

Performance Improvement Capability: Keys to Accelerating Improvement to Hospitals

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How can organizations more rapidly and reliably improve their performance? Billions of dollars are spent annually on technology, training programs, leadership seminars, and other efforts to stimulate performance improvement. Notwithstanding this massive investment, many organizations have found it difficult to capitalize on their new knowledge.¹ Pfeffer and Sutton have highlighted what they call the “knowing-doing gap”—many managers know what needs to be done to improve their organizations’ performance but the implementation of the changes remains a significant problem.²

This gap has prompted renewed interest in the problems of innovation “diffusion” and “implementation” as distinct from innovation “generation.” Within the growing literature on knowledge management, these problems have come into sharper focus as scholars and managers tackle the obstacles to sharing and leveraging knowledge.³

Health care organizations are among those actively engaged in a wide variety of improvement activities, with Total Quality Management and Continuous Quality Improvement programs taking root in a growing number of hospitals. However, health care organizations also suffer from the knowing-doing gap.

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Their improvement programs, like those in other industries, have often not met expectations.⁴ Numerous studies have found large variations in clinical practice and in its clinical and economic outcomes between doctors and across regions. In part, these variations reflect gaps in current medical knowledge; but the best research shows that they also reflect a considerable gap between available medical knowledge and the daily clinical practice of many physicians and health care delivery organizations.⁵

This article is grounded in a study of several children's hospitals' attempts to close the knowing-doing gap and thereby accelerate their rate of performance improvement. Our analysis of these hospitals' improvement efforts leads us to highlight the key role of what we call the organization's "Performance Improvement Capability" (PIC). PIC reflects the state of five key components of the organization: skills, systems, structure, strategy, and culture. These hospitals were making changes in each of these five components in order to strengthen their PIC.

Conceptual Framework

Organizations differ considerably in their rate of performance improvement. Since any improvement trajectory is the fruit of a series of improvement projects, the proximate cause of this variation between organizations lies in the varied ways these projects are managed. The success of these projects depends, however, not only the goals and the efforts of the project team, but also on the context within which they are undertaken—and, more specifically, on the competencies on which the projects can draw. It is variation in these competencies—the organization's underlying PIC—that explains the substantial and sustained differences in rates of improvement that we observe across organizations.⁶

Performance improvement (PI) projects can focus on innovation in processes or products/services; the two are often intertwined. These innovations can be generated within the organization or adopted from other sources. Generation is the process by which a new idea emerges within a given unit. Diffusion encompasses several complementary and interrelated processes: in-bound adoption, out-bound transfer, inter-unit collaboration, intra-unit adaptation, and inter-level management and leadership.⁷ The capacity to generate innovations is clearly critical, but effective performance improvement in large, complex

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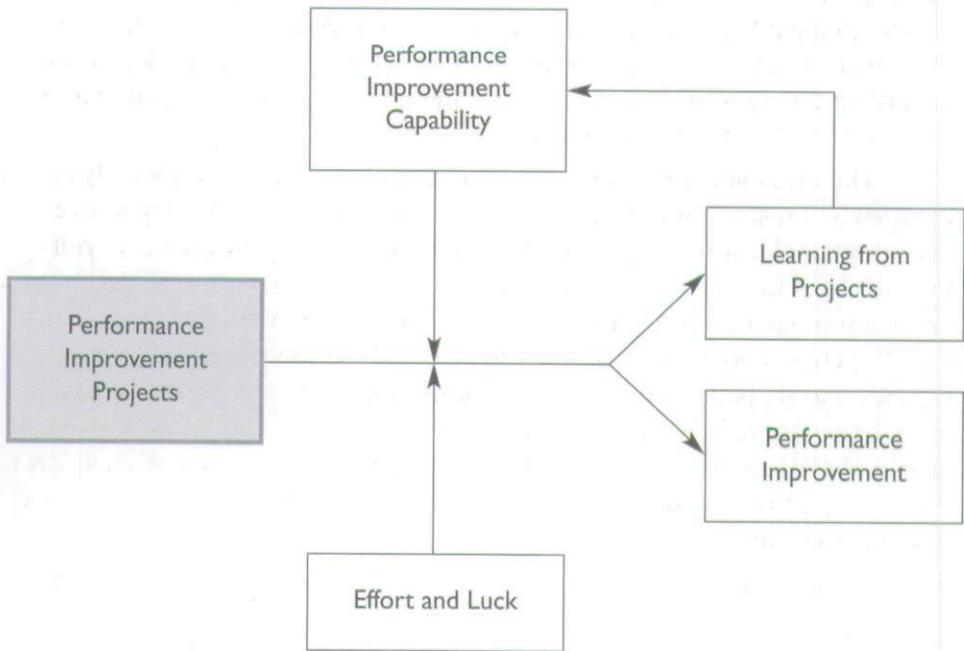
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EXHIBIT 1. A Conceptual Model of the Performance Improvement Process

organizations depends even more on the ability to assure diffusion across unit and organizational boundaries.⁸ Effective diffusion is, moreover, selective: a key task facing organizations is to decide which of the many innovations that it might become aware of would actually contribute to rather than detract from performance.

The success of an organization's efforts to improve its performance through a series of projects over time is fundamentally constrained by a cluster of underlying competencies—its PIC. Performance improvement capability includes all the resources and processes supporting both the generation and the diffusion of appropriate innovations.

Our model of the performance improvement process—presented in Exhibit 1—pushes into the background some themes that are prominent in the various literatures addressing innovation, diffusion, learning, and improvement. In particular, we are less focused on “change agents” and “champions” because we believe their effectiveness depends critically on the broader organizational context within which they function. The attention devoted to these roles reflects, we believe, excessive cynicism about the organizational context and human nature. Change agents and champions are pushed to center-stage in many accounts because they are seen as heroes in a constant struggle for innovation against the stifling effects of bureaucracy and people's tendency to resist change.⁹ Our focus on improvement capability is motivated by a more

optimistic, albeit cautiously optimistic, view. Drawing from our research in hospitals and reviewing the research literature convinces us, first, that large, complex organizations can be redesigned to be more hospitable to innovation and, second, that while people resist change, they often embrace change that they help create. Organization-wide improvement capability can be developed, and the task of theory is to understand when and how it can be developed, not to embellish the "pathos of bureaucracy."¹⁰

This argument and the concept of PIC draw on a considerable body of research on organizational learning. This research has shown the key role of "organizational learning capability" in determining the organizational payoff to individual and small-group learning efforts.¹¹ We also draw on the literature on organizational change, which has shown the importance of "change readiness."¹² While there is broad agreement among these studies on many of the features that support learning, change, innovation, and improvement, no consensus has emerged on how to characterize the architecture of organizations best equipped to undertake these tasks. In our analysis below, PIC will be analyzed as a function of five key components of the organization: skills, systems, structure, strategy, and culture.

