Differentiating Quality Improvement Projects and Quality Improvement Research

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Chapter Objectives

1. Define quality improvement and the primary elements.
2. Differentiate between quality improvement projects and quality improvement research.
3. List considerations related to implementation science, translational science, and dissemination of both quality improvement projects and quality improvement research.

Key Terms

Innovation	Quality improvement	Value
Project planning		

Roles

Advocate	Leader

Professional Values

Evidence-based practice	Patient-centered care	Quality

Core Competencies

Assessment	Design	Management
Coordination	Leadership	Risk mitigation

Introduction

The Health Resources and Services Administration (HRSA, 2011) defines **quality improvement** as a systematic and continuous process that leads to measurable improvement in healthcare services and the health status of a targeted patient population. As a process for improving quality outcomes, strategies are employed in an intentional way to assure that there is flow from the gaps (needs assessment) to the planning, implementing, and evaluation phases. The Institute of Medicine (IOM, 2001) defines quality in health care as a direct relationship between the level of improved health services and the expected health outcomes

of individuals and populations. Quality improvement strategies are integral to projects that focus on safety, improvement, and **innovation**. Understanding of the basic principles of quality improvement and quality improvement research is the cornerstone of projects that are impactful and add **value**.

This chapter seeks to define quality improvement and identify the primary elements in the quality improvement cycle. How quality improvement projects and quality improvement research are differentiated is described as well. In addition, this chapter considers related improvement sciences, such as translational and implementation science.

Quality Improvement

Quality improvement requires thoughtful leadership in nursing as a major driver in advancing positive healthcare outcomes. Shewhart (1931) first studied quality from an industrial perspective, which led him to introduce concepts such as customer needs, reduction in variations in process, and elimination of the need for frequent inspections. Intrigued by Shewhart's work, Deming (1982) was able to determine that quality was a major driver for positive outcomes in industry; in turn, he introduced quality methodology to post–World War II Japanese engineers and executives. Deming's methods were strategically applied by the Japanese automobile industry, which enabled members of this industry—and other Japanese industries—to gain worldwide recognition for the quality of their products and services (Deming, 1982). Shewhart's and Deming's work on quality control has since informed the work of the Institute for Healthcare Improvement (IHI) and the Model for Improvement (MFI). The MFI is considered foundational to many of the quality models, such as Six Sigma, Lean Toyota, and the define–measure–analyze–improve–control (DMAIC) process (IHI, 2015a).

From the IOM's perspective, quality is considered within an organization's current system and is defined as how work gets done. Healthcare performance, however, is defined based on the organization's efficiency, care outcomes, and patient satisfaction levels. Quality is directly aligned with an organization's service delivery approach or underlying systems of care. Innovation is necessary

to achieve a different level of performance and improve quality. From a **project planning** and management perspective on improving quality, it is important to understand the principles underpinning quality initiatives. The IOM purports that while a quality project may be unique to the organization, all successful quality initiatives integrate four key principles:

1. Quality improvement work as systems and processes
2. Focus on patients
3. Focus on being part of the team
4. Focus on use of the data

Quality Improvement as Systems and Processes

If an organization is to make improvements, understanding its own delivery system and key processes are critical to beginning this work. Quality improvement approaches recognize available resources (inputs) and tasks carried out (processes), which collectively determine quality of care (outputs/outcomes). For example, inputs may include people, infrastructure, materials, information, and technology. Consideration is given to the professionals and providers within the system, as well as to the supplies and equipment needed to carry out the project.

Processes involve activities focusing on what is to be done and how the project will be carried out. Consequently, process-flow maps and concept maps are useful tools in illustrating the steps in carrying out the work. The process map, which comes to health care from engineering, provides a visual diagram that chronicles events or steps culminating in particular outcomes. The visualization of those steps provides a concrete look at how the work (processes) is carried out, as well as who is accountable for that work and how efficiently the work flows, and can illuminate areas for improvement. Knowledge of how work flows may indicate the need for redesign, and the proposed plan can be compared to previous processes that are not working. Tools and resources to assist in developing projects using process mapping as an improvement strategy can be found at the Institute for Healthcare

Improvement's website: http://www.ihi.org/education/WebTraining/OnDe mand/Pages/default.aspx.

