CHAPTER 2

Factors Influencing the Application and Diffusion of CQI in Health Care

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Change is not merely necessary to life — it is life.
—Alvin Toffler (Futurist)

Continuous quality improvement (CQI) has gained acceptance within all sectors of health care and across geographic and economic boundaries. It has evolved as a global strategy for improving health care in a variety of settings, spanning a broad number of issues and improving services to a variety of customers ranging from individual patients to communities. The range of applications covers not only direct patient care in primary care or hospital settings, but also disease prevention and population initiatives—such as HIV, childhood obesity, and influenza vaccination programs—under the domain of public health agencies at the local, national, and international levels. These applications are characterized by continuous, ongoing learning and sharing among disciplines about ways to use CQI philosophies, processes, and tools in a variety of settings. New applications continue to emerge, but at the same time, there are new challenges to the broad application of CQI. In this chapter, we examine the factors and processes that facilitate or impede the implementation of CQI as a dynamic programmatic innovation within a health care setting.

While many of the barriers to more rapid adoption of CQI in health care were reduced during the first decade of the 21st century, we continued to face many challenges to the widespread adoption of CQI. Some of these challenges were due to the scientific method—for example, the definition of evidence-based practice and how it varied across different areas of health care, with medicine perhaps being the most rigid due to an over-emphasis on randomized, controlled trials. Satterfield et al. (2009) reviewed this issue, noting that the interdisciplinary nature of health care research requires a new broader definition of evidence-based practice. This broader model represents a transformation in thinking that might increase the flexibility and the range of methodologies that are used to make scientific
decisions, for example through the greater use of quasi-experimentation, and one effect of this model’s adoption might be an increase in CQI initiatives. Other transformations that have occurred include the greater emphasis on translational research and the introduction of implementation research (see Chapter 3).

Since 2010, progress in CQI has been made at the system level in the United States, as a direct consequence of national initiatives including, but not limited to, the Affordable Care Act (ACA), which includes incentives that could serve as a catalyst for innovation such as those directed at lowering hospital acquired infections; and the implementation of new care models such as “primary medical care homes” (Somander, 2015). Also since 2011, the National Quality Strategy has been in place in the United States; this initiative, led by the Agency for Healthcare Research and Quality (AHRQ) is a transdisciplinary strategy to improve quality of care (AHRQ, 2017). Another major factor influencing system-wide CQI implementation, especially in public health, has been accreditation initiatives (see Chapters 11 and 12). Also noteworthy on a global scale has been progress made to expand CQI at a greater pace in resource-poor countries (see Chapter 13).

While progress has been made in understanding and implementing CQI, new challenges have arisen, and old challenges persist. For example, despite incentives for prevention, significant challenges remain in reducing medical errors; these are addressed further in Chapters 9 and 10. And some of the advances in technology, which are intended, at least in part, to facilitate greater adoption of CQI at the system level, have had a negative effect on individual health care providers’ motivation to implement CQI. These include the more widespread use of electronic health records and electronic patient satisfaction surveys; these are discussed further later in this chapter as well as in Chapter 4. As a result, some important questions remain about the adaptation and diffusion of quality improvement methods, especially in regard to the central role of individual health care providers. These include questions such as:

- Why aren't more health care providers using CQI tools and processes?
- Why is the gap between knowledge and practice so large?
- Why don't clinical systems incorporate the findings of clinical science or copy the “best known” practices reliably, quickly, and even gratefully into their daily work simply as a matter of course?

The answers to these questions, which have been raised by CQI leaders such as Dr. Brent James (Leonhardt, 2009) and Dr. Donald Berwick (2003), are multifaceted. Central to this issue is the question of how to influence practitioners to adopt new ideas and the broader topic of diffusion of innovation in health care.

The remainder of this chapter will address several questions:

- What is the current state of quality in health care, and what are the problems regarding implementation of CQI in health care?
- Given the widespread application of CQI in recent years, what are the factors that contribute to the implementation of CQI across industries and settings?
- Specifically for our application in health care, what are the factors that have influenced the rate of diffusion and spread of CQI in health care?
- What steps are needed to develop a culture in health care where CQI is the norm?

The Current State of CQI in Health Care

There has been progress in improving quality and safety of patient care since the publication of the Institute of Medicine’s landmark reports.
To Err Is Human (IOM, 2000) and Crossing the Quality Chasm (IOM, 2001). Although there is evidence that there are global trends leading to ongoing improvements in health care, an earlier assessment of the state of health in the United States (Swensen et al., 2010, p. e12[1]) still persists today:

U.S. health care is broken. Although other industries have transformed themselves using tools such as standardization of value-generating processes, performance measurement, and transparent reporting of quality, the application of these tools to health care is controversial, evoking fears of “cookbook medicine,” loss of professional autonomy, a misinformed focus on the wrong care, or a loss of individual attention and the personal touch in care delivery. …

Our current health care system is essentially a cottage industry of non-integrated, dedicated artisans who eschew standardization. … Growing evidence highlights the dangers of continuing to operate in a cottage-industry mode. Fragmentation of care has led to suboptimal performance.

These statements were made at a time when the United States was launching the most major health reform in its history, the ACA, amid great opposition—opposition that still continues today. The challenge of the coming years continues to be how to build on the gains that we have made in the past and how to fix what many still consider a broken system.

Rather than assume that we have any easy answers—which we do not—some time will be devoted in this chapter to examples of successes, with a particular focus on CQI philosophies and processes, as models of how to generalize these successes more widely. Hopefully this will give us some direction toward a set of ideas to expand the implementation of CQI across a broader range of providers.

