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Lean, Shingo, and the Baldrige Framework: A Comprehensive Method to Achieve a Continuous-Improvement Management System

John S. Toussaint, MD, John R. Griffith, MBA, FACHE, Stephen M. Shortell, PhD, MPH, MBA

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The U.S. health-care system is hampered by the lack of a comprehensive continuous improvement management system that empowers providers with data to improve care. But a well-known management framework and a specific management approach fills this gap — the Baldrige Excellence Framework and the Shingo Model of organizational excellence. Hospitals successfully achieving the Baldrige Framework have documented high performance on critical measures of cost, quality, patient satisfaction, and worker satisfaction. We discuss the relationship between Baldrige and Shingo, review the evidence base for the achievements of the approaches to date, and suggest how government, accrediting agencies, and payers might best promote wider adoption of this integration.

Health care in the United States has long suffered from a quality chasm — an intractable and inexcusable gap between the care we have and the care we could have. This gap was detailed by the Institute of Medicine (now National Academy of Medicine) in its landmark 2001 report *Crossing the Quality Chasm*.¹ Nearly 20 years later our health care quality remains both inadequate and inconsistent. Overall, U.S. health care system performance is substantially below other advanced nations² and suffers from variation that would be unthinkable in less complicated industries, such as the airline, hospitality, or manufacturing industries. Choosing the wrong hospital can double a patient's risk of avoidable death and increase the risk of clinical error³ by a factor of 10. Nationwide data shows that health care among states differs significantly in both quality and cost. Mississippi spends one-third more money than Oregon for health care that is only three-fourths as effective. When people with similar health status move from Minnesota to Florida, they spend far more on health care than before they moved, for no additional benefit — in fact, they may face higher risk.⁴

The payment system is one major contributor, because it has not until recently even pretended to reward better quality.⁵ Although performance-oriented payment is growing, it has not yet reached the tipping point to incentivize widespread transformational performance improvement. Even some of the most advanced government accountable care organization (ACO) models are still based on a fee-for-service platform, which incentivizes volume over better health outcomes. As payment for health outcomes takes hold, pressure on costs/prices without explicit quality standards could lead to even poorer quality of care. Now is the time for the health care industry to adopt principles and systems of excellence to prepare for the inevitable future.

An organizational culture achieves excellence by constantly pursuing improvement to provide safe, effective, patient-centered, timely, efficient, and equitable care as defined by the National Academy of Medicine.⁶

The Management Problem

Delivering health care involves a complex process that requires a highly trained and specialized workforce. This is likely one factor that has caused the system to be designed primarily around caregivers rather than patients, and around individuals rather than team activity. To redesign the system to center around patients, management systems should support not only excellence in individual contributions, but also effective team communication and collaboration across the continuum of care. Conventional models of top-down management and leadership (e.g., management by objectives) do not support the needs of this complex and diverse workforce.

Lessons from Clinical Guideline Development

Breakthroughs in clinical discoveries and treatments — supported by peer-reviewed research and expert panel evaluation — have been translated into clinical guidelines for many conditions. For example, the Diabetes Control and Complications Trial (DCCT) followed more than 1,400 patients for many years and, together with subsequent studies, clearly linked uncontrolled diabetes with complications such as retinopathy and vascular diseases.⁷ Further, this research established that HbA_{1c} is a reliable measure of blood glucose over time, which vastly improved clinicians' ability to predict a patient's risk of developing diabetic complications and help them control sugar levels. Diabetes care now conforms to widely accepted guidelines based on this research.

“ *Health care management practices can be codified just as clinical guidelines have been, and with equal potential for improving care.* ”

By contrast, the literature supporting evidence-based management of health care organizations is strikingly less rigorous.⁸ While many U.S. hospitals (61%) use some form of management improvement method, only 12.6% report being at a mature, hospital-wide stage of implementation.⁹ With no mature standards, no improvement is possible. Poor or nonexistent management systems have contributed significantly to the high rate of medical errors.⁸

Connections between caregivers and the flow of patients and information are constantly breaking down.

Take, for example, a patient with congestive heart failure. The patient is treated in the hospital effectively and is discharged to home — but the connection between home care and the primary care office isn't established. The patient can't get an appointment to see her primary doctor for a month and is confused about the dose of furosemide she is taking. She takes the dose previously prescribed because that is the dose on the bottle in her medicine cabinet. She can't understand the discharge instructions that doubled the dose. Within 2 weeks, she is readmitted unnecessarily.

All these problems could be eliminated with changes in management processes. A system that tracks discharges and readmissions can reveal how many patients are being readmitted and why. A regular check-in between home care and discharge planning would uncover any confusion about discharge instructions. Integration of primary offices into the electronic medical record would alert the staff to make post-discharge appointments a priority. All these possible solutions are the responsibility of management. But with no rigor in management systems to connect points of care and identify ways to improve, poor patient outcomes continue to be the result.

Health care management practices can be codified just as clinical guidelines have been, and with equal potential for improving care. This article supplies a path for adopting continuous-improvement management guidelines.

The Baldrige Excellence Framework

Our path begins with the Baldrige Excellence Framework, which is designed to support quality and efficiency in management.¹⁰ The Malcolm Baldrige National Quality Improvement Act of 1987 created the Baldrige National Quality Award to recognize businesses or organizations that demonstrate the effective practice of quality management.^{11,12} The program is managed by the National Institute of Standards and Technology, with extensive volunteer support, and has issued 129 awards through 2019.^{13,14} In 1999, the framework was expanded to include industry-specific versions for health care and education. Since the first health system received an award in 2002, through 2019, hospitals and health systems have accounted for 27 of 78 organizations that have received Baldrige awards.

The Baldrige Excellence Framework is simply a way to structure how organizations think about their performance by answering three broad questions:

- *Is your organization doing as well as it could?*
- *How do you know?*
- *What and how should your organization improve or change?*

The framework addresses these health care criteria for performance excellence¹⁰:

- Leadership
- Strategy
- Customers
- Measurement, analysis, and knowledge management
- Workforce
- Operations
- Results

The Baldrige Framework is agnostic as to method for achievement, so no one method is associated with it. However, many organizations applying for the Baldrige award have used some or all the tenets of the Shingo Model, and we believe this integration is worth pursuing.

The Shingo Model of Organizational Excellence

The Shingo Model of organizational excellence was developed from the teaching and writings of industrial engineer Shigeo Shingo, whose management principles and systems helped improve Japanese and U.S. automobile manufacturing.