Gaps in the process can lead to further explorations, such as through failure model effect analysis (FMEA). FMEA is a tool used for risk mitigation, which is essential to achieving safe, quality outcomes (IHI, 2015b). This type of analysis requires that each step (or process) be assessed for severity and frequency, with a hazard score being constructed to summarize these results. High hazard scores (8 or greater) alert the improvement team that emergent action is needed, particularly when the processes involve more than a single point, have few or no controls, and are not detectable (IHI, 2015c).

Outputs or outcomes may consider results or patterns such as health services delivered, changes in health behaviors and health status, and patient satisfaction. Health service delivery systems may be small, simple, and straightforward, such as a well-baby clinic, or multilayered and complex, such as a large corporate proprietary system. The efficiency and efficacy of the system depend on the services being individualized and attending to specific needs within the system. When the system considers the resources, activities, and results that exist and that are desired, quality improvement projects and programs can be customized to address unmet needs.

Focus on Patients

Patient-centered care is not a new concept; indeed, it has been reinforced as a competency for educating healthcare professionals in the 21st century (IOM, 2001). Patient-centered care evolved with resurgence of the holistic roots of health care, and initially had limited appeal given the complexity of the present healthcare system. Defined as engaging patients in a true partnership, patient-centered care involves personalizing care to include patients' normal routines and values. Such aims were considered daunting objectives when first introduced, and unrealistic at best. With increased technology and patient involvement, however, the creation of a healing physical environment, including one in which spiritual and emotional needs are met, has become mainstream practice.

So important is patient-centered care that the Hospital Consumer Assess-ment of Healthcare Providers and Systems (HCAHPS) created a patient survey that affords patients the opportunity to share information about their experi-ences with the healthcare system. In other words, this standardized tool assesses the way care is provided from the patients' perspective. Considering care from the patients' perspective takes into account more than just clinical treatment, medications, and technology. While core measures provide data that evaluate hospitals' care quality, at a minimum from a standard of care perspective, the patient experience is not necessarily taken into consideration when evaluating overall care delivery. HCAHPS considers aspects of the healthcare experience that patients report are important to them on a personal level, such as commu-nication with nurses and physicians, cleanliness and noise levels, pain control, and quality of discharge instructions and medication information. Publicly re-ported scores of individual hospital systems have health systems on high alert, given that patients can now compare the way care is delivered by various sys-tem and decide which is the best fit for them as individuals. With the advent of value-based purchasing, HCAHPS data have become increasingly important as a basis for reimbursement, further informing and advancing patient-centered care. Responding to these demands by delivering patient-centered care has also become an important business imperative.

The healthcare system's focus on patients is an important measure of qual-ity that considers the patients' needs and expectations. When a focus on patients is present, services are created and designed by paying attention to the following factors: 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 healthcare system; and cultural competence, including assess-ing health literacy of patients, patient-centered communication, and linguisti-cally appropriate care (HRSA, 2011).

Focus on Being Part of the Team

Quality improvement (QI) is a "team sport." QI as a team process denotes the importance of the team coming together to take advantage of the knowledge,

skills, experience, and perspectives of individual providers and professionals within the team to make sustainable improvements and produce innovations. Team effectiveness can happen when the following elements are in play: considering the process or system as complex; acknowledging that no one person in an organization knows all the dimensions of an issue; recognizing that the process involves more than one discipline or work area; advocating for solutions that require creativity; and realizing that staff commitment and buy-in are needed. All QI projects engage individuals as part of a team and implement QI as a team process. Projects such as improving time to referring providers, increasing patient engagement, reducing wait time, and ensuring providers' use of evidence-based guidelines are team efforts that can go far toward achieving sustainable improvements. Active involvement of team members is critical, as each individual skill set and contribution leads to a synthesis and synergy of ideas and solutions that would not have the same impact if they were implemented in isolation.