Dr. Brent James, former Executive Director of the Institute for Health Care Delivery Research and Vice President of Medical Research and Continuing Medical Education at Intermountain Health Care, in an interview with the New York Times, gave several examples of how Intermountain Health Care led the way to value-based care through the use of CQI processes. He identified the lack of widespread change as being directly related to the complexity of the health care system; a clear symptom of the depth of problems that persist is that the American health care system is vastly more expensive, but not vastly better, than the health systems of other countries (Leonhardt, 2009).

Intermountain Health Care has also led the way to the future by implementing innovations that are rooted in past philosophies and processes of CQI, most notably Deming’s process management theories. In a 2011 report, they demonstrated the basic CQI principle that the most effective way to reduce health care costs is to increase quality, using methodologies that are sustainable and generalizable to the entire nation, and which could facilitate the greater and more effective implementation of the ACA (James & Savitz, 2011). (Further details and ideas for academic discussion of the process for achieving success at Intermountain Health Care can be found in a case study describing the “Intermountain Way to Positively Impact Costs and Quality” [Savitz, 2012].)

Dr. Donald Berwick founded the Institute for Healthcare Improvement (IHI) more than 25 years ago and has also served as Administrator of the Centers for Medicare and Medicaid Services (CMS). In 2003, he noted “Americans spend almost 40% more per capita for health care than any other country, yet rank 27th in infant mortality, 27th in life expectancy, and are less satisfied with their care than the English, Canadians, or Germans” (Berwick 2003, p. 69).

Two of the important issues at the heart of this problem, complexity and cost, were also key factors in the debate about health reform in the United States in 2009; they are also contributors to the explanation of why CQI has not been
more widely adopted. He also addressed the issues of complexity and cost in his introduction of the Triple Aim of health care, to be discussed in greater detail later in this chapter (Berwick, Nolan, & Whittington, 2008).

The complexity of the health care system is both a challenge and a source of ideas for how to make improvements (Plsek & Greenhalgh, 2001). Health care can be described as a complex adaptive system, a concept that has implications for how to improve the system. For example, the importance of leadership is critical, as are incentives for improvement. As a complex adaptive system, health care can only be designed to a certain extent and cannot be designed around minimizing costs; rather, the focus must be on maximizing value (Rouse, 2008; Spath & Kelly, 2017).

▸ CQI and the Science of Innovation

While health care is unique in many ways, one commonality that it has with other complex endeavors is the difficulty surrounding diffusion of innovation, starting with simple resistance to change but including many other complex factors. Understanding these issues helps to provide pathways toward greater diffusion of CQI in health care. The research and principles that are specific to diffusion of innovation of health services are summarized in a systematic review of the literature presented by Greenhalgh et al. (2005). From this review, it is noted that there is a wide range of literature using a variety of concepts and approaches that describe how to move along the spectrum from the initiation of a concept for change to the spread, diffusion, and institutionalization of innovation.

Diffusion theory is useful in understanding the factors that thwart or support the adoption of CQI in health care. Because of the complexity of health care and the added complexity of CQI, as alluded to earlier in this chapter, there are no simple answers about how to move CQI innovations into the mainstream of health care more quickly and efficiently. Complexity must be considered in understanding innovation. Although there are competing theories about how and why, innovation clearly does happen in “complex zones.” There is some evidence that while innovation may not be susceptible to being managed, it is possible to design and control organizational conditions that “enhance the possibility of innovation occurring and spreading” (Greenhalgh, Robert, Bate, Macfarlane, & Kyriakidou, 2005, p. 80). Addressing this complexity requires, first and foremost, leadership, but also the creation of a receptive and even enthusiastic culture; one excellent example of how this has been accomplished in CQI in health care is the formation of quality improvement collaboratives, such as the SURPASS collaborative group, which among many accomplishments includes the successful application of surgical checklists to improve patient safety (de Vries et al., 2010).

The speed and overall adoption of any change, including CQI, can be influenced by the characteristics of the change and how it is perceived by those responsible for implementation. These characteristics include relative advantage, compatibility, simplicity, trialability, and observability (Rogers, 1995). All of these characteristics relate to changes and improvements in health care, and two are particularly relevant to health care: compatibility, which relates to how closely the change ideas align with the existing culture and environment, and trialability, which addresses how the changes can be adapted and tested in the new environments in which they are being spread.

A further extension of these change concepts yields the following seven rules for dissemination of innovation in health care (Berwick, 2003):

1. Find sound innovations.
2. Find and support innovators.
3. Invest in early adopters.
5. Trust and enable reinvention.
6. Create slack for change.
7. Lead by example.

All of these rules are applicable to innovations around CQI; leadership, trust, and reinvention are fundamental. Reinvention has to do with the cross-disciplinary learning concept that has permeated CQI and is responsible for its evolution across industries and across the globe. CQI cannot be a top-down mandate. It must be part of the vision of an organization and accepted by all who must implement CQI, thus requiring trust at all levels, which comes from leadership, teamwork, and Deming’s concept of “constancy of purpose.” Top leadership must be involved, supporting and communicating the vision for innovation and change; however, participation, buy-in, and support from opinion leaders at all levels within an organization are critical for successful implementation and the process of reinvention.

One size will not fit all. As described by Berwick, “To work, changes must be not only adopted locally, but also locally adapted” (2003, p. 1974). Berwick asserts that for this to happen, there must be reinvention. In his words, “Reinvention is a form of learning, and, in its own way, it is an act of both creativity and courage. Leaders who want to foster innovation … should showcase and celebrate individuals who take ideas from elsewhere and adapt them to make them their own” (Berwick, 2003, p. 1974).

