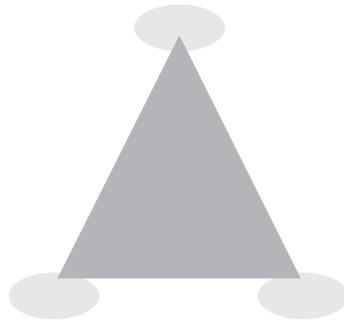


Innovation Series 2007



Execution of Strategic Improvement Initiatives

To Produce System-Level Results

The Institute for Healthcare Improvement (IHI) is a not-for-profit organization leading the improvement of health care throughout the world. IHI helps accelerate change by cultivating promising concepts for improving patient care and turning those ideas into action. Thousands of health care providers participate in IHI's groundbreaking work.

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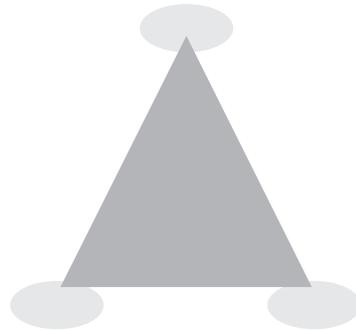
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Execution of Strategic Improvement Initiatives

To Produce System-Level Results

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Executive Summary

A simple framework for getting results from strategic improvement work is Will-Ideas-Execution. Achieving results at the system or organizational level requires will at all levels, but especially the will of top management to make a new way of working attractive and the status quo uncomfortable. The new system will require new ideas about how work gets done, how relationships are built, and how patients participate in their care. Processes to scan widely within and outside of health care will be needed to find ideas robust enough to form the basis of a new system that performs at unprecedented levels. No single initiative or set of unaligned projects will likely be enough to produce system-level results. This paper proposes a framework for execution of strategic initiatives aimed at producing system-level results.

Background

The Institute for Healthcare Improvement (IHI) uses a simple mantra to describe the essential elements for strategic improvement: Will, Ideas, and Execution.¹ You have to have the *will* to improve, you have to have *ideas* about alternatives to the status quo, and then you have to make it real—*execution*. This white paper, which previously appeared as a four-part series on IHI.org, proposes a system of execution of a portfolio of improvement projects aimed at achieving sustained results at the system level.

Introduction

The best at ..., the leader in ..., the national model for ..., highest quality health care, improve the health of the community, leave no one behind—the aspirations of health care organizations are high, as expressed in their mission and vision statements that invariably contain some of these words and phrases. Quality improvement in health care has progressed. Many clinics, practices, hospitals, or other organizations can get results from projects such as reduction of medication errors, reduction of mortality from acute myocardial infarction, improvement in management of a particular chronic disease, or reduction of delays in discharge from a hospital. These projects often are initiated by internal champions such as a surgeon motivated to lead an effort to lower surgical site infections, a nurse interested in management of anticoagulants, or a pharmacist passionate about medication safety. External forces also give rise to improvement projects—for example, The Joint Commission National Patient Safety Goals and Core Measures, or IHI's 100,000 Lives Campaign and 5 Million Lives Campaign. This plethora of ignition sources predictably results in a long list of worthwhile projects and measures, each of which makes sense on its own. However, the collection of projects is less likely to make sense as a coordinated whole aligned with the strategic direction of the organization.

Quality and safety are part of the strategic imperatives of an increasing number of health care organizations. One would hope that a desire to fulfill the organization's mission is driving this trend. In addition, a variety of internal and external pressures are contributing to the strategic importance of quality and safety. Some health care organizations are being driven by their “balanced scorecards” and the realization by senior leaders and board members that continuous improvement in the organization is weak when measures are flat or even showing a decline in performance. Others are realizing that increasing volumes are overwhelming slow improvement efforts. Some are driven by falling financial numbers and realizing that efficiency and effectiveness are critical to maintaining organizational health. Still others are for the first time facing real competition with neighboring—or even national—organizations taking away market share, gaining better reputations, or challenging their long-held dominance in a certain area.

A simple framework for getting results from strategic improvement work is Will-Ideas-Execution. Achieving results at the system or organizational level requires will at all levels, but especially the will of top management to make a new way of working attractive and the status quo uncomfortable. The new system will require new ideas about how work gets done, how relationships are built, and how patients participate in their care. Some of these ideas may come from sources internal to the organization, but many will come from outside. Processes to scan widely within and outside of health care will be needed to find ideas robust enough to form the basis of a new system that performs at unprecedented levels. No single initiative or set of unaligned projects will likely be enough to produce system-level results. Even aligned projects alone will not be sufficient. It will be necessary also to have a pervasive understanding of work as a collection of processes. The responsibility of managers and supervisors includes continual improvement of the work processes under their control.

System-Wide Approaches to Execution

The will of participants in IHI's 100,000 Lives Campaign and the will, creativity, and perseverance of the participants in the five years of the Pursuing Perfection initiative led IHI to conclude that execution is currently the weak link in the three-component chain of Will-Ideas-Execution. As a result, IHI launched a research-and-development project to gather data on the approaches used by organizations inside and outside of health care. IHI conducted interviews with leaders from the well-known US companies Caterpillar, Milliken, and DuPont. We also conducted interviews with two lesser known companies, OMI (www.omi.ch2mhill.com), which manages water and wastewater treatment systems and is a winner of the US Malcolm Baldrige National Quality Award, and SRF from India (www.srf-limited.com), which makes industrial products such as high technology textiles and is one of the few winners of the Deming Prize from outside of Japan. In addition IHI, through its programs and alliances, had opportunities to observe, interview, and learn from many organizations in health care, including Ascension Health, the Bellin Health System, HealthPartners, OSF Healthcare System, the health system of Jönköping County in Sweden, and Cincinnati Children's Hospital Medical Center. This paper contains a synthesis of the data that we gathered. Based on this synthesis, we propose a method of execution aimed at producing transformation through achieving sustained results at the system level.