Another key component of a well-organized and functioning QI team is an effective infrastructure, such as leadership and policies/procedures that design and facilitate the work of the team. A strong infrastructure provides the team with tools, resources, clarity of expectations, and a medium for communication (HRSA, 2011).

Focus on the Use of Data

A centerpiece of QI is the use of data. Data can be used to determine how effectively current systems are working and what occurs when changes are applied, and to document successful performance. By using data, the team is able to accomplish a number of tasks. First, the QI team members are able to separate what they believe is happening from what is actually happening within the system. A baseline can then be established to determine which, if any, changes made would be an improvement. It is likely that baseline scores will be low (this is acceptable), so the aim is to improve the rates and scores (e.g., patient satisfaction, falls, pressure ulcers, wait times, restraint use). By tracking data and comparing the baseline to the post-intervention data, the team can determine

the efficacy of solutions; likewise, by monitoring procedural changes, it can evaluate whether improvements are sustained over time. In this way, data serve as powerful sources by which to determine whether the changes made led to improvements, and they allow for comparisons of performance across sites.

Quantitative and qualitative methods of collecting data are essential to QI projects. The use of numbers (rates, scores) and frequencies represents a quantitative research method that results in measurable data. Statistical process control, for instance, provides a wealth of information that can measure efficiency in care delivery. Examples include calculating how frequently patients access the emergency room and receive adequate health screenings. While numbers, rates, and frequency provide excellent ways to measure improvement efforts, the use of qualitative methods sheds light on the depth and breadth of the experience of care delivery. Data that are qualitative in nature are observable (not measurable), consider patterns and relationships between systems, and are contextual in nature. Qualitative methods may include patient and staff satisfaction surveys, focus groups, interviews, and participant-observation experiences.

Healthcare organizations can obtain data from a number of sources, including health records, patient and staff satisfaction surveys, external evaluations from accrediting and regulatory agencies, and community assessments. Using data sources in a methodical way within the infrastructure of an organizational system illuminates opportunities for improvement and allows for ongoing monitoring. Standardized performance measures focus on specific data for QI programs. Healthcare organizations are encouraged to collect data on performance measures that are impactful and add value to both the patient experience and the overall operation of the healthcare system. Such outcomes should guide the organizations' decisions regarding which data are collected and measured.

Quality Improvement Programs and Quality Improvement Research

With a QI program, the QI team considers the systematic activities that are designed and implemented to monitor, assess, and improve the organization's quality of health care for the population it serves. Higher levels of performance

are reflected upon when reviewing the cyclical activities that are implemented to optimize resources and services for the patients served. There is a creative tension between innovation, sustained improvement, and ongoing delivery of evidence-based standards of care. Organizational QI programs incorporate all QI activities within the healthcare system.

The Donabedian model of structure, process, and outcomes provides a theoretical framework for integrating quality improvement strategies within the system (Donabedian, 1988). Leadership and interdisciplinary teams are essential to sustained quality improvement programs. Likewise, knowledge of the infrastructure and the principles of quality improvement is foundational to a successful QI program. Leaders ask the question of how QI processes work to support the success of the QI program. A number of benefits can be achieved from implementing a QI program, including improved patient (clinical) outcomes that focus on process outcomes (screenings) and health outcomes (blood glucose and blood pressure readings within normal parameters). Other benefits of QI programs are improved efficiency of managerial and clinical processes, such as reducing waste and maintaining financial viability.