“ *We believe the Shingo Model is particularly well-suited to help health care organizations achieve the aims of the Baldrige Excellence Framework because it dovetails with the same types of cultural change needed for clinical quality improvement.* ”

Between 1989 and 2019, the Shingo Institute at Utah State University has awarded the Shingo Prize to 348 organizations worldwide based on an assessment of each organization’s culture and how well it drives world-class results. Winners generally have been industrial manufacturers in areas such as automotive, aviation, medical device, pharmaceuticals, defense, and military. In that time, one health care provider, Denver Health Community Health Services, received recognition: a bronze award in 2011.¹⁵

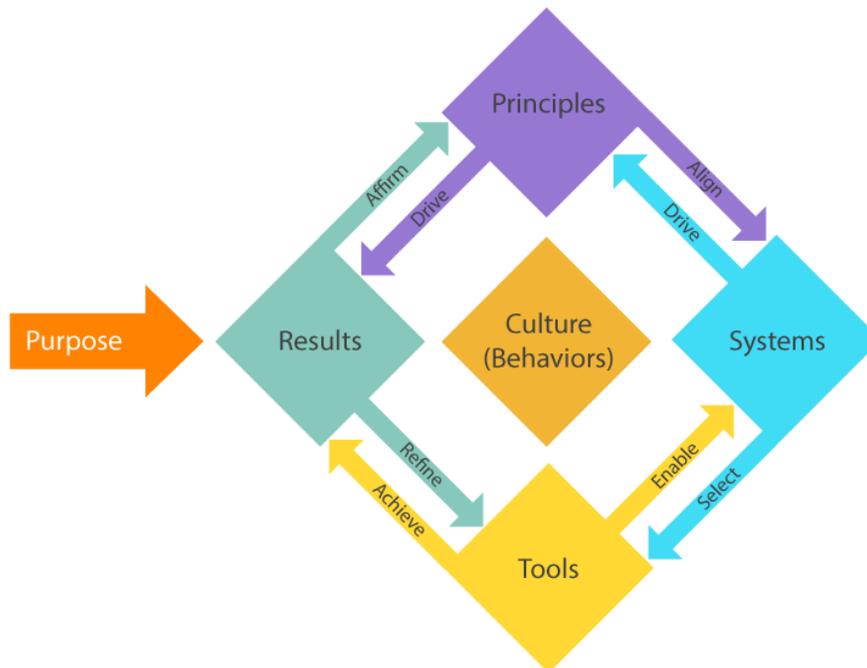
The Shingo Model builds an organizational culture of excellence and continuous improvement (Figure 1). We believe the Shingo Model is particularly well-suited to help health care organizations achieve the aims of the Baldrige Excellence Framework because it dovetails with the same types of cultural change needed for clinical quality improvement. Though the Shingo Model does little to describe what process is used for strategy development, the Shingo Institute partners with Catalysis, a nonprofit education institute based in Appleton, Wisconsin, that supports health care

organizations engaged in applying organizational excellence principles to operations. (Author JS is the Chairman of Catalysis.)

FIGURE 1

The Shingo Model

The Shingo Model starts with purpose and principles, incorporates organizational culture by establishing behaviors, and accounts for the development of systems that support the use of tools to achieve results.



Source: The Shingo Institute. <https://shingo.org/model>
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The Shingo Model¹⁶ rests on three insights, or tenets, as expressed by the Shingo Institute:

Ideal Results Require Ideal Behaviors: Results are the aim of every organization, but there are various methods by which they are attained. Ideal results are those that are sustainable over the long term. Simply learning or buying new tools or systems does not achieve ideal results. Great leaders understand the cause-and-effect relationship between results and behavior. To achieve ideal results, leaders must do the hard work of creating an environment where ideal behaviors are evident in every associate.

Purpose and Systems Drive Behavior: It has long been understood that our beliefs have a profound effect on our behavior. What is often overlooked, however, is the equally profound effect that systems have on behavior. Most of the systems that guide the way people work in our companies were designed to create a specific business result without regard for the behavior that the system consequentially drives. Many systems are de facto systems that have evolved in response to a specific need for a particular result.

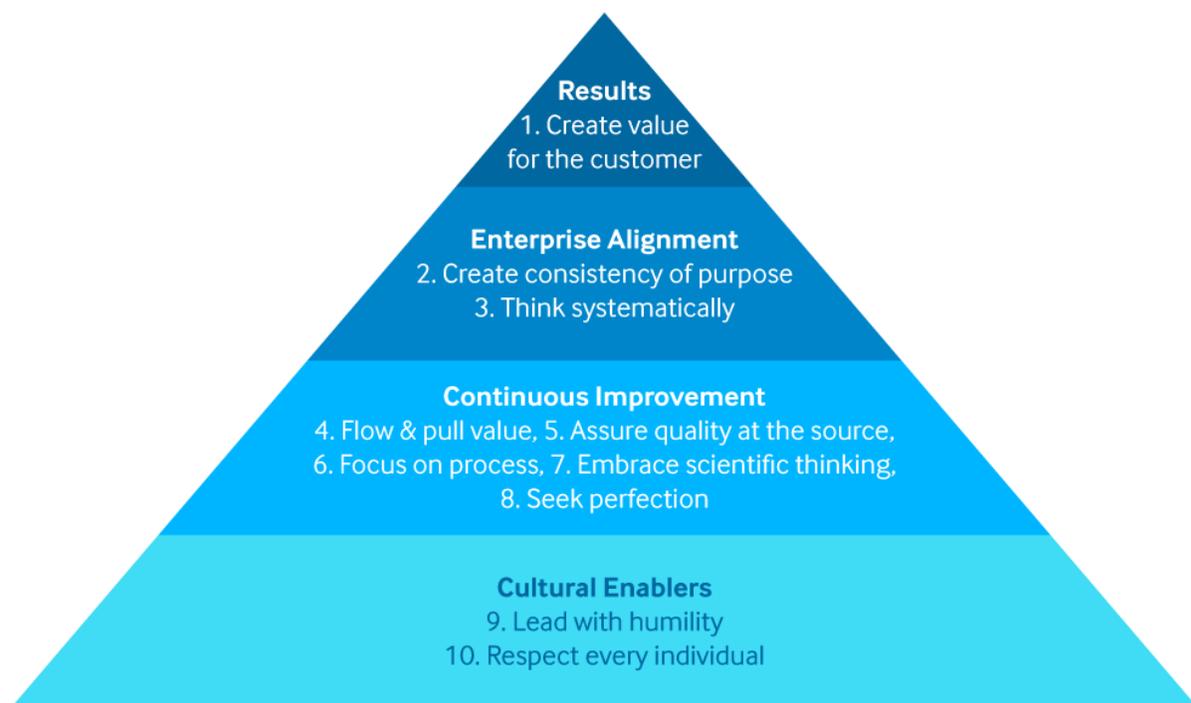
Managers have an enormous job to realign both management and work systems to drive the ideal behavior required to achieve ideal business results.