Several common themes emerged from the organizations that we interviewed or observed. Each of the industrial companies set corporate goals and goals in each of their businesses. (A "business" is usually defined by a group of like customers or markets. Service lines in health care organizations or divisions in a teaching facility serve a similar purpose.) Several of the companies had corporate themes that became inputs to the planning of all the businesses. For example, at Caterpillar each business was encouraged to consider the theme of environmental sustainability when choosing their portfolio. The corporation also supported organization-wide initiatives related to sustainability.

Each of the organizations was using its investment in improvement to accomplish these strategic goals. They also used a very strong selection process to pick projects and initiatives to achieve the strategic goals. Focus and the courage to say what will not be done this year echoed throughout the interviews: "Less is more." "The less we do each year, the faster the results at the system level come." "We hate to see performance below our standards, but we will do less if we try to do it all." Although the number of system-level initiatives was small, the ambition of the aims was not.

Most of the companies also spread good ideas and methods around the organization. Some demanded some standardization of processes such as pricing or new product development among the largely autonomous businesses. In the health care systems, standardization included standard protocols for administering prophylactic antibiotics before surgery, standard processes for reporting lab results to patients, or standard appointment scheduling templates.

Since the investment in people's time and investments of capital were substantial, each of the organizations had formal oversight systems operated by managers and executives. Monthly reviews of projects were conducted by those individuals most accountable for the project's success.

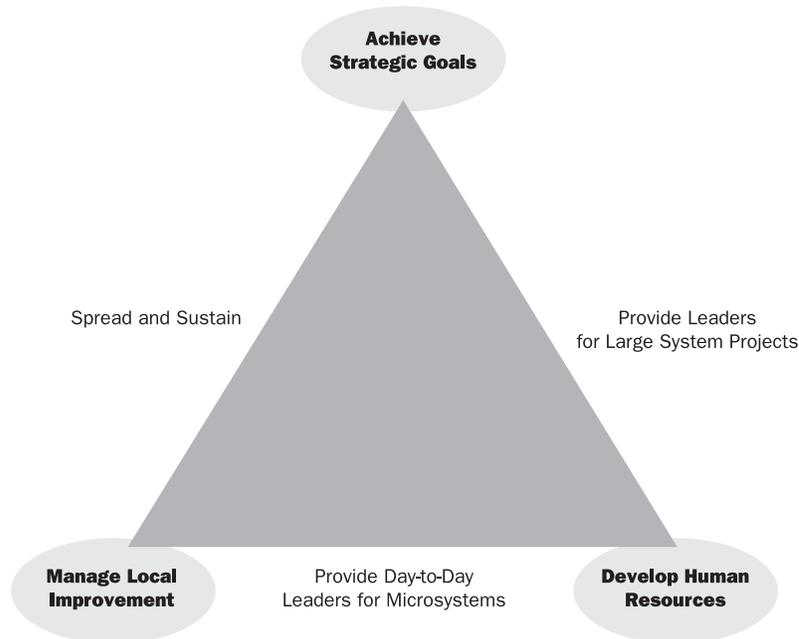
Quarterly reviews by senior executives of a portfolio of projects aimed at a strategic goal were common occurrences. SRF in India supplemented these reviews by using a lean concept of “making the system visible.” They attempted to make the results and progress of key initiatives transparent by using readily accessible charts, illustrations, or stories. A surprisingly strong theme of transparency, combined with intrinsic desire to serve patients or customers and produce business results, emerged as an important source of motivation.

Several important differences between the industrial and health care organizations also emerged. The most significant difference was in the investment of people’s time to run the projects in the portfolio. In most cases, the projects in industrial organizations were led by an assigned full-time person. This provided a reliable day-to-day driver of the effort. If the project was big enough, one or more additional persons might also be assigned to work full time on the project. One of the industrial leaders expressed skepticism that a busy person could carve out 20 to 50 percent of their time reliably for the project work, while also having to attend to their daily “normal” work. However, this is precisely how many health care organizations are deploying their resources for improvement projects. An important difference between the sectors may explain this difference in approaches. In the industrial companies, being selected as a project leader was considered favorable for one’s career. Many leaders were managers, and gaining experience and recognition by leading a highly visible project often led to career advancement after the project was completed. For health care managers the same motivation should apply. However, the career of a doctor or nurse who takes leave from clinical work to lead a project might not be enhanced if their aim is to return to clinical work. For health care leaders, finding time for clinicians to contribute to system-wide improvement is a deployment issue that will need to be addressed. Perhaps looking to academic models in which individuals balance clinical care, education, and research will provide some direction.

A Framework for Execution

Based on these observations and our experience at IHI with advancing the improvement of the quality of health care, we propose the framework for execution shown in Figure 1. Of course, the framework will need to be adapted to local circumstances, but we are confident that it contains the components of an execution system capable of producing system-level results.

Figure 1. A Framework for Execution



An organization that is able to consistently improve system-level performance will have capabilities in three areas:

1. The ability to consistently deliver on **system-level aims** aligned with strategic priorities by coordinating a portfolio of projects and the associated human and capital investments;
2. Ubiquitous **local management and supervision** of activities aimed at stabilizing local performance, supporting or sustaining strategic aims, and providing an environment that promotes joy in work; and
3. Continual **development** of a sufficient number of employees who are capable of leading initiatives to produce system-level results, as well as managers and supervisors capable of quality-based management in their local areas.

Improving System-Level Performance: Setting Goals and Ensuring Results

A proposed system for achieving breakthrough levels of performance contains four components:

1. Setting Breakthrough Performance Goals
2. Developing a Portfolio of Projects to Support the Goals
3. Deploying Resources to the Projects That Are Appropriate for the Aim
4. Establishing an Oversight and Learning System to Increase the Chance of Producing the Intended Results

1. Setting Breakthrough Performance Goals

Strategic and business planning produces a set of goals for the organization. As the focus on quality and safety increases, many health care organizations are setting a balanced set of goals that include goals related to finance, patient safety, clinical quality, patient experience, and human resources. Reflecting its overall aim of “building the Toyota of health care,” IHI’s Pursuing Perfection initiative developed a set of “whole system measures” along with goals for each measure (referred to as the “Toyota specifications”) to illustrate the level of ambition and scope of a system-level goal (see Figures 2 and 3). For example, a breakthrough goal for efficiency consists of assuming responsibility for the total cost of care—cost per capita—rather than a specific aspect of care such as hospital costs, length of hospital stay, or cost per case. Setting aims regarding total cost requires that design concepts relate to the total system or linkages between components such as hospitals and long-term care facilities. The aim might be made more manageable by setting a boundary for the population under consideration—for example, cost per capita for severely ill persons with multiple chronic diseases.

