (HCS)

Part 6: Additional Resources

1. Introductory training on [Quality Improvement](#) provided by HRSA and developed by the Morehouse School of Medicine is available as pre-recorded audio and video modules in Real Player software format.
2. The Duke University and Medical Center Department of Family Medicine prepared a module, [What is Quality Improvement?](#) Inclusive of essential discussion and tools assisting providers and teams in their quest for QI.
3. The HRSA Office of Rural Health Policy (ORHP) assembled an extensive list of resources, [RHC Quality Improvement Resources](#), for organizations researching and preparing for QI.
4. Beck KL, Larrabee JH: A simultaneous analysis of nursing care quality and cost. *J Nurs Care Qual* 9(4): 63-71, 1995.
5. Flower J: The 13 errors. *Physician Exec* 24(6):52-54, 1998.
6. [HRSA HIV/AIDS Bureau \(HAB\) manual](#) reference here.
7. [Improving Chronic Illness Care: Overview of the Chronic Care Model](#) Presentation ([link to Improving Chronic Illness Care Web site for these tools](#)).
8. [Healthcare Communities](#) – Portal for Quality Improvement Library provided by HRSA contains an array of QI resources, change strategies, and tools that may be instrumental to organizations who may be designing a QI program. The searchable library can be accessed by entering words or phrases in the “Search For” box.
9. [The Migrant Clinicians Network](#) provides Web-based resources and tools that may be accessed and integrated into health care organizations implementing QI programs.
10. The Improvement Guide - A Practical Approach to Enhancing Organizational Performance. Langley, Gerald et al. San Francisco: Jossey-Bass. 1996
11. [NQC Quality Academy](#) - <http://nationalqualitycenter.org>
12. Deming WE. *The New Economics for Industry, Government, and Education*. Cambridge, MA: The MIT Press; 2000
13. National Quality Center, QAP, 2008, A Modern Paradigm for Improving Healthcare Quality
14. [NACCHO Continuous Quality Improvement Worksheet](#)
http://www.naccho.org/toolbox/toolbox/Continuous%20Quality%20Improvement%20Worksheet_1.pdf