Principles Inform Ideal Behaviors: Principles are foundational rules and help us to see both the positive and negative consequence of our behaviors (Figure 2). This fact enables us to make more informed decisions, specifically, about how we choose to behave. The more deeply leaders, managers, and associates understand the principles of organizational excellence and the more perfectly systems are aligned to reinforce ideal behavior, the greater the probability of creating a sustainable culture of excellence where achieving ideal results is the norm rather than the aspiration.

FIGURE 2

The 10 Shingo Principles

The 10 Shingo principles are divided among four areas: Results, Enterprise Alignment, Continuous Improvement, and Cultural Enablers.



Source: The Shingo Institute. <https://shingo.org/model>
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Applying the Shingo Model to Address the Baldrige Framework

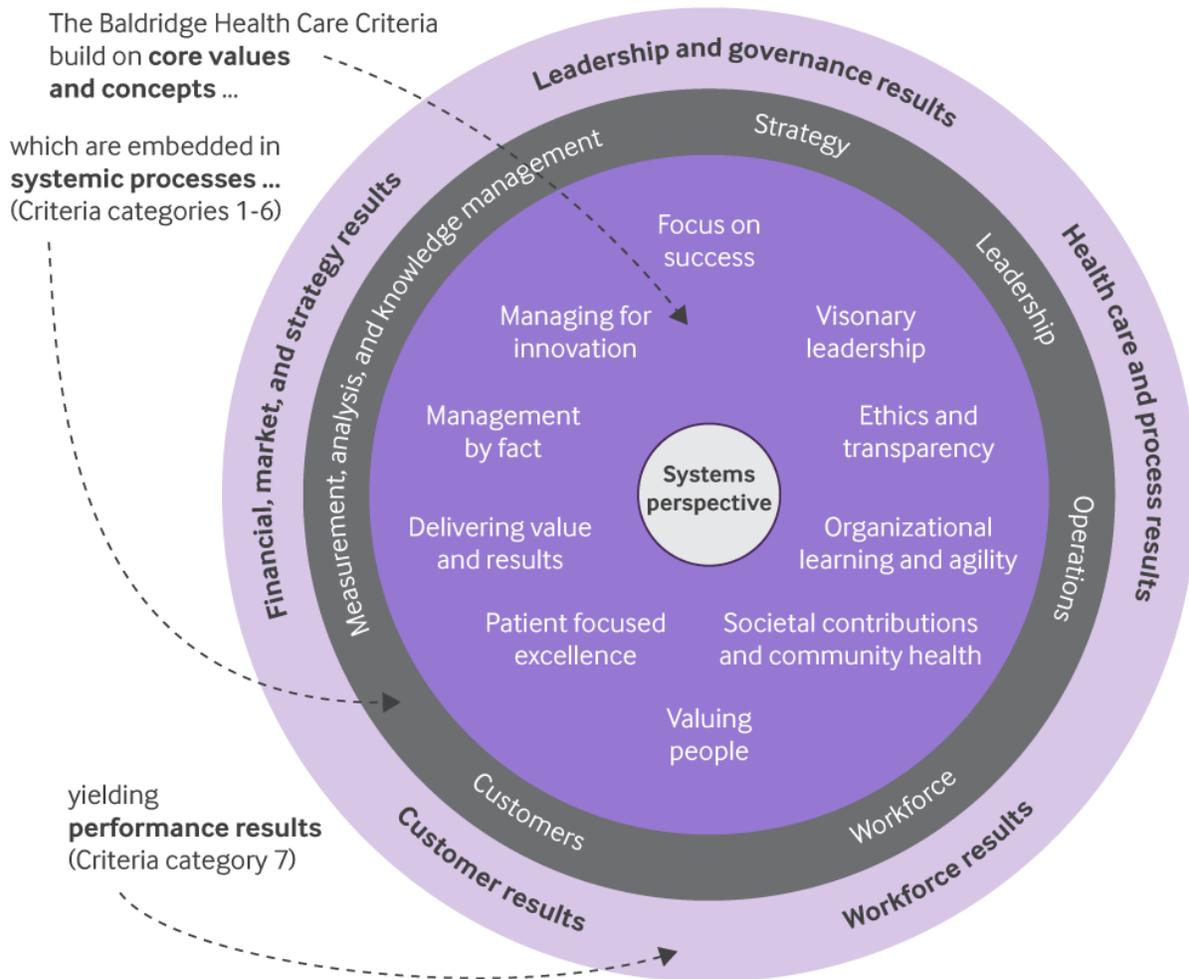
In this section, specific examples will illustrate how the Shingo Model of organizational excellence can be applied to meet the requirements of the Baldrige Excellence Framework.

The Baldrige Framework defines 10 core values and concepts of management activity that are embedded within six systematic processes that yield performance results in five groupings (Figure 3).

FIGURE 3

The Role of Core Values and Concepts in the Baldrige Framework

The 10 Baldrige health care criteria build on core values and concepts that are embedded in six groups of systematic processes that yield performance results in five groupings.



Source: Baldrige Performance Excellence Program. 2019-2020 Baldrige Excellence Framework: Proven Leadership and Management Practices for High Performance (Health Care). Gaithersburg, MD. U.S. Department of Commerce, National Institute of Standards and Technology. www.nist.gov/baldrige

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The Baldrige Excellence Builder¹⁷ lays out a series of questions for leaders to answer to assess their organization and understand the framework. Those questions, and an explanation of how the Shingo Model addresses them, are as follows:

Baldrige Question 1.1: How do your senior leaders lead the organization?