Methods

Our research strategy sought a middle course so as to avoid two problems common in research on innovation and improvement. On the one hand, research in this field often suffers from too narrow a focus on a specific organization or a specific type of innovation, making it difficult to generalize. The converse danger is equally common—that of studying innovation "in general," which leads to results that are so generic that the reader may not be able to discern their significance for any given context.

We sought to characterize PIC by comparing the experiences of a small number of similar institutions that we could study in depth. Any choice of industry setting imposes limitations. Our choice of hospitals and the health care industry, however, promised to reward us with valuable lessons with broader significance. Hospitals, as a key part of the broader health care delivery system, are under increasing cost pressure—as are organizations in numerous other sectors of the economy. Hospitals represent a relatively complex type of organization whose activities are subject to extensive government regulation—but this too is not uncommon in the broader industrial landscape. Perhaps the most unusual feature of hospitals for the present purposes is that the key staff members—physicians—are not usually employees: most merely have "privileges," and sometimes they have privileges at more than one hospital at a time.¹³ However, this loose affiliation of hospital physicians is merely an extreme form of the mobility of many highly professional knowledge-workers. From this point of view, hospitals might be seen as prototypical of the knowledge-intensive organization of the future.

With the support of the Child Health Corporation of America, we studied seven geographically dispersed pediatric hospitals over a one-year period. These hospitals were engaged in a project led by Dr. Don Berwick, an educator and consultant in the area of health care quality improvement, and his team from the Institute for Healthcare Improvement (IHI).¹⁴ The IHI intervention focused on executive leadership of performance improvement. This program opened up a window for our research into the hospitals' improvement capabilities. The first two authors, as project principal investigators, visited the participating hospitals and conducted interviews with senior medical and hospital staff. A team of doctoral students undertook detailed ethnographic studies of several improvement projects in four of the participating hospitals. A survey was distributed in seven of the hospitals to a horizontal and vertical cross-section of management and physicians.

The Context

One cannot understand the performance improvement capabilities that hospitals are attempting to build without understanding the types of performance improvements they are seeking to make. These improvements cannot be understood without addressing the context that hospitals find themselves in today. The contextual challenges facing health care are not terribly different from those facing broad swaths of U.S. industry.

New Performance Improvement Priorities

As a result of greater cost pressure from payers—insurance companies and employers—hospitals' key performance priorities—are evolving . . .

from:

- . . . attracting more patients through affiliated doctors
- . . . attracting the more influential doctors with the latest technologies and the most munificent operating environment
- . . . billing more care to more patients (fee-for-service payments)
- . . . maximizing care for individual patients according to doctors' preferred treatment plans (thus, more tests, more medication, more advanced technology)

to:

- . . . reducing costs to meet demands from payers
- . . . increasing quality to meet demands from patients and regulators
- . . . optimizing the cost-effectiveness of care for patient populations (thus, shorter stays, fewer tests, less expensive treatments)
- . . . attracting patients and revenue by capturing more managed-care contracts, and simultaneously maintaining physician loyalty and offering up-to-date technologies and techniques

This transition is clearly visible in the shift in the meaning of "quality." Hospitals have always been concerned with quality, but until the 1990s, the concern was with "quality assurance"—ensuring that quality did not fall below a minimum acceptable level. The focus was on post-factum audits of mishaps and on the credentialing of medical staff. Now, the concern is more with "continuous quality improvement" which ensures that the average level of quality improves over time and that the variance in quality outcomes narrows. The focus thus broadens to include a whole host of processes contributing to the quality and cost of care, and it shifts from post-factum assessments to pro-active improvement initiatives, from a focus on people as the source of errors to a focus on systems and processes, and from a focus on outliers to a focus on common variance. Whereas credentialing sought to screen out the incompetent few, the focus now shifts to continuously upgrading everyone's knowledge and skills.

This evolution encounters several tension points. Key stakeholders disagree on the relative importance or even the legitimacy of the different improvement priorities. Many physicians—most often, older ones—still adhere to the older interpretation of the Hippocratic oath—that the patient's health needs should be met whatever the cost. They are profoundly skeptical of the ethical implications of the new focus on cost.¹⁵ For hospital administrators, internal improvement efforts compete for resources with efforts to respond to external pressures to reposition the hospitals, which means that resources for improvement efforts are scarce precisely when improvement is most needed. For both the clinical and administrative staff, management and leadership skills are stretched as hospitals are catapulted from an environment where such skills were not a critical success factor into an environment of immensely complex and urgent challenges.

A More Challenging Mix of Innovations

Under competitive pressure, and in response to new priorities, hospitals are finding that they must innovate more actively and in different ways. A prototypical case is the difference between the adoption of a new medication and an innovation such as the introduction of a new clinical pathway.¹⁶ The shift is . . .

from:

- . . . innovations that affect primarily core clinical tasks
- . . . relatively modest rates of innovation outside those core tasks, in administrative areas or in organizational design
- . . . innovations whose impacts are primarily "local" to specific clinical departments

to:

- . . . continuing high rates of innovation in core clinical areas, and of technological and drug innovations flowing into the hospital from outside; but also
- . . . more innovations that aim to improve the cost-effectiveness of care rather than its quality alone—and thus

from:

... innovations that come primarily from outside the hospital in the form of new technologies and new drugs

to:

... a relatively higher proportion of innovations that cut across clinical departments and professional specialties, and that affect that ways in which clinical, support, and administrative tasks are linked; and

... relatively more innovations that are the result of local, hospital-specific improvement efforts

This change in the mix of innovations also engenders tensions in hospitals. The flow of innovations into hospitals from pharmaceutical companies and medical equipment manufacturers shows no sign of slowing. While some of these innovations clearly represent improvements in terms of both quality of care and cost, other cases are more ambiguous. Hospitals are under pressure from insurers and employers to reduce costs, but also under pressure from patients and doctors to make the most advanced techniques available regardless of cost. Improvement capability includes the ability to limit the diffusion of inappropriate innovations. However, given disagreement on improvement priorities, the appropriateness of many innovations is subject to debate.