The checklist tool cited in Chapters 1 and 8 of this book is a clear illustration of this process of reinvention and leadership. It was adapted from the airline and other industries, first to intensive care and later to surgery, with trusted leaders in their fields and disseminating their ideas and successes via scientific venues. The fact that these evidence-based tools are not fully accepted and used returns us to the point that health care is complex and requires diligence to spread the improvement process. The systematic review of diffusion of innovation in health services identifies complexity as one of the key elements that is inversely associated with successful diffusion. Quite often, due to the complex nature of health care systems, equally complex quality improvement strategies are required, thus lessening their quick and easy adoption. This helps to explain why simpler quality improvement processes, such as the use of PDSA cycles, have enjoyed broad success. But other factors may need to be considered to overcome resistance to changes in health care procedures and understand how these changes truly lead to improvements (Langley et al., 2009). For example, a prospective study of the attributes of 42 clinical practice recommendations in gynecology (Foy et al., 2002) helps to explain what these factors may be. After review of almost 5,000 patient records, findings indicate two relevant outcomes that explain why there may be unexpected resistance to change. First, recommendations that were compatible with clinician values and did not require changes to fixed routines were associated with greater compliance. Second, initial noncompliance could be reversed after audit and feedback stages were carried out, indicating that perhaps more time will yield greater compliance. This is especially to be considered when evaluating improvements in outcomes (vs. processes), which may require more time and repeated cycles of process changes to take hold and be sustained.

The techniques and philosophies described throughout this book provide some other examples of progress that has been made in specific segments of health care and also describe models that can be considered to increase diffusion of CQI ideas. For example, social marketing has been documented as being an effective tool for understanding ways to improve the impact of innovations in health care in general (Greenhalgh et al., 2005). In Chapter 8 of this text and in an illustrative case study (Brelend, 2012), a novel social marketing approach is...
proposed as a technique for increasing compliance with use of surgical checklists and other CQI innovations.

The Business Case for CQI

Health care delivery systems are large, decentralized, and complex, yet at their core they involve a fundamental personal relationship between providers and patients. Moreover, if this were not a sufficient challenge, rapid and uncertain changes in the structure and processes of providing and paying for care make measuring the effect of any single management intervention over time very difficult, if not impossible. Although evidence has been accumulated from both controlled trials (Goldberg, Wagner, & Finh, 1998; Mehta et al., 2000; Solberg, 1993) and survey data (Shortell, Bennett, & Byck, 1998) on the implementation process and perceived impact, much of the evidence remains anecdotal (Arndt & Bigelow, 1995; Bigelow & Arndt, 1995). Leatherman et al. (2003), for example, argue that the “business case” for quality improvement is yet to be proven, even while evidence mounts for the overall societal and economic benefits:

A business case for a health care improvement intervention exists if the entity that invests in the intervention realizes a financial return on its investment in a reasonable time frame, using a reasonable rate of discounting. This may be realized as “bankable dollars” (profit), a reduction in losses for a given program or population, or avoided costs. In addition, a business case may exist if the investing entity believes that a positive indirect impact on organization function and sustainability will accrue within a reasonable time frame. (p. 18)

These arguments continue; the economic case includes the returns to all the actors, not just the individual investing business unit. The social case, as they define it, is one of measuring benefits, but not requiring positive returns on the investment. That has been overriding the consideration in the battle to control medical variation and medical errors (McGlynn, Asch, & Adams, 2003). The business case for quality improvement suffers from the same negative factors as the business case for other preventive health care measures—namely, all or part of the benefits accruing to other business units or patients, and delayed impacts that get discounted heavily in the reckoning (Leatherman et al., 2003). The regulatory arguments for quality improvement efforts have generally been justified on the basis of social and economic benefits such as lives saved and overall cost reductions, but these arguments are not necessarily profitable to the investor. These authors also present a whole array of public policy measures that would overcome the barriers to a positive business case and encourage wider and more assertive implementation of quality improvement methods. Clearly, economics alone does not provide an argument strongly for or against the use of CQI, but it does add to the complexity that pervades the wider and more rapid implementation of CQI in health care.

In summary, this brief overview indicates that a strong business case for CQI in health care cannot be made. Looking back over the past 40 years, Robert Brook, UCLA Professor of Medicine and Health Services and Distinguished Chair in Health Care Services for the RAND Corporation, observes, “Although there are some examples in the literature to support the concept that better quality of care is less expensive, few studies have produced information that could be generalized across time and institutional settings” (Brook, 2010, p. 1831). Building on the traditional business concepts that have been discussed and in consideration of the limited evidence to support the business case for CQI, a transformation that may...
support greater diffusion of CQI and the continuing need to bridge the quality chasm is to consider a more value-based approach to CQI in health care. This approach argues for simultaneous goals of higher quality and lower cost, which will only be achieved when there is a reorientation among CQI proponents that includes a thorough understanding of how to achieve a positive return on investment (Brook, 2010). This view is consistent with the Triple Aim of Health Care described by Berwick, Nolan, and Whittington (2008) and its most recent recommended enhancement, the Quadruple Aim (Bodenheimer & Sinsky, 2014); it will be discussed in greater detail in the final chapter of this text (Chapter 14), which will address future quality trends in health care.

**Factors Associated with Successful CQI Applications**

Despite the need for greater diffusion of CQI in health care, much progress has been made, suggesting a broad array of factors that can be associated with successful CQI implementation. The key to greater diffusion is understanding and emphasizing those factors that work while exploring new concepts, such as the value focus described previously. This analysis starts with regulatory (e.g., accreditation) factors and organizational factors such as leadership, organizational culture, and teamwork; and finishes with individual providers’ internal/intrinsic motivation, perhaps the most important factor for adoption of innovations and CQI.