Most health care organizations have four levels: the board, executive management, middle management, and the front line. To establish purpose, the board and executive management must identify a limited number of high-level metrics. The Shingo Model calls these *True North*, and suggests six to ten. Baldrige winners report dozens. A recent winner, Memorial Hospital, reported a total of 109, of which half address quality of care. The governing board routinely reviewed about 20 aggregate measures, expecting goal achievement and prompt action if it's threatened. Every team had its "True North," negotiated goals, and monthly progress reports. "True North" focus is essential. If the most important few are not prioritized, having many metrics does nothing but confuse staff. Each frontline staff member must be able to connect the work they do to at least one True North metric, whether they work in finance or the ER or a clinic. The categories in health care for True North metrics generally are quality, cost, patient satisfaction, employee engagement, and safety, with specific high-level metrics attached to each category.

“ *To establish purpose, the board and executive management must identify a limited number of high-level metrics. The Shingo Model calls these True North, and suggests six to ten. Baldrige winners report dozens.* ”

An example of a True North metric for a hospital would be actual mortality compared with expected mortality. Some people admitted to the hospital will die during their stay. But we are trying to prevent deaths for those who need not die. The goal is for actual mortality to be equal to or less than expected mortality. Staff can have an impact on this metric by reducing incidents that contribute to preventable mortality, such as falls, hospital-acquired infections, and medication errors.

Once True North metrics are established, they can be used to frame a continual dialogue between top leaders and those at other levels of the organization, particularly the front line. Leaders can thus understand how different departments and clinics function together. The information flow also allows for leaders to better understand the barriers that block optimal performance on the True North metrics.

It is important for leadership and the board to consistently embrace this way of leading. The role of executive leadership is to energize, overcome barriers to change, listen, and celebrate. At PeaceHealth, based in Vancouver, Washington, leaders support an improvement culture by giving every team member permission to test new ideas. One of those ideas, a *safety stop*, was developed by physicians, nurses, and middle managers. Anyone can call a safety stop if they think there is a possibility of an ensuing safety problem for staff or patients. If a safety stop is called, an on-call team including a nurse and administrator responds immediately. The team travels to where the potential problem has been identified and helps staff understand what happened. They manage the staff's emotional health while at the same time they start improving the potentially unsafe process. PeaceHealth has seen a reduction of 50% in the patient harm index (this includes falls, infections,

medication errors, etc.) year over year between 2017 and 2018. The reduction on a 12-month rolling average went from 3.3 serious safety events per 10,000 patient days to 1.7 events in the same time frame.¹⁸

Middle management's role is to coach frontline workers to solve problems, rather than stepping in to solve problems themselves, and to empower the team while breaking down silos. Middle managers also monitor structures and processes to ensure consistency with True North metrics.

The front line's role is to identify meaningful metrics in their departments that map to the True North metrics established by the board and executive leadership. They set their own targets for improvement in the areas of focus, regularly assess what is working, and find opportunities to improve.

Baldrige Question 1.2: How do you govern your organization and fulfill your societal responsibilities?

Responsible governance is based on the principles of organizational excellence. The board must be committed to learning and practicing these principles. The journey to excellence will not go beyond the CEO who introduced the method unless the board prioritizes these principles in selecting a successor. The board must also apply these principles to its many other responsibilities, including financial stewardship, quality oversight, strategic direction, and board succession.

At St. Mary's General Hospital in Kitchener, Ontario, Canada — a 153-bed facility about 75 miles southwest of Toronto that is part of the St. Joseph's Health System — a *board huddle* is initiated at the beginning of each board meeting. Each board member has the opportunity to raise an improvement idea to address board governance specifically (not hospital performance). These ideas are vetted by the full board and assigned to board members who are interested in working on them. Ideas have included redesigning the orientation process for new board members and determining how to measure individual board member performance.

“ *Equally important to deploying strategy is deciding what not to do. One of the most important activities is deselecting strategic initiatives and setting priorities. By doing so, leadership can avoid overburdening managers and staff.*”

The board has the responsibility to develop succession plans for their own replacements. At St. Charles Health System, a four-hospital nonprofit community health system based in Bend, Oregon, with 348 licensed beds, a behavioral-based interview process has been established to determine whether prospective board members exhibit personal behaviors that align with the principles of organizational excellence. For example, to determine whether the board member demonstrates respect for every individual, which is a core of the Shingo Model, prospective board members are asked to describe a situation in which they struggled to build trust with a coworker, stakeholder, or partner. The response to this question reveals how the person treats others.

Boards should not dabble in managing the organization, and the board and the executive leadership should spell out their respective roles in a written document. But boards must understand the organization's performance. Though many boards try to convey this type of information in written reports, in our experience this understanding is best achieved visually, with a dashboard on the wall showing all the True North metrics, coded in red (not meeting target) or green (meeting target). The same display should show the board's approved strategies for addressing the metrics and the status of their execution. Board discussion can then focus on what management is doing to achieve the agreed-upon targets and how the board can help.

Baldrige Question 2.1: How do you develop your strategy?

Strategy development is a process that must take customer needs into account. Traditional strategy development is done once a year within a set time frame. But strategy creation must be more fluid than that. It must be constantly updated and revised.

While the Shingo Model does not explicitly address the strategy development process, its purpose and underlying philosophy of excellence, continuous improvement, can help a health care organization frame a strategy focused on improving the patient experience. Strategy should align with the True North metrics.

Catalysis teaches a system of strategy development that was developed at Procter & Gamble by A.G. Lafley¹⁹ and has been applied in many companies. Within that context, health care organizations can pose the same questions as any business or organization developing a strategy:

- What is our winning aspiration?
- Where will we play?
- Where will we compete? (geography, product categories, consumer segments, channels, vertical stages of production)
- How will we win? (value proposition/competitive advantage)
- What capabilities must be in place?
- What management systems, structures, and measures are required to support the choices made?

A successful strategy development system increases the probability of successful strategy implementation.

Baldrige Question 2.2: How do you implement your strategy?

In the Shingo Model, strategy is implemented through a system of regular dialogue that happens at *tiered huddles*, which are daily 15-minute stand-up meetings that occur throughout the organization, from the front line to the C-suite. Topics covered include safety events, staffing issues, and strategic

breakthrough initiatives (e.g., a breakthrough strategy could be to create a system to manage the population health of ACO members). In this way, voices from throughout the organization can impact everything deemed important.