New Diffusion Challenges

This new mix of innovations poses difficult diffusion challenges. The literature on the diffusion of innovations shows that five characteristics of an innovation strongly condition the prospects for its diffusion¹⁷ and each of these five characteristics tends to become more challenging with the recent evolution in the mix of innovations confronting hospitals. We can illustrate the point once again using the contrast between a new medication and a new pathway:

- *Complexity*: The new medication may represent very esoteric new biological science, but its implementation is typically less organizationally complex than the implementation of a new pathway. Using the new medication may require only an individual decision or a budget meeting with the head of the pharmacy. The pathway is likely to involve more specialties and work units, and thus more heterogeneous interests and cultures.
- *Trialability*: Innovations diffuse more rapidly when potential adopters can more easily try them out, as is the case with most new drugs that offers the physician a novel treatment option. Innovations are more difficult to try out when they affect long-linked activity chains, as is the case with pathways that change organizational processes.
- *Observability*: It is easier to mobilize support for an innovation when its operation and results are more visible—as is the case with prescribing a new drug and observing improvement in the patient's condition. When

new innovations affect multiple actors in small ways—as is the case with many pathways—the overall innovation is harder to see with the naked eye. Identifying the clinical and economic outcomes of a new pathway is beyond the capabilities of many hospitals' information systems.

- *Relative Advantage:* Most new medications claim to offer clear-cut clinical advantages. The advantages of pathways, in contrast, are often debated: should the criterion be the welfare of individual patients or that of whole patient populations, quality of care or cost-effectiveness? Attending physicians in teaching hospitals sometimes argue that the benefits of clinical pathways in reducing unnecessary practice variation should be weighed against the risk that interns and residents might use them as a crutch and not develop autonomous decision-making skills.
- *Compatibility:* New medications rarely disrupt physicians' practice patterns. In contrast, pathways prescribe physician behavior, which is often construed as violating norms of autonomy in clinical decision making. PI research is also less compatible with norms by which many physicians judge the worth of medical innovation because PI research is rarely published in the primary journals of the profession, and it relies on scientific methods that are unfamiliar to most physicians.

We should note that these characteristics are not only a function of the objective features of the innovation; they are also a function of the hospital's current PIC. Faced with the challenge of implementing a given innovation, one hospital might find the innovation's complexity overwhelming, while another might absorb it easily because it has staff with superior skills, greater experience with related innovations, better leadership, and so on. Improvement capability, in other words, enables an organization to meet more easily the challenges posed by these five characteristics.

One of our case studies illustrates how superior capabilities reduce diffusion barriers. As noted, pathways standardize care in ways that challenge traditional beliefs of physician autonomy in clinical decision making. Many physicians are skeptical that such standardization will prove superior to care provided under traditional norms—i.e., their individual approach to treatment. These difficulties of relative advantage and compatibility were greatly reduced at one hospital as its members accumulated greater expertise through more extensive experience with pathways. Originally, it took nine months to develop a new pathway, but after creating approximately 44 pathways over seven years, pathway development time was reduced to only three months and compliance (the proportion of cases “on the pathway” when the pathway was indicated) increased from 30% to over 80%.

Performance Improvement Capability

Given the growing importance of these new innovations to their success, hospitals are striving to build more robust improvement capabilities. Our research led us to identify five components of capability:¹⁸

- *skills*: specifically, technical, business, and social skills
- *systems*: organizational systems and information systems
- *structures*: PI staff groups, PI project structures
- *strategies*: priorities, and strategy processes
- *culture*: norms, values, identities

New Skills

Enhanced performance improvement capabilities require skills that traditionally have not been widespread in these hospitals. Specifically, stronger skills are needed in: epidemiology/public health (population-level reasoning); formal TQM methods (statistics, process analysis, design of experiments); project management (structure, controls, rewards); project team leadership (vision, chartering, conflict management, support, energy); and business literacy (accounting, finance, strategy).

These skills can be concentrated in specialized staff groups, but they are also needed among project leaders and project participants. Indeed, these skills are increasingly necessary for all hospital and medical staff. A more broadly shared skill-base enables people to identify improvement opportunities in the course of their work; it creates "bench strength" in a larger number of people ready to participate in future projects; and it prepares people to implement innovations by creating a shared understanding of PI goals and processes.

Much of the knowledge and skills underlying PI work—in particular, statistics, design of experiments, and business process analysis—is not part of current medical education for physicians. Interns and residents must therefore be trained not only to use the enhanced processes that result from PI efforts, but also in the underlying theory. Over time, such training will increase physician receptivity to PI efforts.

Some of the requisite skills are mundane but nevertheless significant. For example, we found many cases where people needed skills in managing meetings, which includes practices as simple as taking and distributing meeting minutes, as well as practices that require additional training such as facilitating discussions and managing conflict. Management skills are also required in order to properly charter the PI teams and effectively deal with the continual movement of personnel in and out of teams due to turnover, shift changes, and other exigencies.

Forming the organization's PI skill base has, however, proven difficult in many hospitals. Financial pressure can make it difficult to maintain PI training budgets. In some of the hospitals we studied, these pressures had taken a new, harder form because the hospital no longer controlled its own budget but was

part of a larger system. Skill-development efforts were also impeded by chronic staff shortages and by staff mobility. House-staff may rotate units every month, nurses change shifts and jobs, and many attending physicians are only on site occasionally. Some hospitals also encountered English language skill deficits among some foreign-born employees.

Efforts to train interns and residents in the logic of PI also encounter difficulties because the introduction of pathways and evidence-based medicine implies a considerable departure from the traditional models of medical apprenticeship. Attending physicians are often not familiar enough with this logic to teach it effectively. Moreover, many fear that the availability of pathways will undermine the process of learning if residents use them as a crutch.

Some hospitals are being proactive in building the skill-base of improvement capability:

- at the medical school affiliated with one of the hospitals in our study, physicians on the faculty were encouraged to take a masters degree in public health;
- some hospitals committed considerable resources to giving basic training in PI to a broad cross-section of the hospital staff;
- some leaders are working to get PI theory integrated into medical education.