Figure 2. Toyota Specifications — System Level

Dimension	Measure	Performance Specification
Patient Experience	Response to question in How’s Your Health database (www.HowsYourHealth.org): “They give me exactly the help I want (and need) exactly when I want (and need) it.”	72% of patients report, “They give me exactly the help I want (and need) exactly when I want (and need) it.”
Effective and Equitable Care	Self-reported health status	5% of adults self-rate their health status as fair or poor. (Response rate will not differ by income)
Efficient Care	Per capita health care expenditures	\$3,000 per capita

Consider “Hospital Readmission Percentage,” one of the measures in Figure 3. Achieving breakthrough performance for reducing readmissions requires redesign across organizational boundaries. The new system likely would include new ways of integrating the hospital, home care, primary care offices, and the family that center on the unique needs of the individual patients.

Figure 3. Toyota Specifications — Component Level

Dimension	Measure	Performance Specification
Evidence-Based Care	Pervasive Reliability	Reliability Levels of 10 ²
Safe Care	Adverse Events per 1,000 Patient Days	5 Adverse Events per 1,000 Patient Days
Timely Access to Care	Days to Third Next Available Appointment	Primary Care: Same-Day Access Specialty Care: Within 7 Days
Effective Care	Hospital Standardized Mortality Ratio (HSMR)	HSMR = 57
Effective Care That Crosses Barriers	Hospital Readmissions Percentage	30-Day Hospital Readmission Percentage = 4.69%
Safe Work Place	Occupational Injuries and Illnesses	0.2 Cases with Lost Work Days/100 FTEs/Year
Efficient Utilization and Resource Use	Hospital Days per Decedent During the Last Six Months of Life	7.24 Hospital Days per Decedent During the Last Six Months of Life
Efficient Care	Medicare Reimbursement per Enrollee	\$5,026 per Enrollee
Patient-Centered Care	Patient Satisfaction	81% of Patients Are Very Satisfied

Pitfall

The executive attempting to set system performance goals will often encounter resistance to the ambition of the goal. One response to this is to reduce the ambition of the goal by moving to a lower level in the system that requires less integration—for example, cost per case in a hospital rather than total costs; or by restricting the time and circumstances—for example, only including readmissions within 14 days for the same disease as the original hospitalization.

Suggestions

- Keep the discussion centered on the patient’s experience over time.
- Use the Toyota specifications as a comparison for the level of ambition in an aim.
- Concede that one project may not be sufficient to accomplish the goal. Provide some guidance as to how the aim might be accomplished and help establish a portfolio of projects capable of achieving the aim.

Pitfall

With so many opportunities for improvement, the urge to set too many goals and under-resource them will be strong.

Suggestions

- Keep the goals at an ambitious level with respect to impact and scope. This will help people realize that accomplishing even one or two of these goals would be a substantial achievement.
- Face the reality of past achievements. It is a rare organization that accomplishes even two improvements in performance at the level of the Toyota specifications in a year.

2. Developing a Portfolio of Projects to Support the Goals

Goals without methods for achieving them lead to distortion of the system, unintended consequences, or unsustainable results. For example, people may try to meet a health care performance goal by sacrificing some other aspect of care: saving money by cutting corners which compromises quality; discouraging sicker patients from coming for care in a given system; using overtime, expediting, or other expensive practices to substitute for effective planning and scheduling; or inappropriately revealing sensitive information in the course of carrying out the project. In this section of the paper we assume that the intent of management is to actually change the system for the better using a defined set of projects.

We also assume that in carrying out the projects the team members will test changes before full-scale implementation, in order to reduce the risks of unintended consequences. Projects can be connected to strategy in at least two ways—top-down or bottom-up—as described below.

- Some organizations, in particular SRF, took a *top-down approach*. Their strategic planning resulted in not more than two system-level goals at the individual business level. Each of the goals was accompanied by three “means,” or “drivers.” These drivers became initiatives for managers in the system. The managers used the same logic to establish their own set of drivers. This cascading definition of goals and drivers made explicit the logic or theory of how the system-level results were to be achieved. From this logic chain, organizations chose a set of projects by means of a negotiation process. Those familiar with the Japanese approach to strategic improvement will recognize this approach to setting priorities as Hoshin Planning and the negotiation referred to as “catch ball.”²
- A related but different *bottom-up approach* to selecting projects used by several organizations was to request nominations for projects related to strategic priorities such as safety, international expansion, community health, patient or customer experience, new service lines, or cost reduction. The list under each strategic priority was then pared down and connected into a coherent whole.

Both of these approaches have merit. The top-down approach emphasizes integration of effort to focused goals. The bottom-up approach provides some assurance that all strategic priorities are receiving some attention. In practice, some combination of the two approaches may be best.

To understand the top-down approach, consider a goal based on the Dartmouth Atlas of Health Care measures of end-of-life care for patients with severe chronic illness that focuses on resource use and on patient experience.³ Figure 4 is an example driver diagram that relates system components (“primary drivers”) and processes (“secondary drivers”) to the achievement of a system-level goal—in this example, appropriate utilization of resources in the last six months of life, as measured by hospital days, ICU days, and physician visits.

