

White Paper from National Center for Healthcare Leadership

The Art of Health IT Transformation

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Gloria L. Austin, Stephen Klasko, MD, and William B. Leaver

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Leading 21st Century Healthcare

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INTRODUCTION

The adoption of health information technology (HIT) has become a national priority, but the majority of healthcare providers still have not made much progress toward that goal. While the significant HIT incentives in the *American Recovery and Reinvestment Act* (ARRA) of 2009 have addressed the primary barrier to technology adoption—the financial investment required—and encouraged many physician groups and hospitals to quickly adopt technologies such as ambulatory electronic health records (EHR), the degree of change required to implement enterprise-wide HIT still deter many.^{1,2} This white paper examines the change management techniques employed by a number of pioneering healthcare organizations to achieve the successful adoption of advanced forms of HIT, including computerized physician order entry (CPOE) and EHR systems.

The implementation of health IT is a difficult proposition in an entity of any size, partly because of the sweeping changes required in workflow. But the challenge is even greater in a large organization, due primarily to the many stakeholders involved, each having different needs, work processes, and roles related to the provision of patient care. Large hospitals, for example, typically have many different departments and disciplines (including those related to inpatient and outpatient care), and many also have employed physician groups. These different parts of the organization must work together, and health information systems must mesh well to support a

Introducing an enterprise HIT system into any large, complex organization requires a collaborative effort involving many different stakeholders, and a strategy for exchanging data across multiple care settings.

smooth, efficient workflow. The same is true in a large multi-specialty medical group or independent physician association (IPA), although the demands of the ambulatory-care realm differ from those of inpatient care. Introducing an enterprise HIT system into any large, complex organization requires a collaborative effort involving many different stakeholders, and a strategy for exchanging data across multiple care settings.

Much is known about what drives successful change management in general business organizations. In his article “Leading

Change: Why Transformation Fails,” John P. Kotter of Harvard Business School lists the major reasons for the failure of large-scale change initiatives (such as implementation of enterprise-wide HIT systems) in companies, including a lack of the following: a sense of urgency; a strong coalition; a clear vision; frequent, clear communication; empowerment of staff; creation of short-term “wins” to build momentum for change; and an anchoring of the changes in culture.³

Healthcare organizations have several unique attributes that make HIT adoption more complex than in other industries, such as dealing on a daily basis with life-and-death issues and the existence of a complex personnel structure, not-for-profit as well as for-profit ownership, a wide variety of stakeholders, and rapidly changing technologies.

While all of these factors apply to healthcare, the last one, “anchoring changes in culture,” represents a bigger challenge for healthcare organizations than in most other industries. In fact, healthcare organizations have several unique attributes that make HIT adoption more complex than in other industries, such as dealing on a daily basis with life-and-death issues and the existence of a complex personnel structure, not-for-profit as well as for-profit ownership, a wide variety of stakeholders, and rapidly changing technologies.⁴ Equally important, most large healthcare organizations remain highly dependent on physicians for their success (including successful HIT adoption). Even if these physicians are employed by the larger organization (which they often are not), they tend to have a culture that is very different from that of the larger entity, and often have a different outlook than the administrators who typically initiate change.

Experts have found that “culture eats strategy for lunch.” In other words, in the absence of cultural acceptance, major change efforts will fail. Studies have found that between 60 percent and 90 percent of change initiatives flounder because leaders tend to focus primarily on high-quality technical solutions while paying inadequate attention to developing a strategy for fostering acceptance of the proposed solution.⁵ The common approach, in fact, is to focus 80 percent of the effort on the technology, but only 20 percent on encouraging adoption of the technology. These figures likely need to be reversed. In fact, GE Healthcare has devised a simple, yet powerful equation that suggests that the effectiveness (E) of a solution, including HIT implementation, depends primarily on the “three As”—organizational alignment with, acceptance of, and accountability for the proposed solution (i.e., $E = Q \times A^3$).⁶

In other words, even if a proposed solution is technically sound, it will likely fail if would-be users do not understand or accept it, or lack the resources and knowledge to implement it. Put another way, once technical quality reaches a certain level, ultimate effectiveness depends on acceptance of the system by those who will use it.

While many factors contribute to the acceptance of HIT and the organizational transformation it entails, leadership remains the most important driver of success. As Lorenzi and Riley⁷ point out, it is not the lack of technical expertise among clinicians and administrators that typically impedes change, but rather, a lack of leadership and management skills, including the failure to set forth a vision, prioritize, plan, provide feedback, and reward success. As Dean Sittig, a leading expert on EHR and clinical decision support, has observed, leadership and stakeholder buy-in represent the two essential elements that drive HIT success.⁸

Success requires strong leadership, a long-term commitment to documenting and improving healthcare processes, substantial efforts to engage and involve clinicians and other staff, and the ability to sustain productivity during the transition period.⁹

Drawing on interviews with leaders of healthcare organizations that have successfully implemented EHR (see sidebar for a list of these leaders), the remainder of this paper discusses the major barriers to HIT acceptance and the most effective strategies that have been used to overcome them. It also lays out a six-step *HIT Transformation Strategy Roadmap* that is intended to serve as a practical guide to successful implementation.

MAJOR BARRIERS TO ADOPTION

Organization-wide implementation of HIT is a complex endeavor that requires not only the investment of significant resources, but also the involvement of many different levels of personnel and management and the interaction of multiple systems. Success requires strong leadership, a long-term commitment to documenting and improving healthcare processes, substantial efforts to engage and involve clinicians and other staff, and the ability to sustain productivity during the transition period.⁹

Cultural Obstacles

According to a white paper prepared by the Health Information Management and Systems Society (HIMSS),¹⁰ the primary barriers to adoption of an enterprise information system fall into three categories: behavioral, organizational, and technical, as follows.