New Systems

If individuals are to be able to deploy their skills effectively, they must be supported and guided in their efforts by the relevant formal systems and processes. Two broad families of systems are important to improvement capability: hospital-wide systems of various kinds, and systems specifically devoted to supporting PI projects.

First, effective PI requires strong organization-wide systems and processes. Among the most important are:

- *Information Systems Infrastructure:* These technical systems are the infrastructure on which the various organizational systems rely.
- *Performance Measurement Systems:* These assess the performance of hospital processes so that problems and improvements in those processes can be identified.
- *Communication Systems:* These need to be able to identify and broadcast improvement issues and ideas as well as to support collaboration between different parts of the organization.
- *Human Resource Management Systems:* These need to assure that skill gaps are identified and filled, and that participation in PI efforts is appropriately recognized and rewarded.

Information systems (IS) are a crucial aspect of the infrastructure for performance improvement, in particular (but not only) because performance cannot reliably be improved if it cannot be measured.¹⁹ However, the state of many

hospitals' IS infrastructure limits the possibility of performance measurement because they cannot integrate clinical and cost data. One hospital we studied had four clinical databases and over 28 systems in use across different units—and most of them were incompatible. As a result, it was difficult to assess process performance, or to detect whether improvement initiatives have had the desired impact. Another hospital's systems had been recently evaluated by outside consultants who found that a large number of their systems were obsolete; they were so highly customized that maintenance was inordinately expensive; and the hospital's IS budget was too low compared to comparably sized organizations in other industries.

Improvement efforts at all but one of the hospitals we studied were stymied by an inadequate IS infrastructure. At a time when large segments of U.S. industry are inventing new business models and discovering radically more effective ways to configure their internal and external operations through IS, many of these hospitals were far behind. This state of affairs clearly reflects the extreme financial pressure many hospitals have suffered in the recent period, but it may also reflect an insufficient commitment by hospital leadership.

The case studies suggest that communication systems often fail to provide for sufficient downward or lateral communication. All these organizations have staff newsletters, and some posted information on bulletin boards. Some have regular meetings where the CEO or COO can talk with staff. However, the role of middle- and first-levels of management in assuring the downward flow of information was underdeveloped. The gaps were even more striking in horizontal communication systems. There were very few mechanisms or forums to bring people in different units together in regular discussions and dialogue. Without well-developed systems for assuring vertical and horizontal communication (e.g., communities of practice that are not bound by medical specialty), it is difficult to see how improvement can be reliably assured.²⁰

Human resource management systems did not provide much incentive for physicians or hospital staff to commit time and effort to improvement projects. A number of interviewees saw PI efforts as a waste of their time. The combination of deficiencies in information, performance measurement, and incentive systems was often debilitating. For example, in one hospital, some of the surgeons were excited by the possibilities of laproscopic surgery for a certain condition. The hospital's data suggested, however, that for this condition, laproscopy was nearly three times more expensive and had no better clinical outcomes. The doctors' response was to argue that the cost accounting data were flawed, which they were, since they accounted differently for the resources used in the new and the conventional procedures. The reward system did not provide the physicians any incentive to pursue the dialogue, and the practice continued.

Within the broad class of systems and processes, we also note the particular importance of those that can guide specific PI projects. PI was in general managed as a set of discrete projects. Using the lessons of research on the management of product development and extrapolating from the best of the

practices we observed, we can cautiously predict the direction of desired evolution.²¹ In general, the PI process will need to evolve . . .

from:

- PI managed as discrete projects, where project success is a function of
- . . . individual creativity, to generate new ideas, and
 - . . . strong championship, to cajole reluctant bureaucracies and recalcitrant staff to accept new ideas

to:

- PI managed as a process, where process success is a function of systems that support and guide
- . . . portfolio management, to assure that the mix of PI projects reflects strategic priorities
 - . . . pipeline management to match PI workload to PI resources, and to streamline the PI process for faster cycle-time
 - . . . project management, to assure that project participants are guided by procedures that embody best practices
 - . . . post-project learning, to assure that lessons learned in any given project are identified, shared with others, and documented for use in future projects

Some hospitals have developed a standard process for pathway development and other types of PI projects. In these cases, the PI staff regularly reviews the progress of PI project teams, and their PI process has improved as a result of the accumulated learning from projects. By contrast, some other hospitals do not even regularly archive PI documents or project reports, and thus find it difficult to accumulate lessons learned. At one of the hospitals we studied, the medical staff voted that all new pathways developed would, once approved, become the default treatment plans. It was easy to see how the effectiveness of pathway development projects is greatly improved once such a policy is implemented.

The importance of portfolio and pipeline management is often underestimated in organizations where PI is still a matter of discrete projects. The case studies show how support for PI work can be weakened if people do not see how the overall portfolio of projects contributes to important hospital goals. The case studies also show that in some organizations, the pipeline of PI projects is severely congested because participation in PI work is a task added on top of workloads that are already excessive and very variable. If PI has strategic value, adequate time and resources must be freed up to support it, and the organization needs to put in place the systems needed to ensure a good mix of projects and a good balance between resources and tasks.

In summary, the main systems opportunities for hospitals are:

- development of horizontal networks and communication opportunities;

- strategic investment in information systems;
- changing HR systems to reward involvement in performance improvement; and
- more disciplined procedures for managing PI portfolios, pipelines, projects, and post-project learning.

New Structures

If people are to fulfill the roles specified by the organization's systems, these roles must be embedded in structures that support the requisite information flows and specify the appropriate scope of responsibility and authority for interdependent positions. Strengthening improvement capability requires some changes to the traditional structures in hospitals:

- a specialized PI staff function is needed to support the development of PI skills and to help coordinate PI work in the rest of the organization;
- new standing committees are needed to guide PI efforts and assure they have the necessary resources (PI Councils, new Medical Staff committees, and new committees bringing together physicians, nurses, and other occupational groups); and
- new types of project teams are needed, because the new mix of innovations requires project teams that span units, specialties, and different levels in authority and status hierarchies.

More generally, strengthening improvement capability depends on actors' willingness to relinquish some autonomy of action so as to assure more reliable coordination. The traditional structure of a hospital is marked by low levels of hospital-wide coordination. Coordination may be tight within local work units, but there has traditionally been little emphasis on wider standardization of processes or centralized decision making. This decentralization was reflected in the autonomy of the Medical Staff from the hospital administration, the autonomy of individual physicians vis-à-vis both the hospital and physician colleagues, the considerable degree of autonomy of nurses in their daily work, and a generalized norm in many hospitals that committees cannot really make decisions—indeed, that any decisions made by a committee can be safely ignored.