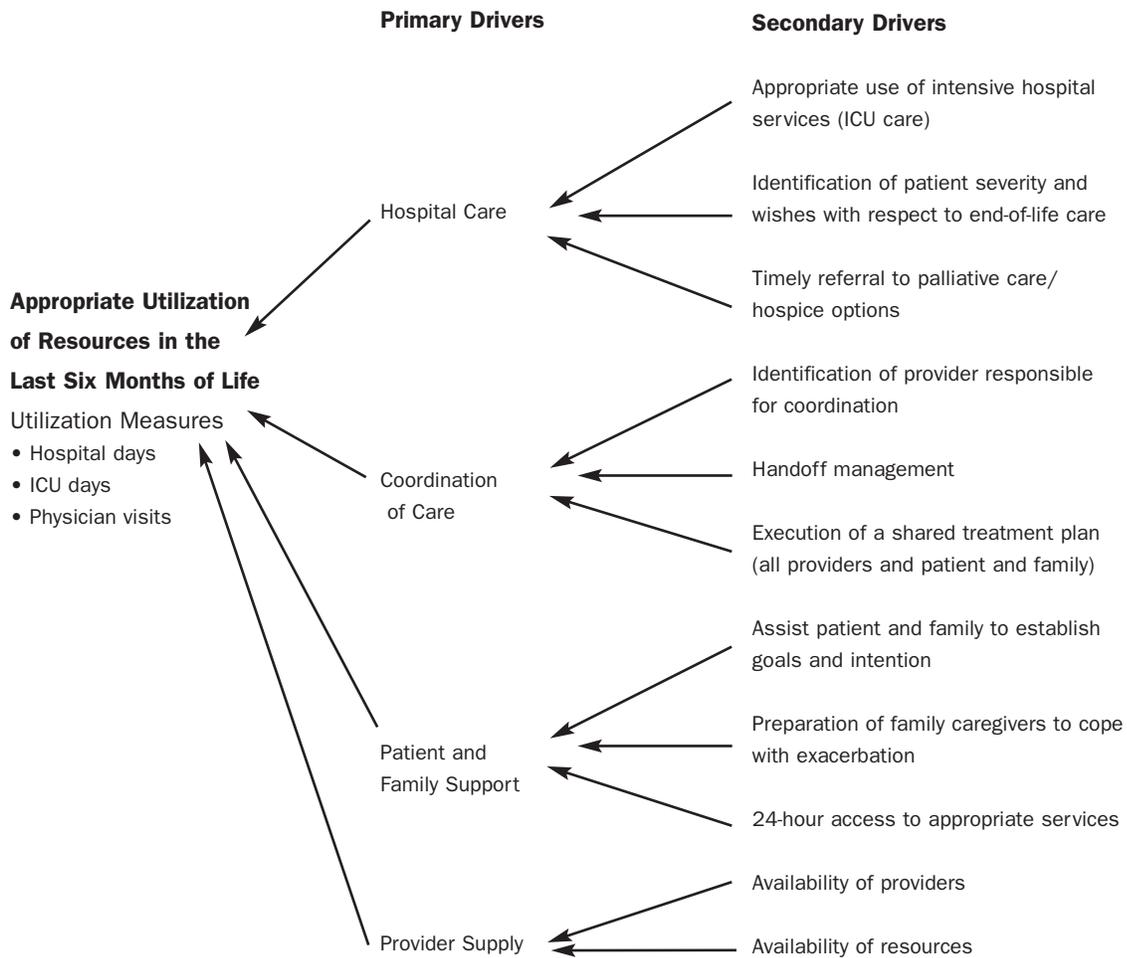
The cascade begins with a system-level goal—in the example in Figure 4, appropriate utilization of resources in the last six months of life. To provide an informative link between the goal and operations, the goal is accompanied by the means, or “drivers,” to accomplish the goal. It is the executive team’s responsibility to ensure that the goal is connected to drivers. Four primary drivers have been identified in Figure 4: hospital care, coordination of care, patient and family support, and provider supply (supply of resources). Each of the drivers could be thought of as an initiative assigned to one or more persons with its own set of secondary drivers. The person or group responsible for the primary driver is also responsible for establishing the set of associated secondary drivers. For example, for hospital care, the responsible executives, perhaps high-level medical and nursing executives, have chosen three drivers: appropriate use of intensive hospital services, identification of patient wishes with respect to end-of-life care, and timely referral to palliative care services.

Assume that an organization had an aim of being in the lowest 10 percent with respect to utilization of health care services by taking a more patient-centric and efficient approach to care. Assume also that Figure 4 outlines their theory of what drives appropriate utilization in the last six months of life. The organization has several ways to pick a group of projects consistent with their aim, theory, and capabilities. The decision process will include some balance of analysis of data, intuition, and negotiation of interests. Different organizations and leaders will weight these inputs differently. Some examples of project portfolios include the following:

- Four large projects, one for each of the primary drivers
- Three projects for each of the primary drivers except “provider supply” (The organization may believe that more “will” needs to be built in the medical community before taking on this driver, or better ideas are needed about how to deal with oversupply.)
- Three projects: one for inpatient, one for outpatient, and one for coordinating between them
- Several projects that are patient-centric and address all the drivers, each of which addresses only a segment of the population (The segments might be chosen by type of disease, disease severity, or the level of support that the patient has from the family.)

- Five projects at the secondary driver level, identified by studying the secondary drivers and finding the ones that are predicted to have the most impact on the aim (Note that this approach should be used with caution since it is not often the case that working only on small subset of secondary drivers produces system-level results.)

Figure 4. Example Top-Down Approach to Connect Improvement Projects with Strategy: Establish a System-Level Goal and Drivers



To understand the bottom-up approach, consider the IHI’s 5 Million Lives Campaign.⁴ The Campaign is focused on safety and aims to reduce harm associated with care. The Campaign uses a single measure of harm at the system level, known as the IHI Global Trigger Tool,⁵ and suggests 12 interventions—six from the preceding 100,000 Lives Campaign and six additional ones. Figure 5 shows a sample portfolio in which the 12 interventions have been organized into six projects. The project groupings take into consideration local work groups such as the ICU (called “microsystems,” defined later in the paper) as well as medical specialties such as cardiology or major care components such as surgery. In addition, components of care that cross multiple boundaries such as the medication system or infection control were taken into account to form a useful grouping. The last project, patient care unit spread, is a bit different from the others. It recognizes that the other five projects will all involve the patient care units and a team will need to manage the time burden on these units by thoughtfully establishing a reasonable balance of responsibility for testing and then spreading improvements among the units.