“ *As leaders design new care models, they must consider how the patient experiences that care. The only way to do that is to literally walk with the patient through their experience, and then involve patients in redesigning the care model.* ”

Strategy may involve developing new care models with breakthrough improvements for patients. Care models can't be improved unless workers are fully on board and committed to change. Nurses and doctors know when things aren't working, and they knew it at Saint Agnes Medical Center, a 436-bed medical center in Fresno, California, which is part of Trinity Health. The medical center has 2,600 staff as well as 756 medical staff. The ER was considered the front door to the hospital, but the door was usually shut to customers because of patient flow problems. Leadership understood this problem and decided strategically that the emergency room was where they needed to play to win. Over a 6-month period, using value stream analysis, processes and workflows were completely redesigned, including the underlying management system. The emergency department cross-functional team, including two physicians, used rapid improvement events to create a front-end triage and quick registration process connected through a just-in-time *pull system* with both imaging and the laboratory. As soon as a patient was identified as needing lab or X-ray services, the patient was immediately seen by a lab tech or shuttled to X-ray. The emergency department value stream was optimized by managing acuity levels 3 through 5 (less acute) with a fast-track process, which substantially reduced length of stay for those patients, while level 2 (sicker) patients received an appropriately higher level of support. This entire process was linked seamlessly to the quick-discharge process, ensuring the quickest possible overall time after treatment for the patient.

The results were astounding. Despite seeing more patients each month in 2017 versus 2016, with an average of 7260 patients per month in 2017 and 6520 per month in 2016, the number of those patients who left without being seen dropped from 12% to less than 1%. Costs per ED case dropped from an average in 2016 of \$225 to \$187 in 2017 and increased only slightly in 2018. The number of boarders in the ED — patients kept on stretchers rather than in rooms — decreased in 2017 by 29% (140 versus 180).²⁰ The hospital has sustained gains by creating a management system reinforcing this work; it has established a center of experimentation where different care delivery processes can be tested (see discussion below at Question 4.1).²¹

Equally important to deploying strategy is deciding what not to do. One of the most important activities is deselecting strategic initiatives and setting priorities. By doing so, leadership can avoid overburdening managers and staff. It is not uncommon to see 200 to 300 ongoing initiatives in a health care system. These initiatives can take managers and frontline workers away from daily improvement and achieving the strategic goals set out by senior management.

At Munson Healthcare, a nine-hospital system based in Traverse City, Michigan, the executive team created a strategic filter with a series of yes/no questions aimed at prioritizing initiatives into four categories: mission critical, important, on hold, or stop. Using this filter, they eliminated 25% of existing strategic initiatives. This allowed space for them to work on the top strategies and build a daily management system to support the improvement ideas of staff.

Baldrige Question 3.1: How do you listen to your customers and determine products and services to meet their needs? How do you obtain information from your customers?

The number one — and most important — Shingo principle is customer value. In health care, most processes are designed around providers. Medical staff tend to work in individual silos and rarely think about the patient experience across the enterprise of their care. As leaders design new care models, they must consider how the patient experiences that care. The only way to do that is to literally walk with the patient through their experience, and then involve patients in redesigning the care model.

Consider this: A physician follows a patient from entry into the ER until finally being admitted to a room in the hospital. The whole experience is exhausting: waiting for 4 hours simply to get the OK for admission, then waiting another 1½ hours to be moved from the ER to a room. There are more than 100 questions the patient has to answer, most of them duplicative. There are five handoffs between different providers. After experiencing this alongside the patient, a physician at Appleton Medical Center in Appleton, Wisconsin, helped lead a redesign effort involving former patients that ultimately resulted in an 80% reduction in wait times for admission.

Today, organizations rely on HCAHPS scores to determine patient feedback. These scores are poor indicators; they're only snapshots in time. Focus instead on real-time complaints and problem-solving. At St. Mary's, nurses encourage family members to fill out improvement slips and place them on the huddle board. This generates real-time feedback. Nurses report that the best ideas for improvement have come from patients' families.

Baldrige Question 3.2: How do you build relationships with customers and determine satisfaction and engagement? How do you engage customers by serving their needs and building relationships?

The best feedback health care leaders get is a patient complaint. Whether a patient writes a letter or calls someone to complain, the Shingo Model considers these interactions golden nuggets. Sadly, health care leaders don't always recognize these as golden nuggets; instead, there is usually shame and blame attached to the caregiver who was involved in a complaint. A better practice is to call every patient who sends a complaint letter or email. In our experience, most patients are quite willing to get involved either working on a value-stream redesign project or some type of improvement event. Patients who have helped improve health care processes can become the biggest cheerleaders in the community for the organization.

“ *Redesign goes an inch wide and a mile deep to address an important business problem.*”

To achieve customer engagement, a deep understanding of customer needs is essential. But very few health care delivery organizations do this well. To truly deliver new, breakthrough care models, a more robust process is needed. This is the function of new product and service development. Health care delivery is almost entirely focused on care delivery, not new care model development. Yet companies building organizational excellence must have both.

One such exemplar is at Atrius Health, a Boston-area multispecialty physician group. Starting at the end of 2015, a yearlong process with deep customer research through hundreds of interviews of frail elderly patients led the development team to create a few core concepts for a new care model. One of the findings from the interviews with patients was this sentiment: “I’d rather die than go to the hospital again.” Using this input, a prototype was developed for care in place. Bringing all the service and technology to the patient’s home reduced hospital admissions by 50% in the first year alone, saving millions of dollars in hospital costs.²² Once the care-in-place concept was proven, it was implemented across the organization, and a partnership with an outside company has allowed Atrius to scale the solution.

All new care model ideas should be based on understanding customers’ unmet needs.

Baldrige Question 4.1: How do you measure, analyze, and then improve organizational performance?

Answering this question requires us to return to the Shingo principles focused on improvement. Those principles are: scientific method for problem-solving; focus on process, quality at the source, flow, and pull value; and seeking perfection.

These underlying principles support the creation of a *model cell* by applying systems and tools to redesigning processes. A model cell is a department, clinic, or other care delivery unit where a new approach to delivering care will be tested. The criteria for where to start are:

- There is a significant problem to be solved
- The place chosen should have significant quality, cost, or patient experience problems
- The frontline team in this area must be willing to embrace change and have stable leadership

Redesign goes an inch wide and a mile deep to address an important business problem. This involves radically redesigning care in a way that better meets customer needs, with the goal to improve existing performance by 50% to 100%. It involves a frontline team in a department, clinic, or other value-creating work area. The result is new leader and frontline *standard work* — in other words, consistent processes that address recurring situations.