EXECUTIVES INTERVIEWED

Richard Afable, MD

President and CEO
Hoag Memorial Hospital Presbyterian
Newport Beach, CA

James P. Crane, MD

Associate Vice Chancellor for Clinical Affairs and CEO
Washington University Physicians
St. Louis, MO

Nancy Griest

Senior Vice President
Information Technology and Physician Practice Solutions
Brown & Toland Medical Group
San Francisco, CA

Scott D. Hayworth, MD

CEO
Mount Kisco Medical Group
Mount Kisco, NY

Connie Huber, RN

Chief Nursing Officer & Vice President, Operations
Providence St. Peter Hospital
Olympia, WA

Alan Kaplan, MD

Chief Medical Officer
Iowa Health System
Des Moines, IL

Mohamad Kasti

Chief Transformation Officer
Center for Transformation and Innovation
USF Health
Tampa, FL

Jennifer King

Senior Regional Director Operational Excellence
Providence WA/MT Regional Services
Renton, WA

Robert Margolis, MD

Chairman and CEO
HealthCare Partners
Los Angeles, CA

Grace E. Terrell, MD

President and CEO
Cornerstone Health Care
High Point, NC

Behavioral: Obstacles created by human nature, which is inherently resistant to change and prone to inertia

Organizational: The culture of an organization, including internal political and material constraints that might prohibit adoption

Technical: Software and hardware issues and problems related to standards

The “material constraints” cited above might include inadequate resources for HIT implementation. The leaders of some physician practices and cash-strapped hospitals did not believe until the recent passage of *ARRA* that they could afford to purchase inpatient and outpatient EHR or other advanced HIT systems. Even those organizations that do begin an HIT project may realize somewhere along the way that they lack adequate resources for training and implementation. These problems can be exacerbated in organizations with staff shortages and/or high staff turnover.

For their part, many physicians have concerns about the introduction of EHR, including that it will temporarily reduce productivity and income during the implementation. The aforementioned HIMSS paper describes other specific concerns that clinicians have about HIT:

Lack of computer expertise: While younger physicians often have experience using an EHR in medical school or their residencies and are generally comfortable with computer technology, many older doctors are not.

Lack of confidence in IT: Many clinicians do not believe that HIT will ever replace or be as easy to use as paper.

Fear of Big Brother: According to Manuel Lowenhaupt, MD, a former partner at Accenture, “For many physicians, clinical information systems represent ‘Big Brother’ watching and making judgments about their practice patterns.”

Integrating Expert and Collective Culture

Because HIT adoption requires transformation of work processes, it touches everyone in the organization, from receptionists, billing clerks, and administrators to nurses, laboratory technicians, pharmacists, and physicians. But according to Mohammed Kasti, chief innovation officer of the Center for Transformation and Innovation at USF Health at the University of South Florida in Tampa, physicians are trained differently and have a different kind of culture than do these other healthcare stakeholders. Most healthcare professionals (e.g., nurses, therapists, administrators, support staff) are acclimated to a collective culture, where they work together in groups, tend to avoid conflict, and generally do not take large risks. By contrast, physicians belong to an expert culture,¹¹ and tend to be individualistic risk-takers who prize autonomy. Kasti’s insights informed the deployment

of an enterprise-wide EHR at USF that was introduced in 2006 and is now used by all 500 physicians and 200 residents.

Successfully navigating change in healthcare requires an understanding of the difference between the expert and collective culture that exists within any healthcare system. Difficulties in change management can frequently be traced to the fundamental differences between these two cultural phenomena. Overcoming these cultural barriers to HIT adoption will not be easy, even for the most well-intentioned and respected administrators (including those who are doctors). Some physicians may resist until their colleagues persuade them to accept the inevitability of change. But many physicians are willing to work with administration on implementing major

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change, as long as they are appropriately engaged and involved in the change process, and receive adequate training and support on use of the new systems. These systems should also be as easy to use as possible, integrating into existing workflows and processes, and should be designed so as not to have a long-term negative impact on physician productivity and/or income.

AN HIT TRANSFORMATION STRATEGY ROADMAP

The remainder of this paper lays out a *Strategy Roadmap* that serves as a guide to successful implementation of enterprise-wide IT systems within large healthcare organizations. The roadmap covers each of the six key steps in the process.

HIT TRANSFORMATION STRATEGY ROADMAP

- Step 1. Engaging leadership
- Step 2. Clearly communicating the vision
- Step 3. Identifying and analyzing stakeholders
- Step 4. Recruiting and working with project champions
- Step 5. Motivating change
- Step 6. Executing the change

Step #1: Engaging Leadership

Nearly everyone agrees that HIT projects will not succeed without strong commitment from organizational leaders. Leaders of hospitals, physician groups, and IPAs must demonstrate that the project has a high priority; clearly communicate their vision

for what they hope the project will achieve; be willing to commit the organization's resources over a multi-year period; organize the right kind of change management; and do whatever it takes to overcome challenges and carry the project through to a successful conclusion.¹²⁻¹⁴

According to HIMSS, "Leadership is required to select appropriate vendors, plan the implementation, corral the support of physicians and staff, and navigate the inevitable rough patches that form during the dramatic transformations an EMR or EHR brings to institutions."¹⁵ In addition, staff and physicians are less likely to resist changes if they know that management has made the project a priority.