The leader of each of these projects, with the help of an oversight group, will be responsible for sequencing the efforts within the project. Regardless of how the portfolio of projects is selected, a process is needed to deploy resources to each of them.

Figure 5. Example Bottom-Up Approach to Establish a Portfolio of Projects Connected to a System-Level Aim

Project	Interventions
1. Cardiac Care	Acute myocardial infarction (AMI), congestive heart failure (CHF)
2. Medication Safety	High-alert medications, medication reconciliation
3. Surgery Safety	Surgical site infections, surgical complications
4. Infection Control	Methicillin-resistant <i>Staphylococcus aureus</i> (MRSA)
5. ICU Safety	Rapid Response Team, ventilator-associated pneumonia, central line infections
6. Patient Care Unit Spread	Pressure ulcers, medication reconciliation, high-alert medications, MRSA, AMI, CHF, infection control, Rapid Response Team

3. Deploying Resources to the Projects That Are Appropriate for the Aim

Consider, for example, the 5 Million Lives Campaign as a strategic safety initiative aimed at producing system-level reduction of harm. A system-level measure of harm such as the IHI Global Trigger Tool is used to measure progress. The portfolio of six projects identified in Figure 5 has been defined to accomplish the aim of reducing harm to patients. Several key persons are needed to

manage this portfolio of projects. One is the leader of the overall safety initiative—the person who will integrate the six projects to obtain the reduction of harm goal. Each project also needs a leader. The organizations that we interviewed took the process of deploying resources to the improvement projects in the portfolio very seriously. In particular, they gave special consideration to assigning the safety initiative leader. In one case, the vice president of human resources did an assessment of the skills needed to lead each project and identified staff within the organization who matched these skills. Project leaders were selected from this group of candidates based on the interest of the individuals and negotiations with line managers to enable them to work on the projects. Project leaders were often relieved of other duties to work full time on the projects. Some leaders were selected from staff who were already dedicated to improvement within the organization such as “Black Belts” or “Master Black Belts,” for those organizations following a Six Sigma framework. Other organizations selected leaders from among their operations management personnel and relieved them of their other line responsibilities.

Although this level of improvement project staffing may seem excessive or unaffordable, when pressed on this point, each of the organizations that followed this approach responded that the projects were large system projects demanding lots of time, were vital to the organization, and were expected to result in a substantial financial or strategic return. They added that the pace of the improvement project was a deliberate choice (“how much by when”) and that the organization could choose to increase the pace without increasing resources by focusing the leader’s efforts. For example, consider a person leading two projects scheduled for one year and devoting 25 percent of her time to each. Each project takes one year to produce results. Consider another allocation of time: The same person allocates 50 percent of her time to a six-month project, finishes it, and goes on to a second project of six months’ duration. The project leader has not increased her time allocation. Instead of producing results from two projects in an average of 12 months, she has produced results from the same two projects in an average of nine months. (The first project delivered results in six months and the second project in 12 months.) Focusing the leader and the project in this way accrues productivity benefits not only for the leader, but also for the project team and the organization by producing increased throughput of results.

The basic structure for improvement project teams is quite similar among all organizations that we interviewed. The team leader is responsible for the day-to-day progress and pace. Each team is assigned an executive sponsor to keep the team connected to organizational strategy, to coordinate the efforts with other projects, and to increase the chances of success. Teams also have one or more technical experts, persons who know the clinical subject matter intimately and who understand the processes of care, and an expert on improvement methods depending on the needs of the project.

Of course, for many organizations the issue is not how much of someone’s time to allocate to a project. The issue is finding and developing people in the organization capable of integrating a portfolio of projects or leading one of those projects. The high-performing organizations that we talked with made it a strategic priority to continually increase the pool of persons in the organization with the following skills and attributes:

- *Curiosity*: To achieve results at the system level requires system-level change. No easy answers are available. A successful leader of large-scale execution must be open to finding and translating ideas both from within health care and from other industries.
- *Capability to move between conceptual thinking and execution*: Integrating a portfolio of improvement projects and learning about what changes are producing system-level results requires conceptual thinking skills. It also takes disciplined project management skills. Leaders that are effective at execution have both.
- *Quantitative and related computer skills*: Effective improvement almost always requires measurement. The measurement and learning challenge increases as the size and ambition of the portfolio increase.
- *Ability to work well with all levels of the workforce and professional disciplines*: To achieve system-level results requires contributions from all levels of the organization and also requires cooperation among them.
- *The confidence to link with senior executives*: Senior executives play a vital role in ensuring that the overall strategic improvement aims are achieved. Leaders will require cooperative interaction with executives as peers to effectively execute projects that achieve system-level results.
- *Ability to be a good communicator*: When the organization sets system-level aims and makes fundamental changes to accomplish them, people in the organization will want to know, “What are we going to do?” and “Why are we doing it?” One successful executive said that he was not confident that his message was understood until he communicated the message “eight times, eight ways.”

These organizations that successfully execute projects also had plans for the development of individuals within the organization. The development plans included some or all of the following:

- Increasing responsibility for larger and more complex projects;
- Attending seminars and other formal training;
- Participating in multi-organization efforts such as an IHI Breakthrough Series Collaborative or Learning and Innovation Community;
- Making presentations at conferences; and
- Writing papers for publication in peer-reviewed journals.

Despite the many different approaches, there is a clear consensus that training and development of improvement project leaders should take an experiential learning approach based on real projects and improvement efforts.

In addition to allocating time resources for the project leader and other team members to engage in improvement work, these organizations also made it a priority to allocate other organizational resources to the portfolio of projects. These resources included the following:

- Capital for projects, such as information technology, construction, or new equipment;
- Designated information technology services to support the needs of the project;
- Other support services such as finance or human resources as required; and
- Analysts or quality improvement specialists assigned to assist the team.

Pitfall

Assigning a leader to a project, but allocating less than 40 percent of that person's time to the project.