**Capturing the Intellectual Capital of the Workforce**

Industrial managers are increasingly recognizing that frontline workers know their work processes better than the management does. Therefore, management encourages workers to apply that knowledge and insight to the firm’s processes. This is especially true in health care, where the professionals employed by or practicing in the institution control the technological core of the organization. Management that does not capitalize on this available pool of professional and specialized knowledge within the organization is naive at best.

**Reducing Managerial Overhead**

Some companies have been able to remove layers of management as work groups have taken responsibility for their own processes. Health care organizations are actually already limited in the number of staff positions, mostly because the professionals, rather than the corporate staff, have clinical process knowledge. Indeed, one might view the new investments in CQI as a catching-up process for the lack of process-oriented staff that are involved in process enhancement in most other industries. This is but another example of how the incentives in health care are misaligned. Since physicians are not employees in most community hospitals, they are not at risk when processes are suboptimal, unless the situation is so bad that it prompts a lawsuit.

**Lateral Linkages**

Health care organizations are characterized by their many medical specialties, each organized into its own professional fiefdom. Specialization is just one response to an information overload in the organization (Galbraith, 1973). By specializing, each unit tends to learn more and more about less and less. One way to offset the effects of this specialization is to provide lateral linkages—coordinators, integrating mechanisms—to get the information moving across the organization as well as up and down the chain of command (Galbraith, 1973; Lawrence & Lorsch, 1967). So far, that has proved very difficult in health care institutions. CQI, through its use of interdisciplinary teams and its focus on a broader definition...
of process and system as it affects customers rather than professional groups, presents one way to establish linkages. The technology of CQI focuses as much on coordination of the change process as on its motivation. In modern medicine, as practiced in the 21st century, this coordination and motivation of CQI is bolstered by the need for greater coordination in medical care in general and is therefore quite natural. There is a greater emphasis on interdisciplinary care, which leads to fostering interdependence and, in turn, better teamwork, including greater employee engagement and improvements in the patient experience and the financial performance of practices (Swensen et al., 2010).

**Regulatory Agencies and Accreditation**

Regulatory mechanisms such as accreditation are key factors that have led to greater diffusion of CQI and will continue to do so in the future as a direct result of mandated measurement and improvement of the quality of care. Chapter 12 will provide a broad overview of accreditation and its impact across the globe, but for the purposes of this discussion, a focus on the United States is illustrative.

In the United States, the efforts of The Joint Commission (TJC) and CMS have led to the implementation of a series of initiatives that require hospitals to report on quality measures; after a period of strong resistance, routine reporting of key metrics is now commonplace and required for accreditation by TJC; and has been reinforced by provisions in the ACA (Somander, 2015). Also, as described in Chapters 11 and 12 of this text, accreditation initiatives at the national and state levels have served as an impetus for CQI in public health agencies in the United States. The local health department accreditation system in North Carolina also serves as an example of CQI innovation at a state-wide level, as it was one of the first states to implement mandatory public health accreditation, which has led to sustainable CQI efforts (Stone & Davis, 2012).

Likewise, CMS generates extensive CQI activities and associated reporting of findings via the efforts of Quality Improvement Organizations (QIOs). QIOs represent a clear example of diffusion of CQI in health care and continue to play an important role in ensuring the highest quality of care to the millions of beneficiaries covered by Medicare in the United States. QIOs are a clear example of diffusion, as they grew from what they were in 1972 when they were termed Professional Standards Review Organizations (PSROs) (Schenck, McArdle, & Weiser, 2013). (For an in-depth discussion and to provide a series of academic questions to be considered for understanding how QIOs work, readers are referred to an illustrative case study provided by Rokoske, McCardle, and Schenck, 2012.)

The processes for each of these regulatory mechanisms provide evidence for factors to be considered, as well as lessons learned, in regard to further diffusion of CQI in health care. For example, the impact of the measurement requirements has been notable. In a review published by members of TJC, this impact was described as being due to the use of robust, evidence-based measures, which link process performance and patient outcomes (Chassin, Loeb, Schmaltz, & Wachter, 2010). Despite extensive documentation of successes in the article, these authors also note the need and define a direction for further improvement, centered on process measurement. They point out that the focus of this measurement process is entirely on hospital care, leaving much to be done in regard to ambulatory care. They also note that the measures in place are process measures, not outcome measures. In the spirit of continuous improvement, they offer guidance in improving the measures that are currently in place.

Once again, this program, while not without problems, is a good model for further diffusion of CQI; early resistance to measurement no longer exists, and now the issue is more
about finding the most effective measures, with little resistance expected from hospitals and physicians. In the language of diffusion of innovation, TJC has passed the early adoption stage and is now well into the institutionalization stage, at least in the hospital sector, and relative to a subset of process measures. However, despite their optimism about the progress that has been made and the value of their proposed measurement framework, Chassin et al. (2010) close their discussion of these new accountability measures by realistically pointing out that perpetual vigilance is required to review and improve the measurement process via feedback from internal and external customers. So a partial answer to our question of how to “fix the broken system” is provided by accreditation, and much has been accomplished, with some guidance from TJC on what to do next. However, these comments are specific to measurement of processes in hospitals, and a more general answer is still needed to truly address the broader health care system and its subcomponents.

Motivational Factors
A number of motivational factors contribute to the sustained interest and enthusiasm for health care improvement. These factors have an impact on the motivation of the management of the organization and its employees. The first argument for CQI is its direct impact on quality, usually a net gain to the customer/patient and to the employees of the organization, the external and internal customers. The second argument relates to the set of benefits associated with a plan that empowers employees in health care through participation in decision making. These factors represent benefits for employees and management that can be classified as follows.