According to HRSA, by improving processes and outcomes that reflect high-priority health needs, a system is able to reduce costs associated with system failures and redundancy. QI processes are typically budget-neutral, meaning that the costs incurred to make the changes are offset by the savings obtained through those efforts. QI programs put proactive processes in place and solve problems before they occur, making sure that systems of care are consistent, reliable, and predictable. These actions can go far in creating a culture of improvement, as they ensure that errors are tracked, reported, and addressed. Critical issues are often resolved because greater attention is paid to monitoring improvement initiatives and variations in standards of care. With a culture of improvement in place, communication is enhanced both within the system and among community organizations. Improved communication focused on quality may result in stronger clinical partnerships and open up funding opportunities. An effective QI program can result in a balance of quality, efficiency, and profitability in its achievement of organizational goals (HRSA, 2011).

Quality Improvement Research

QI projects may come under the federal definition of research, and may require institutional review board (IRB) review and approval if they involve human participants or individually identifiable data. QI programs and QI research should not pose any risk to individuals, infringe on individual privacy, or breach individual confidentiality (*Institutional Review Board Guidebook*, 2015). Research in this context is defined as follows:

> 45 CFR 46.102(d) of the federal regulations defines research as a systematic investigation, including research development, testing and evaluation designed to develop or contribute to generalizable knowledge.

One characteristic that distinguishes a QI program from QI research is whether the activities are intended or created to develop or contribute to generalizable knowledge. Results or research findings, when they are generalizable knowledge, can be applied to populations or situations beyond those being immediately studied. When quality improvement initiatives are not intended to yield generalizable knowledge, IRB review is not mandatory.

In contrast, QI research that is planned in advance to go beyond the scope of the unit, department, or services would require IRB approval. For example, the QI team may want the results from its analysis and the interpretation of its quality initiative to be disseminated across a larger scope and to a broader community of scholars. In other cases, quality improvement research may be intended for application beyond the current quality control efforts or improvements, as when new procedures or processes are shared with a larger audience (outside of one system).

If at least one of these descriptions of QI research applies to the team's QI plan, the next consideration would be whether the proposed activities and strategies are a systematic investigation. When applying the concept of systematic investigation, the team would determine whether information beyond what is routine for patient care will be collected. For example, adding surveys or more data collection through qualitative means, which is typically not part of routine care delivery, would go beyond a QI program. Another consideration with a systematic investigation would be to determine if the team will be assessing the effectiveness

or processes or procedures and comparing two or more treatments, interventions, or processes. When such comparison is contemplated, and manipulation is done to determine if one practice is better, the effort would qualify as QI research. When QI activities entail a systematic investigation that will develop or contribute to generalizable knowledge, per 45 CFR 46.102(d), IRB review is mandatory.

At the outset, many QI projects have only local (organizational) assurance/improvement intentions; during the process of data collection or analysis, however, it may become clear that the findings could be generalizable or benefit others. In such a case, IRB review should occur—that is, IRB review is necessary whenever there is an intention to make findings generalizable**.**

Quality Improvement and Beyond

While nurses are the largest subgroup in the healthcare system, they lack representation on decision-making bodies. QI activities can increase nurses' influence and involvement in decision making at the policy level. A Gallup survey conducted by the Robert Wood Johnson Foundation, titled "Nursing Leadership from the Bedside to the Boardroom: Opinion Leaders' Perception" (Gallup/Robert Wood Johnson Foundation, 2010), reported that the persons surveyed considered government executives (75%) and health insurance executives (56%) as being able to exert more influence on health reform than nurses, whom they ranked as having only 14% influence (Khoury, Blizzard, Moore, & Hassmiller, 2011). These numbers demonstrate that nurses, especially those in positions of authority, need to encourage the development of leaders within the profession and advocate for interprofessional QI team activity. Quality improvement programs provide an excellent opportunity for nurses to become involved in sustainable changes and policy development.

Beyond QI's immediate impact and results, consideration should be given to dissemination of both QI projects and QI research. Translational science, including improvement and implementation sciences, is also important to developing QI science.