Suggestions

- Do a thoughtful assessment of return on investment to reaffirm the importance of the project and build consensus for the allocation of time.
- Instead of decreasing the project leader's time allocation, limit the duration of the project.
- Be clear about what the person will stop doing to make time for the duties of project leader. Provide a means for assigning these duties to others if they are truly adding significant value to patients or the organization, or stop or reduce these activities if they are not.
- Monitor the time spent on the project to prevent erosion of the project leader's time and attention from the project.

4. Establishing an Oversight and Learning System to Increase the Chance of Producing the Intended Results

Each of the organizations that we interviewed had well-developed processes for executive review of projects. These reviews occurred at least monthly with the executive sponsor of the project, and quarterly with an executive team that was responsible for execution of the strategic plan and the associated improvement initiatives. The best reviews seemed to function as high-level problem-solving sessions, with an unwavering commitment to make the project and the team successful. The purposes of the review included some, if not all, of the following:

- To provide encouragement and recognition of the project teams;
- To learn whether the project was on track, or was likely to fall short of the aim;
- To develop action plans for getting projects back on track; and
- To decide whether the project should be modified in some way or stopped.

At Bellin Health System in Green Bay, Wisconsin, for example, each of the projects was on a 120-day cycle. At the end of each cycle, the portfolio of projects was rebalanced depending on whether or not the aim had been accomplished and on the remaining opportunity for improvement. This rebalancing was done at a full-day retreat of the management team.

A good executive review of improvement projects requires a good process for review, with the following steps:

- *Review of the context:* The project is nested in a portfolio of projects connected to a system-level goal or strategic initiative. Make this context clear and use it as needed for the rest of the review.
- *Efficient review of progress:* Good preparation by the team leader of the “story” of the project is important. Elements of the story include the aim of the project, annotated time series for two to three important measures, the major system changes, and the degree of belief—high, medium, low—that the aim would be achieved. One can develop skills for communicating this information effectively by adapting techniques from abstracts for peer-reviewed journals, storyboards, sidebars in magazine articles, or illustrative graphics from newspaper articles. The SBAR (Situation, Background, Assessment, Recommendation) technique⁸ is associated with efficient and effective communication and also can serve as a template for the team’s presentation. This review of progress should take between a quarter and a third of the time allotted for the overall review.
- *Agreement on barriers and emerging issues:* If the project is not achieving the intended results, reach agreement on why. Is it:
 - Lack of organizational will?
 - Absence of strong enough ideas for improvement?
 - Failure to execute changes?
 - Unanticipated internal or external forces?
- *Action plan:* During the discussion of barriers and issues, some solutions may surface that need action by one of the executives or require a new approach that can be carried out by the team without executive action. For example, a hospital team working on reducing readmissions may need to cooperate with long-term care facilities, primary care, and home health care agencies and find new ways of working with them. An executive of the hospital may need to negotiate a framework and principles for this cooperation. The team would be responsible for the details of how the cooperation will occur in daily practice.

The review team may recognize that some of the assumptions on which the project was based were flawed. This may prompt a more fundamental rethinking of the project aim and how the project fits in the portfolio of projects. For example, consider a team working on reducing the time that the hospital is on diversion—the emergency department (ED) declining to take patients who arrive by ambulance. The assumption at the outset might have been that the issue

could be addressed by a team composed mostly of ED staff and the ancillary services serving the ED. Suppose after a few months that assumption was shown to be false, and the oversight group and the team recognized that there were two other drivers, in addition to inefficient ED operations, that were leading to diversions: overcrowding of the ED by patients who could have been seen in primary care, and poor flow of patients to the inpatient units because of inefficient use of inpatient beds. This new knowledge requires a new approach if the aim of reducing diversions is to be achieved. Time constraints may prevent the development of the action plan at the review, but at least some guidance on the plan and an assignment of responsibility for creating the action plan is required.

- *Summary of new knowledge.* The review process is an ideal time to review the new knowledge that is emerging from the execution of the project. The executives and the team learn their way to new performance. Projects may have unexpected connections or reinforce each other in ways that were not anticipated. Effective review processes provide the means for documenting and spreading this learning.

Pitfall

Many project reviews turn into presentations by the team with lots of slides, consuming almost all the time allocated for the review. The executives have a difficult time separating important issues from unnecessary details, and consequently the team does not get the help they need.

Suggestions

- Be sure that the review team is clear about its role in ensuring the success of the project.
- The presenting project team is prepared to summarize on one page or in five slides the progress to date and the issues they need help with. This briefing takes less than a third of the total time for the review.
- Action plans are created and assignments are made collaboratively between the project and executive review teams.

System-Level Impact of Local Improvement

So far we have addressed execution of a portfolio of projects to achieve breakthrough goals and system-level change—the right side of the triangle in Figure 1, the Framework for Execution. This section of the paper addresses the left side of the triangle: the role of local improvement in achieving breakthrough goals and sustaining system performance. These two sides of the triangle are complementary but different.

The execution of system-level change (the right side of the Framework for Execution) usually depends on temporary organizations such as project teams. Project teams are well suited to address structural changes that cross departmental boundaries or sites of care. The left side of the framework—manage local improvement and spread and sustain—is concerned with existing work units, how they function and continually improve, and how they spread improvements among themselves. These local work processes are necessary to sustain the structural changes made by project teams and to ensure that the benefits of these changes reach patients and families. On the right side of the framework, results are usually recognized as changes in the average level of a system measure—lower mortality, less harm, higher satisfaction, or less cost. Work units, in addition to improving their local processes, are often vital to achieving system goals aimed at reducing the variation in the performance of work units—less variation in mortality, harm, satisfaction, or cost unit to unit.

Manage Local Improvement

Work units in health care include medical practices, home health agencies, patient care units within a hospital, pharmacies, and diagnostic centers. Work units of these types have been called “microsystems” and have been studied extensively by Nelson, Batalden, and Godfrey.⁷ They define a microsystem as follows:

A **clinical microsystem** is a small group of people who work together on a regular basis to provide care to discrete subpopulations of patients. It is the place where patients and families meet care teams.