This work takes time. The redesigned processes and roles of caregivers may take up to 9 months or more. Only then, when the new standards are firmly in place, is it time to spread to other areas. The spread is not copy-and-paste but copy-and-*improve*. In this way, *spread sites* can put their own fingerprints on the changes. As the improved care model is developed, the standard work for management is also created; without that, there is no sustainability of the model cell work. Standard work is not a set of policies and procedures that collect dust in a drawer. Standard work is the actual steps in the care process. For example, the standard work might include stand-up management huddles, or the process of reviewing performance and applying plan-do-study-act cycles to daily problems. Standard work is a reproducible process designed to achieve a specific outcome.

Key metrics need to be established to determine how the new work product is performing. This should be made visible on the floor if possible. It should be updated daily so team members know how they are doing. These metrics should be simple and clear — for example, the number of patients who left without being seen today in the ER, or the number of Foley catheters that are indwelling today and when they will be removed. Systems and metrics matter, but without a conducive work environment, improvements won't be sustained.

Baldrige Question 5.1: How do you build an effective and supportive workforce environment?

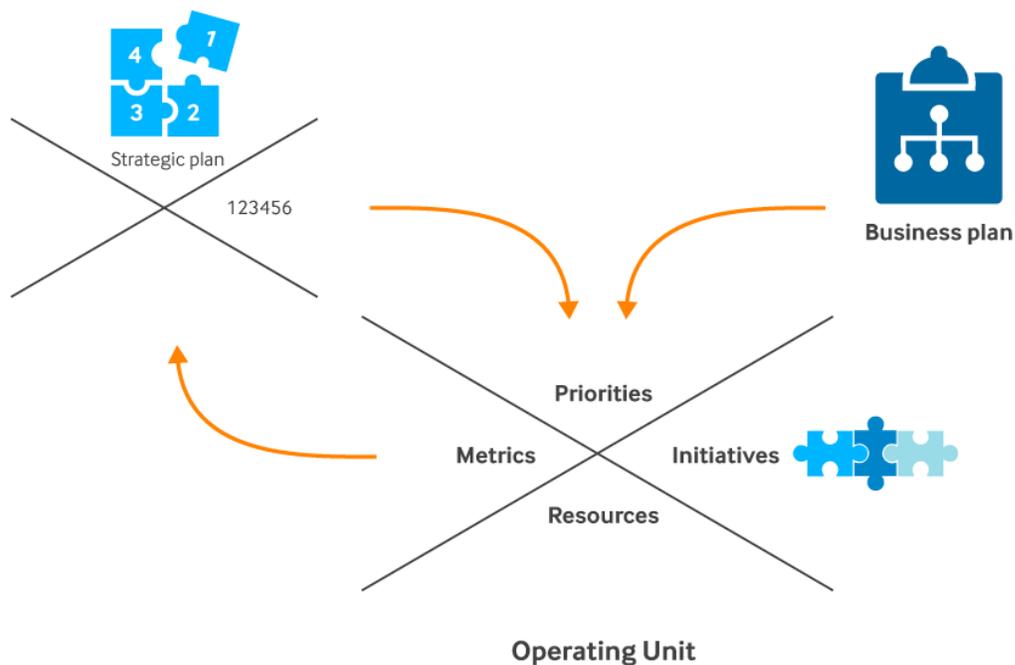
As mentioned earlier, two of the most important activities leaders undertake are setting priorities and deselecting initiatives. If these are not done, teams are overburdened.

An important way to visualize this is by creating a matrix that allows leaders to know what the workforce capability and capacity needs are (Figure 4). To create the matrix, draw an X and then, in each triangle of white space around the X, add the organization's activities. The compass points incorporate the organization's True North metrics; the breakthrough strategies; all the initiatives that are required to achieve breakthrough strategies; and the resources required to achieve the initiatives, which is where capacity is determined. The hours of staff time required are listed for each initiative. The more initiatives, the more hours required. Having this visual reality check allows leaders to quickly see the burden they have placed on workers in the thousands of hours needed to achieve the goals they have established. If this burden is not reduced, burnout is the inescapable result.

FIGURE 4

Strategy Deployment: Matrix to Assess Workforce Capability and Capacity Needs

By laying out the components in the matrix, leaders can ensure that strategic priorities are supported and that workforce capability and capacity needs are considered. At the 9 o'clock position True North metrics are inserted. At the 12 o'clock position are the breakthrough strategies that should support achieving True North. In this figure we are describing a typical hospital entity that is part of a larger health system. The breakthrough strategy comes from combination of the individual hospital entity business plan plus the health system's deployed top strategies. Deployment from the system should not be top down but rather part of a process of dialogue between the entity and system leaders as to what is reasonable and achievable at the entity level. At the 3 o'clock position are the initiatives that are required to achieve the breakthrough strategies and at the 6 o'clock position are the system resources required to achieve the initiatives, such as HR, finance, IT, marketing, and related functions.



Source: The authors

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It's important to create systems to recruit, hire, and train new staff. HR staff need to build standard work systems that result in the type of staff the organization is looking for to ensure a good cultural fit. Behavioral-based interviews are the best way to achieve this. For example, the willingness to seek input, listen carefully, and continuously learn creates an environment where everyone feels respected and energized. Two questions that could help suss out this behavioral trait in a potential employee are:

- What's more important to have: the right answers or the right questions, and why?

- Describe a time or situation when you recognized you made a mistake that you had to admit to others. How did you handle the situation? What did you learn?

Baldrige winners invest heavily in training. The average is about 10 days per worker per year. Winners work hard at information transfer, testing, and question support. The investment is costly, but winners' records consistently document that length of stay and improvements in efficiency offset and exceed the cost.

Standard work in HR for benefits, security, and access to services such as employee assistance programs should be developed and made available to all staff as part of a supportive work environment.

Baldrige Question 5.2: How do you engage your workforce for retention and high performance?