Healthcare providers and consumers of health care are becoming more aware that research results that may have broad application do not always

readily translate into improved health outcomes. The implementation and dissemination of research and science rely on a multidisciplinary set of theories and methods aimed at improving this process of translation from research evidence to pragmatic health-related practices. Implementation research, in particular, investigates how interventions can best be integrated into diverse practice settings and underscores direct engagement with the institutions and communities where health interventions are introduced. Team science and organizational and cultural perspectives are also integrated into translational science, as the gold standard of research (randomized controlled trials) often does not take into account the details necessary for application of findings.

Disseminating QI projects and research can take many forms, such as local stakeholder engagement; poster and podium presentations at regional, national, and international venues; and publication of manuscripts that share findings obtained, barriers overcome, and lessons learned. An excellent resource for dissemination of results is the Agency for Healthcare Research and Quality's (AHRQ) Health Care Innovations Exchange (https://innovations.ahrq.gov). The Innovation Exchange is a web-based resource created to assist healthcare professionals in sharing and adopting innovations that improve healthcare quality. The website includes a clearinghouse of innovative ideas and opportunities to learn and share ideas with others.

Using research evidence to develop evidence-based practice guidelines is also important in the application and translation process of QI projects and research. The National Guidelines Clearinghouse (NGC) is another initiative of the Agency for Healthcare Research and Quality. It was originally created by AHRQ in partnership with the American Medical Association and the American Association of Health Plans (now America's Health Insurance Plans [AHIP]). The mission of the NGC is "to provide health professionals, healthcare providers, health plans, integrated delivery systems, purchasers, and others with a readily usable mechanism for accessing objective, detailed information on clinical practice guidelines and to further their dissemination, implementation, and use" (http://www.guideline.gov/about/index.aspx).

QI projects and research can also be disseminated through manuscript submissions. A useful tool in writing up QI projects is the Standards for Quality

Improvement Reporting Excellence (SQUIRE) guidelines. According to its sponsoring organization (http://squire-statement.org/), the SQUIRE guidelines assist authors in writing up excellent, usable articles about quality improvement in health care. The guidelines serve as a way to report findings that may be easily discovered and widely disseminated. The SQUIRE website notes that high-quality writing about improvement, lists of available resources, and discussions about the writing process can enhance dissemination and adoption of best practices. Sponsors of the SQUIRE guidelines include the Dartmouth Institute for Health Policy and Clinical Practice, the Robert Wood Johnson Foundation, Quality and Safety in Healthcare, and the Institute for Healthcare Improvement.

QI projects and research can also be shared through the Honor Society of Nursing, Sigma Theta Tau International. Its e-Repository hosts communities and collections that can be accessed and applied in practice, as well as a method of disseminating quality projects and research. According to the website, the Henderson Repository, a resource of Sigma Theta Tau International, offers the following benefits:

- *Online dissemination.* This global digital service collects, preserves, and shares nursing research and evidence-based practice materials.
- *Free open access.* There is no charge to submitting nurse authors and no access fee for online patrons.
- *Peer review.* Submissions to collections under the Independent Submissions community are peer reviewed (http://www.nursinglibrary.org/vhl/).

Dissemination of evidence and information takes many forms, and methods for quality improvement and quality improvement research can be shared with many colleagues through these means. Evidence-based journal clubs and clinical scholars programs are other ways to raise the level of conversation, create a spirit of inquiry, and enhance the culture of improvement in health care.

Summary

- Quality improvement projects and quality improvement research share common aims for making healthcare systems safe and quality-driven.

- Leading a quality team that is focused on patient-centered care and using data to inform the process are essential to the work of clinical nurse leaders, executive leadership students, doctors of nursing practice (DNP), and highly functioning interprofessional project teams.
- The foundational work for the development of quality improvement projects and research is key to sustaining success over the long term.

Reflection Questions

1. Describe quality improvement projects you are currently involved in as part of your practice immersion experience.
2. Access the AHRB Innovation Exchange, and select an innovation that best aligns with your quality improvement work. How you are able to use the evidence and strategies described for the innovation?
3. Access the National Clearinghouse Guidelines (NCG). Which guideline can you adopt in providing evidence-based care with your own patient populations?