Nelson and colleagues identified 20 high-performing microsystems in health care. These microsystems were studied in depth to define their common characteristics. The informal interviews that IHI conducted, in addition to IHI’s experience in the Pursuing Perfection initiative and other programs, produced some of the same findings as the microsystems research. Some of the capabilities that we conclude are needed to effectively lead a microsystem are described below.

1. *Recognize the work unit as a microsystem*

This recognition includes:

- Understanding the purpose of the work unit as it relates to patients, families, or internal customers;
- Measuring performance of the work unit against this purpose; and
- Recognizing that the performance of the work unit depends on processes and their linkage.

2. *Choose improvement priorities that balance the needs of the work unit and the larger containing organization*

Local work units will have responsibilities to the containing organization, perhaps by contributing to strategic projects aimed at breakthrough goals. However, they will also have local issues that need attention, for example, consistent complaints from patients or families about the lack of information concerning side effects of medications.

3. *Manage the testing and implementation of changes*

All improvement requires change, but not all change is improvement. The leader will be able to help others in the work unit use some standard framework for improvement, for example, the Model for Improvement shown in Figure 6. The Plan-Do-Study-Act, or PDSA, cycle is a method for testing changes in the work setting to improve performance. Multiple PDSA cycles must be managed in a way that optimizes learning while making efficient use of resources. The Six Sigma framework for improvement uses the DMAIC model—define, measure, analyze, improve, and control—to guide the testing and implementation of changes.

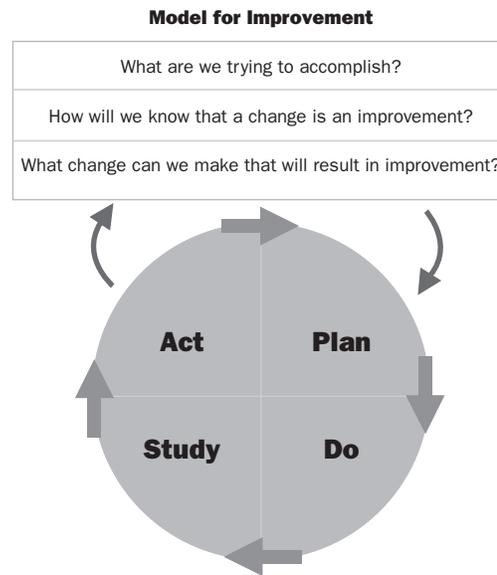
4. *Get everyone involved*

Members of the work unit will vary in their skills for improvement and their desire to get involved in improvement efforts. However, all can and should contribute. Focus on engaging a few key staff to move the improvement work forward. Good microsystem leaders have the capability to make improvement work an attractive way for all to accomplish the purpose of the work unit.

5. *Foster cooperation within the microsystem and between microsystems*

Patients and families interact with many individuals in the health system as they experience care. Effective microsystem leaders form those individuals into an interdependent, interdisciplinary team when they are in the same microsystem. These effective leaders also facilitate coordination of care with other microsystems so that patients and families experience care over time as a coordinated whole.

Figure 6. The Model for Improvement



Source: Langley GL, Nolan KM, Nolan TW, Norman CL, Provost LP. *The Improvement Guide: A Practical Approach to Enhancing Organizational Performance*. San Francisco: Jossey-Bass Publishers; 1996.

Developing a Collection of Strategic Microsystems

Nelson and colleagues discovered that many of the 20 high-performing microsystems they studied were isolated special cases, not the result of an explicit effort by the organizations' executives to develop a collection of high-performing microsystems. They concluded the following about the executives of large systems in which some of the microsystems resided:

“These system leaders showed some recognition of outstanding performance and some degree of special assistance for the unit, but they lacked a strategic focus on creating the conditions to generate excellent performance in all the microsystems that comprised their health system. In short, they did not make the attainment of microsystem excellence a basic pillar of their management strategy.”

Executives intending to develop pervasive, high-performing microsystems in their organization will take on at least three tasks: setting expectations, providing support and encouragement, and developing leaders for the microsystems. An expectation that a significant part of the job of any manager is improvement of the quality and value of the product or service is reinforced by including this requirement in the job description. Improvement requires intention; therefore, another expectation of all microsystems is that each of them will have a small set of measures (three to seven) by which the performance of the microsystem can be assessed relative to its

purpose. These measures can be used to set improvement aims and plans—another important expectation of a microsystem.

Of course, in health care many microsystems comprise the direct providers of care themselves who are often under time and productivity pressures. An executive seeking to develop these microsystems must support their work and provide encouragement. Without this support, expectations become exhortations. The support will include some time for front-line staff to test and implement changes. Some measurement support may also be needed. Many microsystem leaders will need coaching in how to adapt existing meetings, management structures, and communication vehicles so that they include a focus on improvement. Encouragement and appreciation are vital to keep the members of the microsystems motivated for continual improvement. Executives skilled at this type of leadership schedule frequent visits to the locations of care to understand the needs of front-line caregivers. In addition to expressing appreciation, they look for barriers to improvement and quality of work life that they can remove.

Executives and human resources professionals have many options at their disposal for assembling a development plan for leaders of microsystems. Some components of a development plan include the following (for more, see www.clinicalmicrosystem.org/workforce.htm):

- *Lead an improvement initiative within the microsystem:* Improvement is concerned with testing and implementing changes. This can best be done in the actual microsystem setting. The individual learning and development comes from frequent reflections on the experience of leading this work, with help from a capable colleague or improvement advisor.
- *Attend seminars and conferences:* These options seem most useful after a microsystem leader has had some experience with leading or at least participating in improvement efforts within the local setting. Two examples of conferences that provide leadership development opportunities are the annual Dartmouth Clinical Microsystems Coaching-the-Coaching Program, and the IHI National Forum on Quality Improvement in Health Care held annually in December.
- *Lead a workshop for members of the microsystem:* A microsystem leader who has mid-level capabilities could further develop his or her skills by teaching other members of the microsystem, perhaps with some coaching from a skilled advisor. These teaching opportunities can be integrated into existing management, supervision, or educational systems. Geisinger Health System in central Pennsylvania, for example, has designed a sophisticated action learning program for developing microsystem leaders.
- *Rotate into a central improvement group for an extended period of time:* Many organizations have some type of central improvement group that provides resources and knowledge for improvement work throughout the organization. Many organizations use one- to three-year assignments in these groups as a development option for microsystem leaders to acquire advanced skills.