This decentralization was perhaps appropriate in the past, given the strong norms of physician autonomy and the absence of cost pressure. However, the handicap for improvement capability created by such a structure was considerable. In one instance we studied, an asthma pathway development project was in limbo for a full year because three physicians could not come to agreement on it. Disagreement is healthy, but the structure within which these physicians functioned allowed them to stall a major project. They could have been challenged to work on the problem continuously until they reached a workable compromise.

As the environment has become more demanding, as performance priorities shift to give more relative weight to cost and efficiency in operations, and as

innovations involve longer activity-chains that span multiple units, hospitals find they need greater capacity for hospital-wide, coordinated action. This requires more standardization and more authoritative and accountable decision-making structures. We found that in hospitals attempting to build their improvement capability:

- the Medical Staff is more closely engaged with the hospital leadership in various forms of “partnership” that allow for joint priority-setting;
- physicians’ decisions are more influenced by standardized processes such as pathways and restricted formularies, and by approval decisions required from various actors (such as case managers, pharmacists, and utilization review);
- nurses experience increasing regulation of their duties and requirements for greater documentation; and
- committees and teams are more clearly “chartered” by senior leaders, and their decisions, once accepted by those leaders, are more likely to be taken as binding on the rest of the organization.

This trend away from local autonomy and towards tighter overall coordination is sometimes experienced as profoundly alienating. It need not be, and should not be. More centralized hospital-wide decision making and standardization can and should result from—and result in—greater collaboration. In one hospital, intense competition had forced management to make a series of budget cuts. The nursing staff, traditionally very loyal to the hospital, grew increasingly frustrated. However, top management was preoccupied by the external challenges and did not hear the rising chorus of complaints until the nurses voted to unionize. Instead of reacting defensively, the forward-looking CEO responded by instituting regular meetings with representatives from all the hospital departments. These meetings served as forums for surfacing concerns from the “front-lines” and for discussing new policies and initiatives proposed by senior management. The hospital thus built a new structure that gave it a stronger capacity of coordinated action. Such tightening of coordination need not limit informal horizontal communication and local coordination. On the contrary, the more successful hospitals appear to have strengthened simultaneously both local and hospital-wide coordination. However, to achieve these apparently contradictory goals, hospitals need to elicit participation that is broad and deep.

In summary, hospitals that had strengthened the structural components of their improvement capability had more rigorously standardized processes, and more oversight and accountability mechanisms that were developed through—and supported—a process of extensive dialogue between hospital and medical staff and across the layers of authority and status.

New Strategies

The development of the new skills, systems, and structures needed for the new improvement capability requires strategic guidance. This requires, in turn, that strategy in hospitals evolve in both content and process:

- PI becomes a strategic priority and PI strategy needs to set long-term direction, help plan the appropriate portfolio of PI activities, allocate the required resources, and review outcomes;
- the strategic leadership of a more aggressive, proactive PI process requires a more cohesive top management team and a clear, shared understanding of the role of leadership in the PI process; and
- the strategic management of PI requires a more participatory strategy process with more involvement by physicians and by lower levels of hospital management.

One approach to improving a hospital's capability in this arena is the leadership process model developed by the Institute of Healthcare Improvement. This model has three basic components: building will, generating ideas for an improved system, and executing changes to the system:

- *Building Will:* Leaders need to articulate the vision, persuade their colleagues, invest time and resources, set goals and convince others that they can be achieved, provide encouragement and appreciation, focus on the current reality, and compare performance to others. In one of the hospitals, the CEO regularly attended meetings of improvement teams, in part so that he could convey to employees the importance of these efforts and to signal that time and energy should be devoted to them.
- *Generating Ideas:* Set the overall theme, bring in ideas from the outside, provide opportunities for members of different departments in the organization to learn from one another, bring in experts, and use suggestion systems. Most hospitals had regular speakers and encouraged visits to peer institutions and participation in professional conferences.
- *Executing Changes to the System:* Leaders must develop an infrastructure for change that includes investment in support services, partnerships, improved teamwork, measurement, feedback, and guidance. Examples of this were seen to some degree at all the hospitals as new teams were created and leaders focused on improving patient care.

The experience of the more successful hospitals suggests that improvement capability needs a robust strategic leadership process. Hospitals need to develop a process for linking clearly each unit's goals with the larger strategic plan; they need to ensure that all employees understand the vision and hold each level of management accountable for communicating this vision to employees; and they need to find ways to involve more members of the hospital in dialogue about strategy—people support what they help create.

New Cultures

The cumulative effect of these changes is a considerable strain in the values and assumptions that make up the culture of health care delivery. A PI champion who was interviewed for this study described the long-standing expectations of physicians by saying: "Each doctor was a captain in his ship . . . Physicians are individualists. Even division heads are loath to tell other

physicians how to practice medicine." As if to exemplify this characterization, one physician in the same hospital summarized his disagreement with the new expectations in these terms: "Your performance shouldn't be based on how you save money. Your performance should be based on how you practice medicine. And if your LOS [length of stay] is one to two days longer than somebody else's but your patient morbidity is the same, so what if it's just taking a little bit longer?" Not surprisingly, the PI champion, a physician, is seen by many of his colleagues as having "gone over to the dark side" for having taken the lead in the hospital's PI efforts.

However, the new demands on health care do not only challenge old values, they also create opportunities for new values to emerge. PI teams often brought together people from various disciplines and units and from various levels of authority and status—physicians, nurses, technicians, and administrative staff—in a context where all viewpoints were in principle equally significant. The traditional independence of the physician is clearly under attack, but the opportunity to replace it with a collaborative interdependence should afford us some optimism.

In some contexts, *independence* seems to be replaced not by collaborative *interdependence*, but instead by frustrating *dependence*. The dependence can take a financial form, such as when a physician's income depends on reducing the quality of care, e.g., through large increases in the number of patients seen each day and correspondingly shorter visits. It can also take a hierarchical form, such as when a physician's orders are denied by an insurance company representative who is rigidly following formulary or length-of-stay guidelines.