The chief executive officer (CEO) is the key leader in HIT implementation, providing the overall vision and setting the priorities for the project and the organization. For hospitals, having the backing of the board of directors is also critical, as the board maintains ultimate responsibility for the institution's fiscal stability.¹⁶ In any organization, moreover, the entire management team needs to support the project as well. "To drive successful HIT implementation, leaders need a vision of where they need to take the organization," says Scott Hayworth, MD, CEO of the Mount Kisco Medical Group, a 195-physician multi-specialty medical group in the lower Hudson River Valley that Hayworth says has saved "hundreds of thousands of dollars per year" by implementing an enterprise-wide EHR. "You need leaders that can sell the vision and the project to the physicians, who believe in the EHR and believe it is the solution. You need clear communicators. You need respected clinician leaders. In addition to the CEO, you need your chief medical officer (CMO), chief quality officer, chief nursing officer (CNO), chief information officer, chief operations officer, and chief financial officer on board."

Richard Afable, MD, president and CEO of Hoag Memorial Hospital Presbyterian, a 498-bed, not-for-profit, acute care hospital in Newport Beach with more than 1,000 physicians on staff, believes that any project that significantly affects patient care, including EHR implementation, requires a CEO's full attention. Hoag announced in June that it would leverage the recent Stark and Anti-kickback reforms to assist Orange County physicians in the adoption of EHR in their private practices. In Afable's view, the CEO's role should be limited to making sure the right leaders are in place and that they have the resources they need. Once this is accomplished, the CEO needs to "get out of the way." In fact, according to Grace Terrell, MD, president and CEO of Cornerstone Health Care, a 235-provider multi-specialty physician group with 41 locations in the Piedmont Triad region of North Carolina, "leadership for an HIT project cannot come solely from the CEO. Instead, it requires the backing of the physician

board of directors and the entire management team. Physician leaders, and not the CEO, must take the lead on the project in order to create buy-in from all of the doctors." Terrell's approach appears to have paid off. Cornerstone's EHR program has enabled the practice to save more than \$1 million a year on transcription costs, another \$100,000 annually on chart supplies, and tens of thousands of dollars per office by reducing medical records staffing by over two full-time equivalents annually.

Step #2: Clearly Communicating the Vision

The vision needs to explain clearly the need for change and describe the future state that the organization seeks to achieve. Once this has been articulated and accepted, realistic goals can be set to move the organization from the current state to that future state.

To drive successful HIT implementation, leaders need a vision of where they need to take the organization.

For EHR projects, the vision should define the desired system and what it will allow the organization to accomplish, and then compare that to the current state of operations. Because most individuals live and work inside a paradigm, shortcomings may not be noticed. For example, physicians who have always used and are comfortable with paper records may not see the value of an EHR system. The vision statement must clearly communicate that value without setting false expectations. Examples of the value that an EHR system might bring to an organization include the following:

- Enhanced access to and improved continuity of care
- Physician connectivity
- Improvements in operational efficiency
- Support of facility and service expansion
- Higher quality and better performance
- Protection of patients from harm
- Support to physicians in maintaining a desired work/life balance
- Reductions in malpractice liability exposure

Explaining these benefits clearly and persuasively—often in human terms that can be easily understood—can inspire physicians and other staff to support change. As Kotter noted, people are more likely to change when they are shown a truth that influences their feeling than when provided with an analysis that changes their thinking.¹⁷ For example, Iowa Health System, the state's largest integrated health system with 26-hospitals and nearly 600 employed physicians using an ambulatory EHR,

created a slogan that succinctly summarizes leadership's vision for the organization's HIT program: "the best outcome for every patient every time." According to Alan Kaplan, MD, CMO, that goal has driven the entire effort, rather than having the technology drive the strategy.

Communicating the vision effectively, moreover, can go a long way toward overcoming resistance to change, Kaplan says. "Change is hard because of the fear of the unknown. We're adaptive but comfortable with the way we do things. So it's easier to resist change than to implement it. As leaders, we need to understand this. The solution is communication. Always give people a 'Why.' The more they understand the context of the need for change, the more they'll be open to the need for change." In fact, it is difficult to understate the importance of effective communication to the success of a change initiative. The staff within any organization undergoing major change will face some uncertainty about the future, but the level of uncertainty increases significantly if management does not consistently and clearly communicate about the change process, instead leaving the rumor mill and/or the media as the primary sources of information.¹⁸

In addition to communicating that change is coming and explaining the benefits of change, it is also critical to give physicians and staff an opportunity to provide input and voice concerns. "A big part of what we do is look at the

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current state of our processes and compare that with what the future will be with new technology and what you need to do to get to that future," says Jennifer King, senior regional director operational excellence of the Providence WA/MT Regional Services, a part of Seattle-based Providence Health & Services, which includes 27 hospitals, more than 35 non-acute facilities, and physician clinics. "Having people understand that may help them see the value in it, or it may scare them. Giving people involved in the change an opportunity to ask questions and express their concerns is important."

Step #3: Identifying and Analyzing Stakeholders

As part of the planning process, it is essential to identify the key stakeholders who will be affected and can contribute to or block the HIT project. A stakeholder analysis allows a health-

care leader to assess his or her environment by identifying where high-impact physicians, nurse leaders, and other stakeholders stand, including whether they are potential early adopters, middle adopters (also known as the silent majority), or late adopters who typically resist change the longest. In a typical physician group, 20 percent understand the need for change and thus become early adopters, 20 percent resist change, and the rest—the silent majority—follow the cues of organizational leaders based on how they spend their time and energy.¹⁹

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While other health professionals may be less resistant to change, experience suggests that most still need to be convinced of the potential benefits. Particularly in hospitals, nurses are the real center of the workflow, and how they respond to proposed change can spell the difference between success and failure. In the ambulatory care setting, the office manager and long-time staff members also represent key stakeholders who must be persuaded that change is for the best. Various methods can be used to assemble data to predict the level of support by each physician and key stakeholder in the department or site where an HIT system will be implemented, including formal surveys and interviews with staff members, supervisors, and peers. Anonymous surveys likely provide the best approach to gauging the readiness of the entire organization.