Internal/Intrinsic Motivation
With the proper internal or intrinsic motivation, the vast majority of health care workers support the concept of quality care and would like to see improvements and participate in a meaningful quality improvement process. Allowing personnel to work on their own processes, permitting them to “do the right thing,” and then rewarding them for that behavior is almost sure to increase intrinsic motivation in employees, if done properly. It is a classic case of empowerment and job enrichment for health care workers and follows the principle clearly delineated by Deming about the important role of internal (vs. external) motivation and employee engagement in CQI efforts. It should be noted that internal and intrinsic motivation will be used interchangeably throughout this text, representing the form of motivation that Deming describes as being linked to self-esteem and dignity (1993).

System of Profound Knowledge
It is well known that the system of profound knowledge and the original 14 points of Deming (see Chapter 1) emphasize high levels of trust, empowerment, and especially internal motivation and engagement as important factors associated with implementation of CQI initiatives (Deming, 1986, 1993). This is clearly and succinctly emphasized in Deming’s point number 12: “remove barriers that rob people of pride of workmanship” (Deming, 1986, p. 77). In health care, and especially in nursing and medicine, one indication of demotivation and lack of engagement is the increasing rate of burnout and work dissatisfaction in recent years (Shanafelt et al., 2015). A systematic review and meta-analysis reported in The Lancet in 2016 described physician burnout as reaching epidemic proportions (West, Dyrbye, Erwin, and Shanafelt, 2016). Burnout, which can be defined as the opposite of engagement, is indicated by emotional exhaustion, depersonalization and perceived lack of personal accomplishment; and in health care, burnout is manifested by diminished personal well-being and longevity and leads to decreased quality of patient care.
(Chew et al., 2017). Provider burnout has also been linked to greater patient dissatisfaction and higher costs. Examples that have been cited of lower quality/safety of care resulting from burnout include prescribing inappropriate medications (Bodenheimer & Sinsky, 2014). Reports of physician burnout have been persistent during the second decade of the 21st century, as indicated by findings from two large studies, which reported prevalence of at least one symptom of burnout as high as 54.4% in 2014 (Shanafelt et al., 2015) compared to 45.5% in 2011 (Shanafelt et al., 2012). In both studies, the sample sizes consisted of over 3,000 responding physicians; although response rates were in the 20% range, which may compromise the ability these data have to serve as predictors of population parameters, the consistency and large sample size that these findings are based on are indicative of a long-term trend that burnout is consistent and may be worsening over the time period between these two studies. Other studies in the United States and Europe of a range of types of health care providers, including nurses and staff as well as physicians, yield similar findings. For example, one provider survey, in 2013, in the United States found that 60% of respondents reported burnout and 34% indicated that they planned to look for another job (Bodenheimer & Sinsky 2014). A 2015 survey of British physicians reported that 44% of respondents reported very low or low morale, with similar findings for nurses and health care staff (Sikka, Morath, & Leape, 2015).

Among the various factors that thwart innovation and CQI implementation, burnout and low morale are often mentioned not only for the sake of encouraging innovation, but more importantly, to improve the health and well-being of health care providers. A key question for all in health care and specifically to address the topic of this chapter is how to reverse these trends; how to eliminate factors that may be causally related to burnout and how to identify factors that will increase the rate of innovation and CQI implementation.

From Triple Aim to Quadruple Aim

An important innovative concept that was first introduced in 2008 is the Triple Aim of Health Care (Berwick, Nolan, & Whittington, 2008). This innovation broadens the goals and definition of quality health care through the simultaneous pursuit of three aims: “improving the experience of care, improving the health of populations, and reducing the per capita costs of health care” (Berwick, Nolan, & Whittington, 2008, p. 759). Since its introduction, the adoption of the Triple Aim has become a goal of many health care providers both nationally and globally and can be viewed as a new stage in the ongoing evolution of CQI in health care; it has done so by using a systems optimization perspective and has taken advantage of associated innovations that have facilitated the implementation of systems to pursue the Triple Aim. For example, adoption of the Triple Aim has benefited from improvements in technology, such as the broader overall use and the institutionalization, at least in large hospital systems, of electronic health records. It has also benefited from CQI tools and techniques that have become more widely adopted in recent years such as elimination of waste in health care processes via LEAN/Six Sigma, described in Chapter 5.

The introduction of the Triple Aim is an example of innovation in health care systems, and the application of a systems approach utilizing synergy derived from the interdependence of the three aims. However, this interdependence requires careful attention to system optimization since changing any one has a direct impact on the other two aims. This important characteristic has direct implications on the further adoption of CQI in health care, which requires that intrinsic motivation for change and improvement is maintained by providers. For example, if cost reductions lead to overburdening busy providers with lower leverage tasks, then they may not be motivated to identify
and implement new CQI ideas. The cost-reduction mentality that is described in some business models as “doing more with less” can also lead, in health care, to poorer quality and lower patient satisfaction if tradeoffs are not carefully understood and managed.

**Quadruple Aim**

Although many health care providers have adopted the Triple Aim, others have not been able to do so successfully. One explanation for less than full implementation may be that “practices working toward the Triple Aim may increase physician burnout and thereby reduce their chances of success” (Bodenheimer & Sinsky, 2014, p. 575). A partial explanation for this trend is that some of the very same factors that lead to successful adoption of the Triple Aim may have inadvertently led to burnout and demotivation among some health care providers. For example, the widespread increase in utilization of electronic health records, a plus factor for implementing the Triple Aim, has been shown to lead to increases in burnout (Babbott et al., 2014).

Provider burnout and dissatisfaction, the opposite of internal motivation and engagement, may also lead to a reluctance to adopt or lead the development of innovations/CQI initiatives. Because of its possible causative links to burnout, the Triple Aim, while by definition designed to lead to greater CQI implementation and innovation in health care, may inadvertently have the opposite effect, at least in some cases.