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Case Exemplar

■ CASE STUDY 1

Quality Teams Approach to Discharge Planning

Terri Poe

A team of doctor of nursing practice (DNP) students engaged their quality team at their practice site to improve discharge planning by reducing non-value-added activities. The students, working together as a team of acute care nurse practitioners (ACNPs), noted a pattern of increasingly long waits for patients to be transferred to another level of care. To confirm that the pattern they experienced was a "true gap," they engaged their team members, the quality committee, and the chief nurse executive (CNE) to share their concerns. To obtain data to examine the outcomes, they were required to submit a question and begin a search of the external evidence. Through their translational courses, the students were able to step through the quality improvement process, beginning with obtaining internal data through a microsystems analysis and a failure mode effect analysis (FMEA), identifying a gap, searching for external evidence (synthesizing the research), and working with the Model for Improvement to begin small test of change. As they progressed in their quality improvement work, they were able to bring team members along by charting a team, examining the process (through a process flow map), and using plan–do–study–act (PDSA) as a methodological framework for their scholarly project.

Reflection Questions

1. How can faculty best assure that doctoral students and interprofessional teams consistently go through a quality improvement process in which they will be able to engage their local stakeholders?
2. After completing the first iteration of the PDSA method, what would you suggest is the best way for doctoral students and teams to disseminate their results from the first cycle?

■ CASE STUDY 2

Action Plans as an Effective Asthma Management Tool:
A Proposed Quality Improvement Project

Heather Surcouf

Asthma affects more than 22 million Americans. Asthma exacerbations lead to missed school, low quality of life, missed days on the job, hospitalizations, and emergency room visits. Multiple studies support asthma action plans (AAPs) as effective tools for asthma management.

At one school-based health center in Louisiana, the AAP completion rates declined markedly after adoption of an electronic health record (EHR). A project utilizing electronic health record reminders to prompt providers to complete asthma action plans has been proposed. These reminders will be set to "pop up" in the EHR when an AAP is due. The provider will have to record which action is taken (e.g., AAP completed, rescheduled, cancelled) to move beyond this pop-up. These reminders will automatically reset to appear on a yearly basis. The project relies on the Donabedian Model of Quality Care for theoretical structure. The Deming cycle and plan–do–study–act (PDSA) method of quality monitoring will also be used to assure continued quality improvements.

Specific project goals include the following: (1) increased provider AAP completion rates, (2) continued Office of Public Health clinic funding secondary to AAP benchmark satisfaction, and (3) reduced asthma exacerbation–related clinic visits. Congruent with the guidelines of the American Association of Colleges of Nursing (AACN), and advanced nursing practice (DNP Essentials)*,* this project will evaluate provider use of information systems and technology to support and improve patient care using the AAP (AACN, 2006, p.12).

Records of patients with asthma (ages 14–21) will be audited both before and after project implementation for the presence of a completed, up-to-date asthma action plan. Pre-implementation data and post-implementation data for two separate 9-month periods will be compiled through a retrospective review of the electronic records of patients seen in the clinic for a 9-month period prior to the study and for a 9-month period after the study's implementation, based on their diagnosis of asthma (ICD-9 codes 493.00 to 493.92). Records included for review will be determined through the electronic record's reporting

program. Results will be tabulated using a frequency table (i.e., the number of patients with asthma with a completed AAP and the number of patients with asthma without a completed AAP). A second frequency table will be used to tally the number of asthma-related visits for the same study periods using identical ICD-9 codes. Lastly, providers will be given an anonymous survey before and after the intervention to gauge their familiarity with EHR reminders as well as their opinion regarding their effectiveness.

Reflection Questions

1. What is the value of an action plan in managing clinical symptoms?
2. How can medical record reminders promote patient-centered care delivery?
3. Identify tools that are useful in implementing quality improvement projects. Which of the tools are most useful when developing and implementing projects?

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