Step #4: Recruiting and Working with Project Champions

After the stakeholders have been mapped out, the next step is to recruit the early adopters/supporters to be project champions. While many physicians tend to shy away from leadership roles and becoming engaged in an EHR rollout, some can be convinced to participate. And the more champions the project team recruits, the easier it will be to win over the other physicians.²⁰ As Nancy Griest, senior vice president of IT and physician practice solutions for Brown & Toland Medical Group (a 1,500 physician IPA in San Francisco that has helped implement EHR for nearly 200 of its physician members since 2006) notes, "Physician leadership is as or more important to the success of this EHR project than is the management team. We need the support of both, but the physician leaders have to understand it and sell it to their physician colleagues. We have 'champions' in individual practices—early adopters—who understand the potential of new technology. These early adopters became our core group of physician champions that other physicians could rely on for honest input and feedback

on what to expect during implementation and those first months of adoption.”

Similarly, Robert Margolis, MD, chairman and CEO of HealthCare Partners, California's second largest group practice and IPA (after Kaiser Permanente) observes, “Once the vision is established, you need internal champions from a cross-section of functional areas in the organization. These champions must

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not be afraid of technology, but must actually embrace it. They must be well-regarded for their clinical skills and their peer relationships.” HealthCare Partners has more than 500 physicians currently using an ambulatory EHR that the group began implementing in 2005. The benefits of recruiting early adopter can be seen in the story of the USF Physician Group (USFPG), the 500-physician faculty group practice of the USF School of Medicine, that initially had some trouble getting buy-in from department chairs. USFPG focused on training 20 early adopter physicians at a time in its USF Leadership Center, a division of the Center for Transformation and Innovation. The program encouraged participants to stress the importance of change at faculty meetings rather than just having the dean of the medical school talk about it. The turning point came, Kasti notes, when “the early adopters outweighed the avoiders.”

Nurses have a vital interest in HIT, especially in hospitals, where they do much of the clinical documentation. Because they have intimate knowledge of the details of organizational workflow, getting them involved in project planning at an early stage pays big dividends later.

The same approach needs to occur with nurses, an often under-appreciated stakeholder in successful HIT adoption. Nurses have a vital interest in HIT, especially in hospitals, where they do much of the clinical documentation. Because they have intimate knowledge of the details of organizational workflow, getting them involved in project planning at an early stage pays big dividends later.

Some nurses and physicians may be drawn to the idea of championing implementation not only because they believe in HIT's potential benefits, but also because playing this role could be part of a continuing career development process for them. Administrative leaders should seek to identify nurse, physician, and pharmacy leaders who might be drawn to this

type of opportunity, and should allocate adequate funding to compensate these individuals for their efforts (as there may be a tendency to underestimate the cost and time involved).

Once champions have been recruited, planning for an EHR (or any other type of HIT, including CPOE) should begin with the formation of committees that include all key stakeholders. The more input project leaders receive from staff and physicians in the planning stage, the more buy-in they will get during implementation and afterward.²¹ Since communication, collaboration, and empowerment represent the three key factors that drive successful change management, it becomes essential to empower stakeholders, such as physicians, nurses, pharmacists, and laboratory technicians, to participate in the decisions required to bring about change.²² Moreover, they should collaborate as part of multidisciplinary teams that can bring all relevant aspects of the change process into sharp focus.²³

While it may be difficult for clinicians to work with IT experts who are not clinicians,²⁴ the success of many HIT projects shows that it can be done. For example, Providence Washington/Montana Ministry developed a unique project model that combines the strengths of IT project managers with the process and change management mindset of Six-Sigma black belts from the organization's operational excellence team. The model provides IT project management with change management tools and input from multidisciplinary “go-live” teams of end users. This approach allows project leaders and team members to surface issues and obstacles in the early stages of the project, thus reducing delays and increasing buy-in from key stakeholders.

Step #5: Motivating Change

After identifying, and assessing stakeholders and recruiting project champions, healthcare leaders must work with these champions to create a shared understanding of the need for change by answering the question: “Why should I change? What is in it for me?” Especially in an expert culture, it is essential to align the vision to the self-interest of the individual.

At a fundamental level, people are motivated by the desire to take advantage of an opportunity or to avoid a threat.²⁵ Some opportunities for physicians in HIT implementation include the following:

- 1. Improved legibility:** Electronic documentation can be easily read by all who need to know what happened during a patient encounter. In contrast, paper records are often illegible or barely legible, creating the potential for errors and inefficiencies.
- 2. Preventing lost documents:** Medical documents are much less likely to be lost with an electronic system.

3. Improved access to information and other caregivers: Multiple caregivers can access the electronic chart simultaneously and consult with each other about patient care. Digital data can be accessed anywhere at any time.

4. Improved safety: HIT systems make care safer, as the system will provide alerts about allergies and contraindicated drugs. In addition, when a medication is withdrawn because of previously unknown risks, physician practices with a well-functioning EHR can immediately identify and contact patients taking that drug.

5. Better quality improvement process: EHR create a valuable database that can help providers and medical directors analyze practice patterns to improve the quality of care.

Conversely, the threats of not implementing EHR include:

1. Lower productivity and income: Missing information can lead to reduced physician productivity and income. In addition, physicians without access to an EHR likely cannot participate in the increasing number of pay-for-performance programs that provide additional payments for the provision of higher quality care.