To address this conflict in positive and negative effects of pursuing the Triple Aim, one solution that has been proposed is to expand the Triple Aim by adding a fourth aim—improving the work life of clinicians and health care staff and increasing the experience of joy and meaning in health care work (Bodenheimer & Sinsky, 2014; Sikka, Morath, & Leape, 2015). The key question is, how?

As with many CQI initiatives the solution of expanding from a Triple Aim to a Quadruple Aim must start with a system-level focus. For example, one form of system optimization that is proposed to implement the Quadruple Aim for primary care is to shift relevant responsibilities from physicians to practice staff but at the same time ensuring that “staff who assume new responsibilities are well trained and understand that they are contributing to the health of their patients and that unnecessary work is reengineered out of the practice” (Bodenheimer & Sinsky, 2014, p. 575). This approach represents just one of many possible system changes that can be included under the umbrella of empowerment, a well-established, cost-effective approach to improve internal motivation and engagement (Daft, 2015). It also requires attention to the concept of task-relevant maturity for ensuring that those who are empowered are prepared to accept greater responsibility, including receiving adequate training (Grove, 1995). The successful application of these concepts may require an initial investment in dollars and time that will offer a future return on investment. And most important, it requires a culture that is open to transformational leadership concepts (Daft, 2015) such as empowerment and a vision that embraces innovation and improvement; such a culture is described in the next section of this chapter.

In summary, the concept and effectiveness of the Triple Aim will be further improved by the addition of a fourth aim that focuses on the welfare of providers because “maintaining a balance between workforce satisfaction and patient satisfaction will be critical in achieving the fourth aim. Reductions in physician and staff burnout will support the primary goal of the Triple Aim, improving population health” (AHRQ, 2015). Stated more succinctly, “health care is a relationship between those who provide care and those who seek care, a relationship that can only thrive if it is symbiotic” (Bodenheimer & Sinsky, 2014, p. 575). And this symbiotic relationship is at the core of successful CQI implementation.
Culture of Excellence

Throughout the history of the application of CQI, one of the most important factors associated with successful applications of CQI has been the interaction of leadership, organizational culture, teamwork and internal motivation. Transformational leadership, distinguished by its emphasis on vision, is a starting point and a consistent force in motivating change and improvement. “Transformational leadership is characterized by the ability to bring about significant change in both followers and the organization. Transformational leaders have the ability to lead changes in the organization’s vision, strategy and culture as well as promote innovation in products and technologies” (Daft, 2015, p. 360). To ensure CQI, the most important role of a leader is transformation (Deming, 1993), which starts with a motivating vision that must be developed, communicated, and embraced by all in the organization, and which in turn leads to high levels of commitment to the vision of change and improvement (Melum & Sinioris, 1993; Tichy & Devanna, 1986). Leaders ensure commitment to the vision by shaping a culture that not only accepts but embraces change (Balestracci, 2009; Schein, 1991). FIGURE 2.1 describes the way in which this is accomplished in an organization that is dedicated to CQI and thereby defines a set of factors that are critical to the greater diffusion of CQI in health care.

The development of and commitment to a vision leads to what Deming called constancy of purpose for all in the organization, referring to a clear sense of where the organization is going or what a system is intended to accomplish (Deming, 1986). The type of culture that is needed to succeed in an organization whose goal is to continuously improve can be called a “culture of excellence.” This concept is similar to a “safety culture,” defined as a culture in which “a commitment to safety permeates all levels of the organization from frontline personnel to executive management” (AHRQ, 2011). Also similar is a clearly defined, shared vision that translates into detailed procedures, decision-making processes based on teamwork, and strategic actions that lead to achievement of the vision of quality and safety. A culture of excellence is one that ensures high quality at every customer interface and in which a commitment to the highest quality—and CQI, in particular—is shared by all in the organization.

Underlying the creation of a culture of excellence is a need for a systems view. A systems view of health care emphasizes the importance of adding value and the importance of leadership rather than management, influence rather than power, and the alignment of incentives focused on quality rather than quantity of services (Rouse, 2008). A culture of excellence
embraces this view, is performance oriented, and at a minimum adopts a CQI philosophy (as defined in Chapter 1). It exemplifies the following elements outlined in Figure 2.1:

- **Customer focus:** Emphasizing the importance of both internal and external customers (see Chapter 1). It should be noted here that in defining the population who will ultimately benefit from health care innovations and CQI (i.e., the external customer), there may be some discomfort with the generic term “customer,” especially among physicians and nurses (Houpt, Gilkey, & Ehringhaus, 2015). There should be awareness of this issue, especially when developing a culture to embrace the ideas presented here, but for simplicity and consistency with terminology presented here and in the CQI literature in general, the term customer will continue to be used—as a term that denotes the highest respect for the patients, their families and communities served in health care.

- **Systems thinking:** Maintaining a goal of optimizing the system as a whole and thereby creating synergy (Deming, 1986; Spath & Kelly, 2017).

- **Statistical thinking:** Understanding causes of variation and the importance of learning from measurement; having the ability to use data to make decisions (see Chapter 4 and Balestracci, 2009).

- **Teamwork:** Teams of peers working together to ensure empowerment, thereby creating the highest levels of motivation to ensure alignment of the organization, the team, and the individual around the CQI vision (see Chapter 6 and Grove, 1995).