Culture is about behaviors, and great companies are looking for specific personal behaviors that lead to outstanding staff engagement. These behaviors need to be defined by each leadership team, but literature and personal experience direct us to the following critical five dimensions²³:

1. **Willingness.** Leaders must be willing to change because enterprise excellence demands different behavior from leaders. One observable behavior is self-reflection. A 15-minute reflection time built into the weekly schedule is an example. During this reflection, leaders should ask two questions: "What did I do this week that unleashed the creativity of my team? What did I do that shut them down?" The answers to these questions help the leader understand what experiments to try to better engage the team.
2. **Humility.** Humble leaders produce better overall results.²⁴ The observable behavior is going to the *Gemba* to learn and show respect. (*Gemba* is a Japanese term that refers to the physical place where value is created.) The understanding that leaders gain by interacting with frontline staff helps them to remove barriers and to understand the business of health care more deeply.
3. **Curiosity.** This is a dimension that is not generally accepted in leadership performance, but it is critical for building a culture of continuous improvement. This can be observed if leaders are asking open-ended questions, listening carefully, and applying *A3 thinking*. (The term stems from the notion of documenting the detailed thoughts about a problem or opportunity for improvement on an A3-size sheet of paper, which is 11 by 17 inches.) Using A3 thinking, we should observe whether the leader has established a set of experiments aimed at solving a problem and has developed a plan of how to achieve results. A3 thinking is a rigorous approach to problem-solving.²⁵
4. **Perseverance.** This behavioral dimension can be supported if the leader has chosen a buddy to help them learn and stick with new behaviors. The role of the buddy is to observe the leader in action and give immediate feedback on behavior. This can be a trusted insider or an external expert. A coach, on the other hand, is teaching new skills and observing actions and then proposing different ways to act.

5. **Self-discipline.** Finally, self-discipline is about a leader's *standard work*. This guides the weekly work of leaders and managers.

For example, Grey Dube, CEO of Leratong Hospital, a public hospital in Johannesburg, South Africa, has standard work of going to the floors and observing his managers. He spends as much as 3 hours a week coaching and mentoring his team. This includes observing how the managers conduct improvement huddles, what questions they ask, and whether they are teaching frontline workers to solve problems. At the leadership level, standard work like this is about 15%–20% of the week's work.

“ *The spread is not copy-and-paste but copy-and-improve. In this way, spread sites can put their own fingerprints on the changes.* ”

At a recent international conference,²⁶ Dube reported a reduction in neonatal ICU deaths from a baseline of 20.5 deaths per 1,000 births in 2017 to 11.3 deaths per 1,000 births in 2018, which had sustained as of September 2019. The average NICU death rate in South Africa is 29 deaths per 1,000 births. Dube attributes his organization's success to two changes he and others made in 2017: spending more time understanding the needs of the frontline workers and management, and the development of the model cell in the NICU.²⁷ Managers and staff redesigned workflows, focusing on reducing infections. Staff had many ideas about how to reduce infections. One important idea was to ensure that everyone, including new mothers, effectively washed their hands when entering the unit. They had observed housekeepers at a sister hospital in Johannesburg teaching everyone, including physicians, how to wash their hands and then monitoring whether they did it or not. In addition, managers began acting differently. They carefully listened to staff when addressing another reason for the high mortality rates: absenteeism. Lack of adequate staffing was resulting in babies dying. Once the staff realized they were part of the problem and the manager actually was their ally, ideas for how to improve absenteeism began to emerge. Leratong Hospital is in a poor area. When staff had sick family members, there was no one to care for them; they had to take a day off. But what they told the NICU manager was that many times they could find someone to help and take only half a day off. This simple improvement reduced absentee days from 38 per month to 16 per month.

Most health care organizations measure staff engagement. If leaders are changing their own behavior, engagement can soar.²⁸ If they are applying the typical top-down approach to management, engagement tanks. At UMass Memorial Health Care, an academic health system based in Worcester, Massachusetts, a concerted effort by management to change behavior led to dramatic results.²⁹ People who reported feeling threatened during a conversation with staff dropped from 60% to 16.7%. And complaints of poor communication dropped from 46% to 8%. One of the managers stated, “If we are not working in a culture of respect and openness, people will be less likely to speak up if they see an error. That's how people get hurt, when we shut down.”

So the management team worked with frontline nurses, technicians, housekeepers, physicians, and others to help them develop a code of ethics they call the standards of respect:

- **Acknowledge:** Notice others and recognize their contributions or concerns.
- **Listen:** Give your full attention to show you understand and care about what others say.
- **Communicate:** Share appropriate information generously and as soon as possible.
- **Be responsive:** Respond in the expected time frame to show others' priorities are important to you, too.
- **Be a team player:** Do your work in a way that also helps others.
- **Be kind:** Choose to be friendly, patient, and compassionate — even when it's easiest not to.

Another component of a high-performing work environment is developing people. At least 40% of a leader's time each week should be spent on developing people. This is how to ensure internal succession for jobs, but it also shows the ultimate respect for people. The once-a-year performance review is not a good process for development. Regular feedback and coaching are required so that people understand what is expected, how they are doing, and what they need to work on to improve.

Baldrige Question 6.1: How do you design, manage, and improve your key products and work processes?

The secret sauce to ensuring that improvement is sustained is found in the management system: It must support both the work of the care model improvement areas and daily improvement. Organizational excellence requires a different way of thinking about management. Management roles and responsibilities are redefined to be supportive of frontline problem-solving aligned with the system priorities communicated through True North metrics. Determining what to measure at the front line is important and should be connected to True North.

For example, at St. Mary's, the C suite has focused on patient harm. Every department developed a measure supporting a reduction of patient harm. One of the model cells chosen was a medical unit that was experiencing many patient falls — 38 falls in 2016 alone. Frontline teams were mobilized to understand the problem and find ways to improve. By the end of 2017, only 7 falls had been reported, and through the first 4 months of 2018 the number stood at zero. The teams had evaluated the data and found falls usually occurred on the night shift. As countermeasures, the nurses created simple educational materials for patients and families so that they understood the problem. They then installed night lights at the bedside and motion sensors in the bathrooms. For high-risk patients, the night nurses rounded more frequently. The new standard work went into the training activities for existing and new nurses. Everyone was now following a common standard. The learnings were ready to be spread to the next unit. This progression requires managers and leaders to regularly be at the *Gemba* where value is created to understand needs and remove barriers to the front line getting their work done. St. Mary's has been the safest hospital in Canada 3 out of the last 6 years.³⁰

Let's take a closer look. The daily management system developed at St. Mary's organizes the work of the health system and has three constants: daily check-ins, daily problem-solving, and monthly performance reviews. Check-ins are brief one-on-one meetings between supervisors and their team at the start of every shift to assess needs, determine where issues might occur, and seek improvements. This is a mentoring session as much as it is resource planning, and the meeting takes place in the work area, not the supervisor's office. Supervisors then have similar meetings with their bosses (area managers), who meet with their bosses (division leaders), who all have variations of the same questions, which are guided in part by the organization's strategic needs.³¹

Rather than problems piling up on the manager's desk, a daily problem-solving system is required; this involves frontline staff and usually takes place within daily unit huddles. A manager leads a team of workers to identify and then address problems. A standard problem-solving process that applies root-cause analysis and follows plan-do-study-act cycles is intended to teach problem-solving as well as find solutions. Separate team-based problem-solving efforts are used to address larger issues that involve more than one department.