2. Misdiagnosis: Misdiagnosis can occur as a result of illegible or incomplete handwritten information.

3. Increased risk: Lack of an HIT system can lead to higher malpractice risk and liability insurance costs because of medical errors.

4. Poor quality of life: Paper systems require more time and create high levels of stress.

An example of creating a shared need for change by focusing on answering the “What’s in it for me” question comes from Iowa Health System’s ambulatory care offices. Health system leadership secured agreement from physician leaders by addressing their concerns about the potential loss of productivity during the transition phase to an EHR, promising to modify the compensation methodology so the physicians would not lose money during this phase.

Some hospitals and hospital systems, moreover, are providing direct subsidies to physicians who adopt, use, and/or agree to share information from HIT systems. For example, a recent *New York Times* article highlighted North Shore-Long Island Jewish Health System’s plans to offer its 7,000 affiliated physicians subsidies of up to \$40,000 each over five years to adopt digital patient records. This subsidy is in addition to federal support for computerizing patient records. The incentive includes a component for installing and using electronic health records, along with an additional subsidy for those who agree to share de-identified data with the health system to help in quality

improvement efforts. The program will begin with roughly 100 doctors, and then roll out across the 13-hospital system.²⁶

The Importance of Early Wins: Success Breeds Success

Physicians care deeply about quality of care, and are frustrated by missing records and the compromises they must make when they have inadequate information. But in the experience of many healthcare leaders, these factors are usually insufficient to motivate physicians to support a technological solution that will change their way of working and, in their view, might lower their incomes. Getting these physicians on board requires the creation of “early wins” that lower this resistance.

Hoag Memorial, for example, is trying to persuade the 1,200 physicians on its staff—most of whom work in small practices—to accept hospital subsidies to acquire EHR. Progress has been steady but slower than expected, and Hoag CEO Afable points out that many physicians remain unconvinced that EHR will improve quality of care. “It can be very difficult for doctors to see that their care of patients will be better because of the free flow of information. Because many, many physicians—especially doctors working in small groups or independent practices—believe that the care they are providing right now is as good as it can be.”

Like the groups previously mentioned, Hoag Memorial has tried to overcome this resistance by focusing on early adopters. “You look for those people who really do see that the vision is better,” notes Afable. “Those early adopters are people who have the faith and belief that there is a better option out there. They latch onto change very quickly. It is critical to use those individuals in the change management process.” Afable suggests giving those early adopters a lot of support in the implementation process to “stack the deck” so they will be successful. Later, when the organization shifts its focus to the next group—the “silent majority” who need more persuasion—it can cite the early wins and successes of those early adopters. The middle adopters will then become more willing to tackle HIT once they see that the pioneers have used it to improve their practices. As Afable notes, “nothing breeds success like success.”

Creating a Culture of Change by Involving Key Stakeholders in Decisions

Top-down change management does not work, especially with physicians. Everyone in the organization must feel that he or she has a role and a stake in the success of the HIT project. At Cincinnati Children’s Hospital Medical Center, for example, the involvement of stakeholders in planning sessions helped build a “culture of change.” The hospital found that use of live

planning sessions involving key managers and staff leaders from the patient care area was a good predictor of success in implementing and sustaining the project. Those units that took responsibility for problem solving associated with implementation found the greatest satisfaction and saw the most benefits.²⁷ Similarly, Iowa Health System created an IT governing council populated by clinical people who view health IT in terms of the care they are trying to deliver. The same people who are creating the vision are also involved in guiding the HIT project.

This “involve-the-stakeholder” approach extends to the choice of HIT systems in many organizations. As Iowa Health System replaces its picture archiving and communication and inpatient documentation systems, for example, it will use a group of key clinicians to assess the potential replacement systems and conduct site visits. This strategy created a feeling of ownership among these clinicians, who believe they are actively looking at all the alternatives before the choice is made. This ownership mentality will, it is hoped, make them more effective advocates of change with their peers.

Emphasizing the Inevitability of Change

Creating the perception that change is inevitable can also serve as an important motivator. For example, while HealthCare Partners relied on a collaborative team-based process that involved all employees (including physicians, administrators, and receptionists) at each practice site, senior management also set clear expectations and persistently reminded everyone in the organization that the HIT project was a top priority. This sense of urgency helped ensure that everyone would be on board when the group implemented its EHR in a “big bang.”

Similarly, Cornerstone Health Care worked with providers on their own terms to build a consensus, CEO Terrell says. Once that consensus was achieved, however, the large multispecialty practice created a sense of “anticipated inevitability.” As each group of practice site rolled out the EHR, leaders communicated success stories, with positive results being celebrated throughout the group. Everything about the rollout was transparent, so the next batch of physicians knew what to expect when their turn came.

Leaders at Washington University Physicians (the faculty practice of Washington University School of Medicine in St. Louis) communicated “a sense of necessity and a sense of privilege or opportunity to be part of the process,” notes Jim Crane, MD, associate vice chancellor for clinical affairs and CEO of the group. While key decision makers, including business managers and physicians, became engaged in the planning process and

physicians were assured they would not lose income during the changeover, leaders also made it clear to physicians that use of the EHR was not optional. Washington University Physicians has succeeded in spawning one of the biggest EHR implementations in the nation, with more than 900 physicians and several thousand additional healthcare professionals using the application every day.

Step #6: Executing the Change

Because change imposes stress on both individual employees and the organization as a whole, leaders must decide how much change the organization can handle at a time and design the change process accordingly. Research on HIT implementation in hospitals—which is also applicable to physician organizations—has identified several key factors that drive success during the implementation phase, including articulating a clear vision and clear objectives; communicating frequently; creating incentives to reward implementation success; creating an environment that encourages debate and discussion; involving and empowering staff; and building project teams that have the right mix of skills.²⁸

Everyone in the organization must feel that he or she has a role and a stake in the success of the HIT project.