- **Motivation and empowerment:** A key component of the culture of excellence is its ability to increase empowerment and internal motivation necessary for any successful CQI initiative (Deming, 1986, 1993). Ultimately, this will lead to higher levels of engagement. “The most recent thinking about motivation considers what factors contribute to people’s willingness to be fully engaged at work and “go the extra mile” to contribute their creativity, energy and passion on the job. One approach is to foster an organizational environment that helps people find true value and meaning in their work. One path to meaning is through employee engagement” (Daft, 2015, pp. 245–246). A culture of excellence creates an environment where empowerment, motivation and engagement are the norm. It should ultimately address the need for “joy in work” by providing a platform for the Quadruple Aim to be achieved; and in a cyclical manner this will in turn further increase the motivation of health care providers to be innovative and embrace CQI initiatives.

- **Communication and feedback:** Maintaining open channels of communication and feedback to make adjustments as needed, including modifying the vision to achieve higher levels of quality in a manner consistent with a learning organization (Senge, 1990), including feedback that is fact-based and given with true concern for individuals’ organizational success (Balestracci, 2009). Open communication and feedback are key characteristics of the team approach necessary to achieve the goals of CQI (see Chapter 6).

## Leadership and Diffusion

In discussing factors that support the implementation of CQI, the theory of diffusion of innovation clearly supports the important role of leadership in CQI. A capacity for innovation, as described in the literature of organizational psychology, is seen as critically dependent on good leadership; one of the key factors to the implementation and routinization of innovation once adopted is the consultation and
active involvement of leaders—and especially leadership by example. Furthermore, organizational leadership is critical to the development of a culture that fosters innovation (Greenhalgh et al., 2005). CQI is a form of change and innovation that also requires cultural change driven by leadership. As Greenhalgh et al. explain, “Leaders within organizations are critical firstly in creating a cultural context that fosters innovation and secondly, establishing organizational strategy, structure, and systems that facilitate innovation” (2005, p. 69). This perspective ties directly back to Deming’s point about leadership: leaders must know and understand the processes they are responsible for and lead by example, acting as part of the improvement effort and on the “corrections” required (Deming, 1986). This point was emphasized by Gawande (2009, p. 146) in describing how the initial adoption of surgical checklists was accomplished:

Using the checklist involved a major cultural change, as well—a shift in authority, responsibility, and expectations about care—and the hospitals needed to recognize that. We gambled that their staff would be far more likely to adopt the checklist if they saw their leadership accepting it from the outset.

Leaders at All Levels

Various types of leaders can contribute to (or detract from) the innovation process. Traditional organizational and team leaders are most often associated with CQI initiatives; however, in regard to innovations, the terminology of “leader” can be expanded to include opinion leaders, champions, and boundary spanners.

Opinion leaders represent a broad range of leaders “within the ranks” as well as those at the top level. In clinical settings, opinion leaders have influence on the beliefs and actions of their colleagues, either positive or negative in regard to embracing innovation. Opinion leaders may be experts who are respected for their formal academic authority in regard to a particular innovation; their support represents a form of evidence-based knowledge. Opinion leaders may also be peers who are respected for their know-how and understanding of the realities of clinical practice (Greenhalgh et al., 2005).

Unlike opinion leaders, who may support or oppose an innovation, champions persistently support new ideas. They may come from the top management of an organization, including technical or business experts. Champions include team and project leaders and others who have perseverance to fight both resistance and/or indifference to promote the acceptance of a new idea or to achieve project goals (Greenhalgh et al., 2005).

Boundary spanners represent a combination of these various types of leaders and are distinguished by the fact that they have influence across organizational and other boundaries (Greenhalgh et al., 2005; Kaluzny, Veney, & Gentry, 1974). Boundary spanners play an important role in multi-organizational innovations and quality improvement initiatives, such as quality improvement collaboratives. Each of these types of leaders is found in the adoption of quality improvement initiatives in health care, and often these various types of leaders are found in combination.

Teamwork

CQI in health care is a team game. These teams are composed of peers who are highly trained technical experts supporting each other and empowered to take a leadership role as required to meet the needs of customers. Teamwork is one of the most important components of all successful CQI initiatives; team building centers on the ability to create teams of empowered and motivated people who are leaders themselves and who will take the lead as needed to foster change, innovation, and
improvement (Byham & Cox, 1998; Grove 1995; Kotter, 1996). The glue that holds a culture of excellence together and that ensures there will be quality at every interface is the link between leadership and teamwork—with leadership exhibited as called for at all levels within a team. As Deming states, “There is no substitute for teamwork and good leaders of teams to bring consistency of effort along with knowledge” (1986, p. 19).

Motivation and Empowerment

Inherent in teamwork is a high level of empowerment of team members, which in turn leads to high levels of motivation. Empowerment implies that levels of authority match levels of responsibility and training. For example, suggestions and interventions can be made to allow improvements and prevent problems or errors. This initiative goes beyond simply allowing team members to speak up; it means ensuring they are comfortable speaking up when something seems wrong (Byham & Cox, 1998; Deming, 1986; Grove, 1995).

Improved motivation is the direct result of transformational leadership and especially its emphasis on empowerment. Motivation and empowerment both will interact to lead to higher quality; but to work, these elements require another aspect of cultural change and associated leadership responsibility—building a culture of trust. This is emphasized in Deming’s 14 points, namely point number 8: Drive out fear. Create trust. Create a climate for innovation (see Chapter 1). Deming explains, “No one can put in his best performance unless he feels secure. … Secure means without fear, not afraid to express ideas, not afraid to ask questions” (1986, p. 59). This ties directly back to the surgical checklist example as well as the airline safety tradition, where use of a checklist implies responsibility to communicate and question each other as part of the checklist process, regardless of the team member’s rank. A leader’s goal must be to create a culture where people are empowered to do their jobs to the best of their abilities, with trust and a clear understanding of the vision that creates the constancy of purpose needed to achieve the highest quality.