However, in other contexts, interdependence becomes truly collaborative—such as when a physician's orders are queried by a nurse who notices an unexplained deviation from the agreed-upon treatment pathway, and a fruitful dialogue ensues. Collaborative interdependence is also a matter of everyday cooperation across unit boundaries, breaking down the "silos" that isolate medical specialties, occupational categories, and work units.

The transition from independence to collaborative interdependence is a difficult one, but the stakes are high. Culture matters. Hospitals are not fast-food outlets; the difference between committed and perfunctory performance can literally be fatal. The hospital staff we encountered remained passionately committed to quality care, but they also often felt embattled; the average patient is sicker, but budgets and staffing levels have been cut. If hospital leadership can mobilize that commitment to support improvement efforts, the upside opportunity is great; but if leadership fails to meet that challenge, it will find itself at war with its own troops.

The lessons of the hospitals that appear to be making this cultural change more successfully were these:

- Leaders need to commit time to meeting with employees on a regular basis.

- Incentives—symbolic as well as material—should encourage cross-unit collaboration.
- Hospital and medical staff need to accept and embrace the more rapid pace of change.
- The contributions of everyone, not only those of physicians and executives, are essential in responding to the challenges facing the hospital.

Building PIC Takes Time

Among the five components (skills, systems, structure, strategy, and culture), there is a hierarchical relation:

- If individuals are to be able to deploy their skills effectively, they must be supported and guided in their efforts by the relevant formal systems and processes.
- If people are to play the roles specified by these systems and processes, these roles must be embedded in organizational structures that support the requisite information flows and specify in a coherent manner the scope of responsibilities and authority for all the relevant actors.
- The definition of these organizational structures requires strategic guidance—strategy drives structure.
- The intended strategy will lack traction unless it fits the organization's culture—the shared assumptions and values that constitute culture also guide strategy.

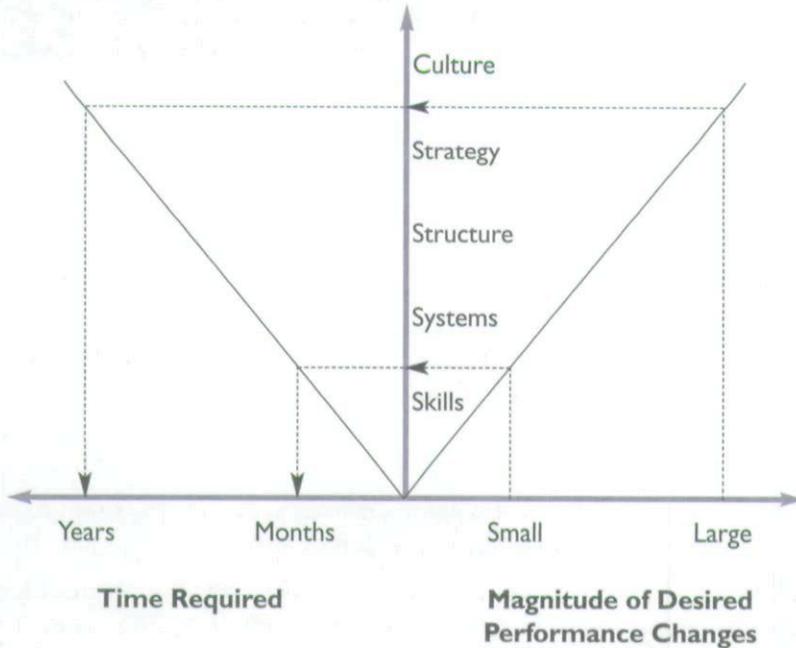
This causal hierarchy explains two broad patterns we discerned in the histories of these hospitals' efforts to build PIC.

- While some upgrading in improvement capability flows from investments in skills, advances were modest without corresponding investments in systems. Moreover, changes in skills and systems did not yield much growth in improvement capability unless organizational structures were also adapted. Finally, if change efforts also addressed the underlying strategic priorities, the nature of the strategy process, and the culture of the organization, these "higher-level" transformations yielded far greater growth in improvement capability than changes in skills, systems, and structure alone.
- Changing any of these components of improvement capability took time, but those at the "higher" levels (strategy and culture) typically took far longer than those at the "lower" levels (skills, systems). The higher levels are more "viscous" because they involve more numerous and more heterogeneous actors and because they rely on shared understandings that are both tacit (as distinct from explicit) and collective (as distinct from individual).

In summary, bigger advances require deeper transformations, which in turn take longer to effect. Exhibit 2 summarizes this double proposition.

EXHIBIT 2. Five Components of Performance Improvement Capability

Small improvements in PIC require only changes in skills and systems and can be accomplished relatively rapidly. Large improvements in PIC require changes in structure, strategy, and culture, and these take longer.

**Developing PIC**

The changes required to build stronger improvement capability are broad-ranging, encompassing all five of the components. Given the nature of this change, it is not surprising that success depends on the same factors shown to be critical in other large-scale organization change efforts. Successful change of this nature requires:

- *Motivation*: people must feel a need or desire to change from the status quo;
- *Vision*: people need to be able to formulate in their minds and to invoke in their interactions a shared image of the desired future state;
- *Process*: the unfolding of the change—the sequence of actions over time—must build progressively stronger support for the change; and
- *Ability*: the individuals and the organization involved must be able to successfully navigate the challenges of the change process.

Motivation

One hospital was helped in its pathway development and implementation efforts by a shared understanding among the physicians affiliated with the hos-

pital that the hospital's cost-effectiveness was a competitive imperative for their own financial security. Initially, the physicians had interpreted the cost pressures they experienced in their hospital practice as the result of self-interested decisions by hospital management. It was only when they began to experience the same pressures in their private office practice, and when the CEO reached out to them to help deal with the hospital's difficulties, that they came to see the hospital as a potential ally. PI efforts were also helped by the CEO's visible support for pathways and for evidence-based medicine.

By contrast, most physicians at some other hospitals lacked any motivation to join PI efforts. For every champion convinced of the importance and value of a PI project, there were many more actors who simply saw no reason to change.

Vision

The physician-executive responsible for performance improvement at one hospital worked hard and convinced the physicians that outcomes research in general and pathway design in particular were truly scientific in their methods and would help create a higher standard of care at a lower cost. He conducted seminars and invited speakers to present their research to the physicians. He presented evidence-based medicine as a vision of a "better way to practice medicine" and provided data to support that vision.