In addition, specific strategies can be used in a variety of areas to help the implementation process run smoothly. What follows is a discussion of several of these key areas, including governance of the effort, training, and technical support and feedback, along with a review of concrete ideas for overcoming resistance during the implementation process and a description of effective long-term planning processes once the initial transition period is complete.

Oversight and Governance

The governing board of a hospital or health system plays a critical role in ensuring the success of HIT implementation. Some boards have charged an HIT or Finance Committee with overseeing the effort, and/or have recruited an HIT-savvy board member to assist with oversight (or serve on the committee). Some place governance in the information services (IS) department, while others create a new entity to oversee the effort. In almost all cases, however, the governance structure involves both IS personnel and clinicians. In fact, the interface between informatics experts and clinicians remains critical during HIT implementation. Consequently, in many organizations, the position of chief medical information officer (CMIO) has been created to supplement and support the chief information officer. As Kasti of USF Health points out, the individual spear-

heading an HIT project must have skills that go beyond knowledge of informatics and medicine. He or she must also have the people skills and strategic abilities to lead an enterprise-wide transformation and overcome the resistance of peers. The many variations that exist with respect to setting up governance structures to oversee HIT implementation are illustrated by the examples that follow.

NorthShore University HealthSystem in Evanston, IL, developed two teams to govern its HIT implementation, one in IS and the other representing seven clinical and operational departments. At The Ohio State University Health System in Columbus, responsibility for project management shifted back and forth between clinical committees, the hospital administration, and the IS department, depending on the project phase. But for two years, a 10-member “physician consulting group” built support among colleagues and met with the IS team to suggest ways to improve the EHR.²⁹

Providence Health & Services takes a similar approach. When planning HIT projects, the organization seeks leaders from both the clinical and IS sides of its operation. “We’ve learned we need people who are motivated to be part of the team, not just assigned to the team,” King says. “That means having both technical expertise and hands-on clinical knowledge. Integrating that knowledge and understanding how it will affect the people who use the system is important. You ensure this by having the operations people own the deployment. It’s their business. IT staff put the system in, but it needs to work for the people who use it.”

On the ambulatory-care side (which tends to be a less complicated environment in which to implement IT systems), governance should include a similar combination of management and end users. For example, Washington University Physicians created implementation teams consisting of managers and HIT users at various levels. Each team member was assigned specific tasks to be completed by a certain date.

Training

Along with clear communication, effective training is critical to reducing risk during HIT implementation. Consequently, hospitals and physician groups would be wise to budget sufficient funds for training. Finding the time to train busy clinicians always remains a challenge, as is trying to find real-world scenarios to use on the information system before it is fully deployed. Timing is also important; as too-early training may lead to clinicians forgetting by the time system implementation occurs. Numerous ways exist to approach training, as illustrated by the following examples.

HealthCare Partners took a “train-the-trainer” approach, in which physician champions first received training at the vendor’s headquarters. The champions then conducted onsite classroom sessions that included “dry-runs” with mock clinician-patient interactions. The EHR was implemented site by site, with the internal champions at the side of clinicians. Reluctant physicians received additional assistance from the champions as needed.

At Brown & Toland, training is performed by office deployment teams that have studied the workflows of the individual practices. “On the front end, we go in and evaluate a group’s workflow and redesign it with that practice, so by the day of deployment everyone understands their role,” explains Nancy Griest, senior vice president information technology and physician practice solutions. “Deployment teams are onsite when each office ‘goes live.’ Post-deployment, we have a service desk that can solve an office’s day-to-day problems with their EHR. In addition, account managers and physician champions continue to provide hands-on support to physicians and office staff. Developing a team of trusted staff to provide support ensures that each practice recognizes the ultimate benefits and value of the EHR.”

Regardless of the approach used, however, it is important for both staff and physicians to receive adequate training. The staff must understand how the system works so that they can communicate internally, document vital signs, and maintain a smooth patient flow. For their part, physicians must feel comfortable with the system; otherwise, they will refuse to make the transition, or will stop using the system if they feel it is slowing them down. In fact, physician opposition to a newly deployed CPOE system forced the leaders of Cedars-Sinai Medical Center in Los Angeles to drop the system several years ago.³⁰

Since resistance to change is more people-driven than technical in nature, training should extend beyond the technical aspects of HIT to include teaching managers, teams, and committees how to lead cultural change effectively. One example of this approach comes from USF Health’s Leadership Institute (see sidebar on page 14).

Technical Support and Feedback

No HIT implementation is fully successful on the date it goes live. While good preparation can accelerate adoption and integration into the workflow of the hospital or clinic, there is always a transitional period in which users learn what they need to know and software “bugs” are discovered. “Most HIT implementations face challenges with bugs or unexpected inefficiencies,” comments Terrell of Cornerstone. “To overcome challenges, you must work with vendors as partners to continually improve the

LEADERSHIP INSTITUTE PREPARES CLINICIANS FOR CHANGE

As they prepared for HIT adoption, University of South Florida Health leaders realized that success required not only strong project management, but also skilled leadership from physicians and nurses. But few USF Health clinicians had any management training. To address this issue, USF Health developed a leadership institute to help physicians and nurses acquire the necessary skills.

Founded in 2005, the Leadership Institute, a division of the Center for Transformation and Innovation (CTI), accepts 25 people a year into its formal program after a rigorous nomination and selection process. The original goal was to have more than 100 clinicians ready to step into leadership roles within four years. The organization is well on its way to meeting that goal, with 75 individuals having already completed the transformation program.