Training is critical to the success of leaders and the ability to achieve constancy of purpose, not only training of employees in the skills required to do their jobs, which removes barriers to motivation, but also training the future leaders of the organization, which creates further motivation. Training of future leaders is one of the most important responsibilities of a leader (Tichy, 1997). And it is a key characteristic of transformational leadership; “transformational leadership inspires followers … motivates people to do more than originally expected … develops followers into leaders” (Daft, 2015, p. 361). Gawande (2009) addresses this issue in describing the process for testing and implementing the surgical safety checklist. Despite the obvious key role of the surgeon, it was decided that the “circulating nurse” on the surgery team would be the one to start the checklist process at the beginning of a surgery. This was done for several reasons, but one of the most important was “to spread responsibility and the power to question” (p. 137).

Examples of Leadership and Teamwork in CQI

The linkage between leadership and teamwork to ensure success in quality improvement in health care has been demonstrated in many instances, including the very successful implementation of quality improvement collaboratives (QICs). QICs represent a form of virtual organizations (Byrne, 1993) the effectiveness of which have been demonstrated in industry for many years. Part of the success of QICs can be tied to this effective team structure. For example, in describing the successful application of a QIC using the IHI Breakthrough series (Kilo, 1998) in 40 U.S. hospitals to reduce adverse drug events, Leape et al. (2000) identify strong leadership and teamwork among their most important success factors: “Success
in making significant changes was associated with strong leadership, effective processes, and appropriate choice of intervention. Successful teams were able to define, clearly state, and relentlessly pursue their aims, and then chose practical interventions and moved early into changing a process” (Greenhalgh et al., 2005, p. 165). Further examples of QICs and their importance in the future of CQI in health care are presented in Chapter 14.

In summary, leadership, effective teamwork, and the empowerment of teams, which lead to higher levels of internal motivation, have been critical factors in the evolution of CQI in health care and are directly related to the pace and broad adoption of CQI in health care in recent years. Chapter 6 provides a detailed description of how to build teams and ensure that they operate most effectively to improve quality in health care. Grove (1995) provides examples of how to create an organizational structure that supports multiple teams working in parallel and how to ensure efficiency in doing so.

**Kotter’s Change Model**

A traditional model that is used to define a culture of change and in particular the role of vision and leadership is the eight-stage change model developed by John Kotter (1996), which is outlined in **BOX 2.1**. The discussion of leadership, organizational culture, and teamwork presented previously described “what is” the type of culture that is needed to implement successful CQI initiatives; Kotter’s model describes “how to” implement major change and also provides guidance on traditional errors to avoid. These two approaches are closely related. There is clear overlap between Kotter’s model and the factors defined in Figure 2.1, which describe the culture of excellence. These common elements include empowerment, communication, feedback loops to produce more change, and, most important, the central role of vision and anchoring change in the culture. The presentation of Kotter’s model, which is well known with widespread application beyond health care, also serves as validation for the basic concepts of the Culture of Excellence Model.

One key point of Kotter’s model that is worthy of a bit more discussion here is his first point: “Establishing a sense of urgency.” This point relates to an earlier discussion about how long it takes, or should take, to implement CQI concepts. The emphasis is not that decisions should be rushed, but that complacency is to be avoided. Complacency may be due to many reasons that can be associated with the need for CQI in health care. These include, according to Kotter, “too much past success, lack of visible crises, low performance standards, [and] insufficient feedback from external constituencies. … Without a sense of urgency, people won’t give that extra effort that is essential. They won’t make needed sacrifices. Instead they cling to the status quo and resist initiatives from above” (1996, p. 5). This point directly relates to CQI in health care; the importance of ensuring safety and quality in health care requires a sense of urgency.

See Kotter’s text for a comprehensive description of the elements in Box 2.1 and the broader subject of how to implement organizational change.

**BOX 2.1 Kotter’s Eight-Stage Process of Creating Major Change**

1. Establishing a sense of urgency
2. Creating a guiding coalition
3. Developing a vision and strategy
4. Communicating the change vision
5. Empowering broad-based action
6. Generating short-term wins
7. Consolidating gains and producing more change
8. Anchoring new approaches in the culture

Adapted from Kotter, 1996.
Chapter 2  Factors Influencing the Application and Diffusion of CQI in Health Care

Conclusions

Despite the increased use of CQI and a good understanding of the philosophy and processes of CQI, its effectiveness and further adoption in health care remain subjects of ongoing concern. The literature on diffusion of innovation suggests some guidelines to understand factors that influence the adoption of CQI. Understanding the factors that enable or influence adoption of CQI, as well as the factors that present barriers, is particularly important as more countries around the world are utilizing CQI to solve health challenges, including resource-poor countries and as national health initiatives are being modified or introduced around the world, including in the United States.

Among the factors that are gaining greater attention is the emphasis on cost, efficiency and value. The emphasis on value is directly correlated with concerns about the costs of quality health care and has led to novel concepts such as the Triple Aim of health care—simultaneously focusing on care, health, and cost. At the same time, the critical role of internal motivation, that was emphasized by CQI pioneers, such as W. Edwards Deming, as central to ongoing implementation of CQI, leads to consideration of a fourth aim, improving the motivation and work life of health care providers. This consideration has been driven in part by demotivation resulting from increasing rates of burnout that have been reported among health care providers. Central to promoting the diffusion of innovation, and in particular CQI, is leadership, vision, and teamwork, resulting in empowerment and motivation of the health care workforce. A model that combines these factors to ensure the continuing adoption of CQI in health care, and including the goals of the Quadruple Aim, is the implementation of a culture of excellence as described and defined in this chapter.

References


References