“ *The secret sauce to ensuring that improvement is sustained is found in the management system: It must support both the work of the care model improvement areas and daily improvement.* ”

Performance reviews are a set of cascading meetings conducted monthly to assess progress toward improvement goals. This is not management by objectives, which is a common top-down way for leaders to tell people what to do. Rather, the performance review is a check-in. Each session begins with area managers working with their advisory teams, who act as mentors and sounding boards. The advisory team can include a finance representative, a quality manager, an IT representative, or a human resources manager. Next, executives at the vice-president or director level meet with their direct-report managers to assess needs and offer help. Then executives meet with the CEO to ensure the work is in alignment with the critical few improvement drivers (or True North metrics) in areas of quality, safety, cost, and employee engagement.

If leadership has decided to track and improve infection rates, for instance, daily check-ins will include questions about which patients might be at risk for infections, unit huddles might discuss procedures for changing dressings and IV lines, and performance reviews will focus on gaps between the current and target infection rates.

UMass Memorial has been on the journey of enterprise excellence since 2011. The management system developed involves tiered huddles. At every level of management there is standard work for huddles that occur each day, allowing for problems to be escalated or identified before reaching crisis stage. At the front line there is an idea board. This is the place frontline staff come daily to share ideas. More than 70,000 ideas for improvement have been generated by staff, and most have been implemented by staff. Clearly, the UMass Memorial management system, now on its 13th draft, has unleashed the creativity of all the people working in that large health system.

Baldrige Questions 7.1–7.5: What are your health care results and your results for your patient and other customer service processes?

The results section of the Baldrige framework is divided into the following categories:

- Product performance and process effectiveness
- Customer-focused performance
- Workforce-focused performance
- Senior leadership and governance
- Financial viability and market strategy implementation

The Shingo Model is aimed at achieving results in these categories, but how the results are achieved is important. It's easy to simply lay off hundreds of people to achieve a given financial result. But if the leaders are following the Shingo Model, that action might violate the core principle of respect for every individual. Instead, leadership should embrace the principles of the scientific method for problem-solving and focus on the process to develop new care models or administrative processes that deliver higher quality at lower cost. This approach will tend to address not only financial viability, but also one or more of the other results categories.

Results should be visually displayed and kept up to date so that all staff know whether they are winning or losing, and organizations should have a process for analyzing why targets are not being met. This process must include talking with the people who do the work; they are the ones most likely to understand problems and recommend effective ways to address them.

Research Evidence to Date

The Baldrige Excellence Framework and the Shingo Model are challenging departures from the historic practice in health care. The combination of worker empowerment with rigorous measurement and goal-setting calls for radical shifts in leadership, careful implementation of measures, and extensive training. The research evidence to date is extremely limited and shows mixed support, probably attributable to the challenges of overcoming legacy managerial systems that don't support continuous improvement.

In health care, organizations are early in experimenting with integrating the Baldrige Framework and the Shingo Model. The research evidence to support use of the Baldrige Framework and the Shingo Model is mixed and still emerging. The best available research so far consists of single-site case studies. Reports of Shingo Model applications are encouraging, though they vary in depth and rigor. For the Baldrige Framework, we have the self-reported case studies from the winners of the Baldrige award. They follow the framework and are rigorously audited, but they are limited in detail. And, of course, they reflect the most successful cases, so we have no information on organizations that have failed or made partial attempts.³²⁻³⁴

Organizational excellence, also referred to as Lean, is the oldest and probably most widely followed model. In health care it has a mixed record. A recent national survey of U.S. hospitals documented widespread use of Lean. Of 1,222 responses, 61% reported the use of Lean or a similar model, with an average time used of 5.2 years. But only 102 hospitals (approximately 12%) reported they were at a mature stage of hospital-wide implementation. Several measures of Lean implementation, such as degree of leadership commitment, were positively associated with reported positive performance outcomes.⁹

Systematic literature reviews have generally found inconsistent support for Lean's impact on performance. One review called for better, more rigorous studies.³⁵ Others found no relationship with patient satisfaction in primary care centers.³⁶ Still other studies have highlighted the importance of implementation, sustainability, leadership, and workforce flexibility in achieving desired performance improvements.^{37,38}

The Baldrige Framework has been effective in improving organizational performance in organizations such as St. David's HealthCare in Austin, Texas.³⁹ The Shingo Model has been successfully introduced in organizations such as Seattle Children's Hospital, Zuckerberg San Francisco General Hospital, and Intermountain Healthcare in Salt Lake City. Further research is needed that compares these approaches with a matched group of hospitals not using these approaches. Longitudinal research now underway at University of California, Berkeley's Center for Lean Engagement and Research will be able to shed more light on the extent to which the Lean and related transformational performance improvement approaches are associated with and lead to improved performance, and why.⁴⁰

Codifying the Pursuit of Organizational Excellence

It is our belief that health professions schools (e.g., medicine, nursing, pharmacy, dentistry, public health, allied health) and health care management programs should provide required curriculum content and field experience in systems science and transformational performance improvement approaches like the ones we have described here. Continuing education credits for health care professionals should include education on building a problem-solving culture and understanding how to push problem-solving down to where care is delivered.

Government, health care leadership, clinicians, payers, and patients all have a role in improving health care organizational performance. And although additional research is needed, the early evidence suggests that, together, the Baldrige Excellence Framework and Shingo Model offer a roadmap to improve quality and safety and lower the cost of U.S. health care. We have outlined an approach for fundamentally changing the way health care organizations are led and managed that is working in many places around the world. There is much work to be done, including making performance transparent, creating the appropriate incentives for improvement, and getting public policy focused on improvement. But all of this is possible if we take our leadership responsibility to our patients seriously.

John S. Toussaint, MD

Chairman, Catalysis Inc. Adjunct Professor, Ohio State University Fisher School of Business

John R. Griffith, MBA, FACHE

Professor Emeritus, The University of Michigan School of Public Health

Stephen M. Shortell, PhD, MPH, MBA

Co-Director, Center for Healthcare Organizational and Innovation Research, UC Berkeley School of Public Health Co-Director, Center for Lean Engagement and Research, UC Berkeley School of Public Health Distinguished Professor Emeritus and Dean Emeritus, UC Berkeley School of Public Health

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