“We teach them that, as a leader, you need to step up and be engaged,” notes Kasti. “Others may complain, whereas a leader first acknowledges, ‘Yes, we have problems.’ Then he asks, ‘What can we do to solve them together?’ This changes the nature of physician engagement, and stimulates entrepreneurial, ‘outside-the-box’ thinking.”

Participants in USF’s Leadership Institute are assigned to real, organization-specific projects. For example, five physicians and an assistant CIO were asked to figure out how to improve physician scheduling and patient access to care. When department leaders decided to switch to online scheduling, they faced a lot of resistance from physicians and staff because of the standardization required. “But in the end, they were able to influence and negotiate with other resistors and get it done,” notes Kasti. “They would not have even considered that approach in the absence of having completed the program.” When implementing its EHR, USF Health turned to the CMIO who had gone through the Institute’s program to lead the transformation. “We wanted someone who had passion for the transformation and who had the skills and experience provided by the Leadership Institute,” Kasti notes. In fact, while resistance had been rising, the new executive “really understood how to develop strategy.” He focused on physician’s needs and priority areas and created some “early wins” in these areas. This approach succeeded, notes Kasti, because it “showed physicians how the change would positively affect their lives—that is, it focused on what was in it for them.”

technology. HIT implementations also require adequate resources: you cannot be undercapitalized, and you must dedicate sufficient human resources and time.”

One example of an effective approach to technical support comes from Brown & Toland, which created its own “service desk” that offers timely support to individual clinicians and practices within the group. Typically, technical support from vendors will be of varying quality, and responses to routine questions can sometimes be slow. While this may be understandable for minor issues, slow responses can have a negative impact on clinician productivity and/or the entire organization.

Integrating both technical expertise and hands-on clinical knowledge and understanding how it will affect the people who use the system is important. You ensure this by having the operations people own the deployment. It’s their business. IT staff put the system in, but it needs to work for the people who use it.

In addition to offering timely technical support, organizations must develop a mechanism to respond promptly to feedback from clinicians, both before and after implementation. For example, USFPG recognized early on that physicians were concerned about the standardization of templates in the EHR. “We went down in the trenches and had process improvement people work with doctors to develop a common documentation process,” Kasti says. “We really tried to see what the doctors were facing, so that they knew we were taking their concerns seriously.”

HIMSS’ Davies award winners consistently stress the importance of listening to clinicians when they say what they need to take care of patients, and addressing their issues and concerns whenever possible. To that end, organizations should work with vendors to develop tools that expedite workflow. In particular, they should create a back-up system in case problems emerge during the go-live phase and physicians cannot use the EHR or CPOE. In addition, organizational leaders should not implement a module, such as critical-care documentation, unless they know it is ready to do the job. Finally, patients should also be considered during the implementation phase; for example, novices should not be entering data in a busy triage area.³¹

Overcoming Resistance

In any organization, some individuals will resist the shift to a new paradigm. A handful of physicians, particularly older ones, may have made up their minds that EHR and other types of HIT are not for them. But even these diehard resistors sometimes find that they like the system after using it.

Hospitals and physician groups have developed a number of methods for dealing with these resisters. One approach is education; Maimonides Medical Center in Brooklyn, for example, used newsletters, training, and other education efforts to show physicians why its EHR would save them time and money while increasing their productivity.³² Brown & Toland created an advertising campaign to convince both consumers and holdout physicians that the IPA was on the cutting edge of healthcare. It is now shooting a video to tell this story to physicians and other stakeholders.

A second approach is to use incentives. For example, Brown & Toland also developed an ongoing “preferred” physician program that obligates a core group of aligned physicians to implement the EHR. As a benefit of being “preferred,” physicians receive signing and ongoing bonuses and EHR subsidies, which reduce financial barriers to implementation. Another example of this approach comes from HealthCare Partners, where physicians were made aware prior to EHR implementation of the system’s potential to help them earn pay-for-performance rewards.

Organizational leaders must use recognized change management techniques to ensure success, including clear and consistent communication, and collaboration with—and empowerment of—physicians and staff.

This strategy reduced expected resistance, serving as a complement to the aforementioned “extra attention” given to reluctant physicians. Interviews with hospital and physician group leaders suggest that, going forward, the Obama Administration’s financial incentives for meaningful use of EHR should help bring more doctors on board, although the magnitude of the impact remains unclear. Some, including HealthCare Partners’ Margolis, worry that, without reform in other areas, such as the payment and delivery system, the result may be “the implementation of many expensive systems that are not well utilized.” Some leaders, moreover, question the potential impact of using financial incentives to convert resisters, preferring instead to focus on rewarding early adopters and silent majority.

Effective Long-term Planning Processes

Once the initial transition period has been completed, organizations need a plan to keep adoption on course and to continue to improve and enhance the HIT system. A variety of approaches can be used, as illustrated in the examples below.

At the University of Illinois Medical Center in Chicago, the planning and implementation committees have been maintained to address ongoing issues. At Brown & Toland,

leadership continues to monitor the HIT implementation centrally to ensure it remains on track, looking at such metrics as transcription volumes and individual physician utilization. By contrast, Washington University Physicians employs a more formal method to ensure that all offices are using the EHR appropriately. Group leaders realized that even though every effort was made to configure the initial system based on user feedback, users will inevitably become more knowledgeable and will have additional feedback and concerns after using the system. To address these concerns and encourage continued use of the system, each office is visited roughly a month or so after implementation. These sessions typically generate some good ideas for improving the system, give users a feeling of ownership over the product, and send a clear signal to users that they are not being left to fend for themselves. While not formally scheduled, additional feedback sessions at practice sites are sometimes held approximately six months after implementation.