Strategic Advantage of Pervasive High-Performing Microsystems

Organizations that have intentionally developed pervasive improvement capability in their microsystems have a strategic advantage when it comes to accelerating and sustaining system-level improvement. These organizations have an efficient and effective means of getting everyone involved to accomplish their strategic plan. It is a tremendous asset for an organization to have a high percentage of microsystems capable of improving and sustaining reliable day-to-day operations in their processes while also rapidly “spreading” or “replicating” improvements among themselves.⁸ Consider the matrix in Figure 7 that describes the contributions and interrelations among inpatient units—microsystems—to the overall patient safety initiative at Cincinnati Children’s Hospital. For any particular improvement project (noted by numbers 1 through 9 across the top of the matrix) some units are leading pilot testing of the particular improvement (denoted by “L”), some are ready to implement and spread the improvement once the pilot testing is done (denoted by “S”), some have already implemented the improvement and are monitoring to ensure the improvement is being sustained (denoted by “M”), and for some the improvement is not an area of focus at this time (empty cells in the matrix). This is an efficient division of labor.

Bellin Health System uses a similar approach to highlight the contributions of individual microsystems and to ensure that no one unit is overburdened with improvement requirements that were generated external to their microsystem. Each microsystem is expected to contribute to the organization’s improvement goals, but microsystem leaders are expected to raise a concern when more than five of these externally generated initiatives substantially impact the microsystem.⁹

Several of the organizations assisted microsystems in their improvement work around a common goal by running internal collaborative projects. David Pryor, MD, Senior Vice President of Clinical Excellence at Ascension Health, emphasized the use of a small set of shared measures across hospitals, called Health Ministries, and patient care units within those Health Ministries to drive learning and change. Ascension Health used these internal collaborative projects to support the efforts of the local Health Ministries. Health Ministries in Ascension Health with a common goal for the year—for example, improving perinatal safety, eliminating pressure ulcers, eliminating nosocomial infections, reducing mortality, eliminating surgical complications, or reducing falls and fall injuries—can voluntarily join a collaborative effort called an Affinity Group and receive support from system resources of Ascension Health. Some of the multinational industrial organizations that we interviewed used these collaborative initiatives to provide support for improvement across national boundaries. One organization referred to them as “worldwide initiatives.”

Figure 7. Contributions of Inpatient Microsystems to Improving Patient Safety at Cincinnati Children’s Hospital

Inpatient Unit (Microsystem)	1. Reducing Adverse Drug Events	2. Reducing Nosocomial Infections Due to Catheters		3. Perioperative Safety/Flow	4. Ventilator- Acquired Pneumonia	5. Codes Outside the ICU	6. Safe Handoffs	7. Transplant Medication Safety	8. Evidence- Based Practice	9. Asthma Care in the Community
		Insertion	Care							
A6N	S		M	S		M	S		L	
A6S	S		M			L	S	M	L	
A4C										
A7	S		M	S		S	L		S	
B5W	S		S	S		S	S			
B5E										
B6W	L	L	L	S	L	L				
B4	S		L	S	L		L			
B6E	S	L	S	S	L		L			
A6C	S	S		L		S	S			

LEGEND

L = Lead pilot testing of improvement S = Implement and spread improvement M= Monitor improvement

Several of the organizations that we interviewed fostered a long-term cultural expectation that microsystems would adopt standard processes unless patient circumstances or preferences dictated otherwise. Standardization across microsystems was used to reduce the waste associated with unnecessary complexity and make the spread of good ideas more efficient. Pete Knox, Executive Director of Bellin Medical Group in Green Bay, Wisconsin, referred to a collection of these standard processes as a “platform” for a clinic or an inpatient unit. At HealthPartners Medical Group and Clinics in Minnesota, standardization of processes in clinics and office practices takes place within a platform that is called the “Care Model Process” and includes processes before, during, and after an office visit by a patient.¹⁰

Summary and Conclusions

The movement for improved quality and safety in health care organizations began with individual improvement projects. Many clinics, medical practices, hospitals, or other organizations can get results from projects such as reduction of medication errors, reduction of mortality from acute myocardial infarction, improvement in management of a particular chronic disease, or reduction of delays in discharge from a hospital. Early on, these projects often were initiated by internal champions such as a surgeon motivated to lead an effort to lower surgical site infections, a nurse interested in management of anticoagulants, or a pharmacist passionate about medication safety.

More recently, the improvement of quality and safety has become part of the strategic plans of many health care organizations. More and more boards perceive quality and safety of care as one of their governance responsibilities and have quality committees to carry out this responsibility. Board members are holding executives accountable for system-level improvements. Thus the will in many organizations is quite high. There is no lack of ideas for redesigning systems of care. However, the weak link is the capability of executing strategic initiatives to achieve system-level results. IHI's suggested framework for this execution contains three interrelating parts:

1. System-level aims;
2. Pervasive local improvement; and
3. Continuous development of people's capabilities to lead improvement and attain system-level results.

Making a reliable connection between organizational strategy and the improvement of quality and safety is the next frontier.

More Resources

For more information on microsystems, visit <http://www.clinicalmicrosystem.org>.

Additional information on the following topics is available on IHI's website:

- Pursuing Perfection
<http://www.ihl.org/IHI/Programs/StrategicInitiatives/PursuingPerfection.htm>
- 5 Million Lives Campaign and the 100,000 Lives Campaign
<http://www.ihl.org/IHI/Programs/Campaign/>
- The Model for Improvement
<http://www.ihl.org/IHI/Topics/Improvement/ImprovementMethods/HowToImprove/>

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