By contrast, at some other hospitals, change efforts were slowed by the absence of any positive vision of the desired future. In one case, the proponents of pathways struggled "in the trenches" for five years before the Medical Director became more actively involved. In the absence of a positive vision, physicians at several hospitals interpreted evidence-based medicine as a code word for cost-cutting at the expense of patient health.

Process

At one hospital, the physician-executive in charge of PI efforts helped build momentum for change by ensuring that all pathway development projects were led by physicians and by selecting physician-champions who would be effective and credible in the eyes of their peers. He ensured a high degree of active involvement by all the relevant actors in each project. He backed off—rather than escalated efforts—when it appeared that an initiative would not have the necessary support. He consolidated early gains by convincing a key division of the medical staff to make the pathways that they had tested the default treatment plan. After giving the medical staff some time to get used to the new policy and to see its benefits, he convinced the staff to give this default status to all new pathways coming out of the pathway development process.

At some other hospitals, by contrast, pathway development efforts were intermittent. Upcoming JCAHO assessments were used to mobilize support for improvement efforts, but these efforts were often short-lived.

Ability

In some hospitals, the knowledge and skills to support the change process were assured by the institutionalization of a PI support unit staffed with well-trained specialists in organization change and process analysis. One hospital also benefited from the key role played by small staff of hospital-based physicians; once this core was convinced, they carried the message of change to the community physicians. Some hospitals committed considerable resources to the training of members and leaders of pathway development teams.

In other hospitals, by contrast, the effort to accelerate PI suffered for lack of a specialized PI staff, improvement efforts often lacked a "home base" in the medical staff, and training for PI project teams was sporadic.

Conclusion

Hospitals are under great stress. The environment within which they function is complex and increasingly demanding. Their structures are siloed. Their key staff lack familiarity with PI research techniques. Their IT infrastructures are outmoded. These and the other challenges facing hospitals together create a situation where large-scale change is both imperative and very difficult to effect.

Our conceptual model of the performance improvement process brings to center stage a key lever for accelerating organizational learning under such conditions, namely, the organization's improvement capability.

The evidence from our study of hospitals suggests that as the pace of environmental change accelerates, PIC will become an increasingly critical factor in determining competitive standing and ability to deliver quality service. The lesson is, we hope, not lost on other industries.

Notes

1. R.E. Cole, *Managing Quality Fads: How American Business Learned to Play the Quality Game* (New York, NY: Oxford University Press, 1999); J. Pfeffer, "When It Comes to 'Best Practices,' Why Do Smart Organizations Occasionally Do Dumb Things?" *Organizational Dynamics*, 25/1 (1996): 33-45.
2. J. Pfeffer and R.I. Sutton, "Knowing What To Do Is Not Enough: Turning Knowledge into Action," *California Management Review*, 42/1 (Fall 1999): 83-108; J. Pfeffer and R.I. Sutton, *The Knowing-Doing Gap* (Boston, MA: Harvard Business School Press, 2000).
3. C.M. Christianson, *The Innovators Dilemma: When New Technologies Cause Great Firms to Fail* (Boston, MA: Harvard Business School Press, 1997); M. Beer and R.A. Eisenstadt, "Developing an Organization Capable of Implementing Strategy and Learning. Human Relations," 49/5 (1996): 597-620; P. Senge, *The Dance of Change* (New York, NY: Doubleday, 1999); S.B. Sitkin, K.M. Sutcliffe, and R.G. Schroeder, "Distinguishing Control from Learning in Total Quality Management: A Contingency Perspective," *Academy of Management Review*, 19/3 (1994): 537-564; T. Davenport and L. Prusak, *Working Knowledge: How Organizations Manage What They Know* (Boston, MA: Harvard Business School Press, 1998).
4. L.A. Savitz, A.D. Kaluzny, and R. Silver, "Assessing the Implementation of Clinical Process Innovations: A Cross-Case Comparison/Practitioner Application," *Journal of Healthcare Management*, 45/6 (2000): 366-338; S.M. Shortell, J.L. O'Brien, J.M. Carman, R.W. Foster, E.E. Hughes, H. Boerstler, and E.J. O'Connor, "Assessing the Impact of Continuous Quality

- Improvement/Total Quality Management: Concept Versus Implementation," *Health Services Research*, 30/2 (1995): 377-401.
5. M. Chassin et al., "Does Inappropriate Use Explain Geographic Variation in the Use of Health Care Services? A Study of Three Procedures," *Journal of the American Medical Association*, 258/18 (1987): 2533-2537; E. Guadagnoli et al., "Variation in the Use of Cardiac Procedures after Acute Myocardial Infarction," *New England Journal of Medicine*, 333/9 (1995): 573-578; J.E. Wennberg and A. Gittelsohn, "Small Area Variation in Health Care Delivery," *Science*, 182, December 14, 1973, pp. 1102-1108.
 6. This assertion can be framed in terms of the broad literature on innovation, since improvement represents a form of innovation. The main factors influencing innovation can be grouped under three headings: characteristics of the innovation itself, characteristics of innovators, and environmental context. PIC is the subset of the environmental factors that operate at the organizational level. One might imagine that organizational research would have already identified the key organizational factors involved. However, although there has been considerable research on innovation [for a recent overview, see R. Drazin and C.B. Shoonhoven, "Community, Population, and Organization Effects on Innovation: A Multi-Level Perspective," *Academy of Management Journal*, 39/5 (1996): 1065-83], this research has in fact been more focused on the other factors—on the characteristics of the innovations, of the innovators, and of the broader institutional context. Where organizational research on innovation has focused on factors at the organization level itself [see the review by F. Damanpour, "Organizational Innovation," *Academy of Management Journal*, 34 (1991): 555-591], the primary constructs—e.g., specialization, functional differentiation, professionalism, formalization, centralization—are too abstract to be actionable. In studying the organization level, most of this research has adopted "an arm's-length approach to the understanding of how organizations integrate innovations, using coarse-grained predictors to summarize the complexity of organizational processes thought to be relevant to innovation." J.-L. Enis, Y. Hebert, A. Langley, D. Lozeau, L.-H. Trottier, "Explaining the Diffusion Patterns of Complex Healthcare Innovations," *Health Care Management Review*, 27 3 (2002): 60-73. There is wide agreement with Mohr's criticism that such arm's-length research has not proven very probative. L. Mohr, "Innovation Theory: An Assessment from the Vantage Point of the New Electronic Technology in Organizations," in J.M. Pennings and A. Buitendam, eds., *New Technology as Organizational Innovation* (Cambridge MA: Ballinger, 1987), pp. 13-31.
 7. E.M. Rogers, "Lessons for Guidelines from the Diffusion of Innovations," *Joint Commission Journal of Quality Improvement*, 21/7 (1995): 324-328; E.M. Rogers, *Diffusion of Innovations* (New York, NY: The Free Press 1995); B. Wejnert, "Integrating Models of Diffusion of Innovations: A Conceptual Framework," *Annual Review of Sociology*, 28 (2002): 297-326.
 8. C.S. O'Dell, C.J. Grayson, and N. Essaides, *If Only We Knew What We Know: The Transfer of Knowledge and Best Practices* (New York, NY: Free Press, 1998).; G. Szulanski, "Intra-firm Transfer of Best Practices Project: Executive Summary of the Findings," American Productivity and Quality Center, 1994; G. Szulanski, "Exploring Internal Stickiness: Impediments to the Transfer of Best Practice within the Firm," *Strategic Management Journal*, 17 (Winter Special Issue 1996): 27-43.
 9. Of course, in reality, champions and change agents do often play crucial roles—not necessarily as heroes but often as facilitators that helps disseminate improvements across boundaries.
 10. Alvin W. Gouldner, "Metaphysical pathos and the theory of bureaucracy," *American Political Science Review*, 49 (1955): 496-507.
 11. See, for example, A.K. Yeung, D. O. Ulrich, S.W. Nason, M.A. Von Glinow, *Organizational Learning Capability* (New York, NY: Oxford University Press, 1999); D. Garvin, *Managing Quality* (New York, NY: Free Press, 1988).; M. Iansiti and K.B. Clark, "Integration and Dynamic Capability: Evidence from Development in Automobiles and Mainframe Computers," *Industrial and Corporate Change*, 3/3 (1994): 557-605.
 12. Note however, that change readiness has usually been defined in terms of individual attitudes and capabilities. PIC, in contrast, focuses on the corresponding organizational characteristics, and to date little research has taken this perspective. In the organizational change literature, Lawler and also Galbraith [E.E. Lawler, III, "Designing Change-Capable Organizations," in C.L. Cooper and R.J. Burke, eds., *The New World of Work* (Oxford: Blackwell, 2002), pp. 222-238; J. Galbraith, "Designing a Reconfiguration Organization," University of Southern California, Center for Effective Organizations, Working paper G 99-1 (360), 1999] come closest to our view in their characterizations of adaptable ("change-capable" and "reconfigurable") organizations. However, these authors focus on the features that characterize

organizations that have mastered the challenges of frequent radical ("transformational") as distinct from incremental change. We focus more broadly on the capability that is required to sustain aggressive improvement efforts, whether more incremental or more radical in nature.

13. There are alternative organizational arrangements, particularly in HMOs, where physicians may be employees of a medical group or the hospital itself, but the hospitals that served as sites in this research are indicative of the traditional arrangement.
14. See, for example, D.M. Berwick and A.B. Godfrey et al., *Curing Health Care: New Strategies for Quality Improvement* (San Francisco, CA: Jossey-Bass, 1990).; D.M. Berwick, "A Primer on Leading the Improvement of Systems," *British Medical Journal*, 312 (1996): 619-622; D.M. Berwick and T.W. Nolan, "Physicians as Leaders in Improving Health Care: A New Series," *Annals of Internal Medicine*, 128/4 (1998): 289-292; D.M. Berwick, "Developing and Testing Changes in Delivery of Care," *Annals of Internal Medicine*, 128/8 (1998): 651-656; IHI web site at <www.ihio.org>.
15. D. Mechanic, "Managed Care and the Imperative for a New Professional Ethic," *Health Affairs*, 19/5 (2000): 100-111.
16. A clinical pathway is a description of the elements of care to be rendered during a hospital stay for a particular diagnosis, including the times for providing those elements, determined by consensus of care providers. The pathway often takes the form of a chart or care path/care map. Pathways address all provider contributions to patient care. Pathways are thus a subset and an operationalization of the broader category of clinical "guidelines," where guidelines are understood as "systematically developed statements to assist practitioner and patient decisions for specific clinical circumstances." Institute of Medicine, M. Field and K.N. Lohr, eds., *Guidelines for Clinical Practice: From Development to Use*, (Washington, D.C.: National Academy Press, 1992). See also Christel Mottur-Pilson, "Clinical Practice Guidelines: Friend or Foe?" <www.acponline.org/sci-policy/guidelines/friendorfoe.htm>.
17. E.M. Rogers, *Diffusion of Innovations* (New York, NY: The Free Press, 1995).
18. See P.S. Adler, "Managing High-Tech Processes: The Challenge of CAD/CAM," in M.A. Von Glinow and S.A. Mohrman, eds., *Managing Complexity in High-Technology Organizations* (New York, NY: Oxford University Press, 1990), pp. 188-215. These components can be mapped easily onto those identified in other studies of related phenomena. Shortell et al. identify four dimensions: cultural, technical, structural, and strategic. S.M. Shortell, D.Z. Levin, J.L. O'Brien, and E.F. Hughes, "Assessing the Evidence on CQI: Is the Glass Half Empty or Half Full?" *Hospital and Health Services Administration*, 40/1 (1995): 4-24. Yeung et al. identify six classes of management actions that can increase "learning capability": culture, competency, performance management systems, organizational structure and communication processes, work processes and systems, and leadership. A.K. Yeung, D.O. Ulrich, S.W. Nason, M.A. Von Glinow, *Organizational Learning Capability* (New York, NY: Oxford University Press, 1999), pp. 136-139. Our schema has the advantage of highlighting the causal hierarchy that links its components.
19. C.G. Elliott, "Computer Assisted Quality Assurance: Development and Performance of a Respiratory Care Program," *Joint Commission on Accreditation of Hospitals: Quality Review Bulletin*, 17 (1991): 85-90.
20. D.W. DeLong and L. Fahey, "Diagnosing Cultural Barriers to Knowledge Management," *Academy of Management Executive*, 14/4 (2000): 113-127.
21. S.C. Wheelwright and K.B. Clark, *Revolutionizing Product Development* (New York, NY: Free Press, 1992).

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