CONCLUSION

As the examples in this paper make clear, successful health IT adoption is possible. But it requires strong, dedicated leadership, along with strategies to enlist and engage clinicians in the effort. Implementing HIT represents a transformation for an organization, not just the introduction of a new technology. As a result, organizational leaders must use recognized change management techniques to ensure success, including clear and consistent communication, and collaboration with—and empowerment of—physicians and staff. In fact, the most effective tool for healthcare leaders is the vision they present to their organizations. This vision must lay out a desired state that is clearly far superior to the current state of affairs. If management can build a consensus in support of the vision and convince physicians and staff to work toward achieving it, they will have created a “culture of change” within their organizations, which is the single most important success factor in HIT implementation.

The end result will be well worth the effort, as successful HIT implementation can lead to more effective higher-quality care for patients and improved productivity and efficiencies for physicians and staff, a winning combination for any organization trying to thrive in today’s tumultuous healthcare environment. The potential of HIT is clearly demonstrated in the following quote from Connie Huber, CNO and vice president of operations at Providence St. Peter Hospital, which has successfully implemented a major HIT transformation: “Information technologies have created synergy in our organization and breached traditional silos by providing access to critical information simultaneously to all disciplines. Employees spend less time looking for paper

charts, thus increasing decision-making cycle time. Physicians can access patient information from their offices, making them more productive and allowing for more timely decisions. IT systems have moved our processes from serial and linear to integrated and patient-centered. By taking advantage of real-time data and alert systems, we have been able to ensure compliance with key evidence-based care processes and improve patient safety. In addition, ongoing tracking of safety and quality metrics has positioned us to increase use of rapid cycle improvement processes and thus improve our clinical outcomes.”

In summary, successful transformation of the healthcare system toward safe, effective, efficient, patient-centered care and community wellness will require strong, dedicated organizational leaders who can create a robust, change-oriented culture and a clear road map for effective implementation of HIT. Enacting such a major transformation is not easy but it can be accomplished by leaders who paint a vision that the end result is more desirable than the present state, and who then facilitate the processes to make that change real.

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The authors would like to thank Cynthia Mullen, Executive Director of The Leadership Institute and Center for Transformation and Innovation at USF Health for her contributions to this paper.

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Commentaries: The Art of Health IT Transformation

Health IT Transformation: The Expectation for Change

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Never in our history has there been a more important time to think carefully about the barriers to health information technology (HIT) and the most effective strategies to overcome them. The process of adopting HIT and using it to meaningfully transform care has always been challenging. But now undertaking this journey is imperative. Virtually every significant potential delivery system reform depends on using HIT to jump-start improvements in clinical decision-making. The stakes are high.

This white paper addresses a number of key steps that hospitals and health care organizations need to think about as they make the transition from paper to electronic health records (EHRs). The proposed six-step strategy draws on both the academic literature and practical experience, and focuses on the change management that underlies adoption and use of HIT. Critical elements include strong leadership support, working directly with physicians and other clinical stakeholders, soliciting and training physician champions, and a series of other steps that will be familiar to institutional leaders who have sought major improvements in health care institutions. The lessons are generic, and applicable to a wide range of reforms—no surprise given that HIT adoption is fundamentally similar to most other efforts at change management in health care.

One thing that may make the attempt to promote HIT adoption somewhat different, and, one hopes, more promising, is recent public policy changes. In February, 2009, President Barack Obama signed into law the American Recovery and Reinvestment Act (ARRA) of 2009, which contained unprecedented programs designed to promote the meaningful use of EHRs among health care providers in the U.S. I believe this legislation has a number of very powerful provisions that are well-designed to support organizations and health professionals wishing to adopt HIT. These include tens of billions of dollars in Medicare and Medicaid incentives for HIT adoption, and 2 billion dollars to fund a variety of specific infrastructure programs that should facilitate organizational programs in the

IT area. One of these is a new initiative to establish Regional Extension Centers that will provide individualized support to physicians and hospitals wishing to start using EHRs. Another is a program of grants to states to encourage health information exchange. Other mandated programs include workforce development, and research, as well as development of national standards for health information exchange and a national process for certifying EHRs.

These and other policy changes will support determined managers, but do not guarantee success. For that, patients and policy-makers are dependent, as ever, on the wisdom and commitment of health care managers whose skill makes change happen in health care delivery organizations. Their leadership has never been more important. At the ONC, we stand ready to support their efforts with the many new policy instruments that Congress has provided us. If we can succeed together, both health professionals and their patients stand to realize enormous benefits in health care gains and health care savings.



Commentaries: The Art of Health IT Transformation

Training Critical Element to HIT Deployment

by James H. Skogsbergh, President and CEO, and Bruce D. Smith, Chief Information Officer, Advocate Health Care

The use of information technology (IT) in healthcare is finding itself at an interesting intersection. While the overall adoption of this technology in the clinical setting is progressing slowly, outside forces are upping the ante. The HITECH provision in the *American Recovery and Reconstruction Act* projects to offer significant dollars for investment and adoption of these new technologies. Business coalitions are pressing for more effective use of IT in the operations of healthcare. Additionally, products are becoming available that are viable and effective in the healthcare environment. Yet, the old ways are firmly embedded and the redundant paper processes are entrenched in many institutions. Transitioning from the current paper-based silo processes to a more system-oriented automated process is a daunting trail. The challenges are significant and the paper does a comprehensive job of outlining the major barriers to true transformation and IT adoption. The industry is currently struggling to overcome these barriers.

On the positive side, we do have other industries that have made this transformation that can provide lessons learned and suggestions for success. The paper itself provides a transformational strategy roadmap that highlights key steps to accomplish in order to realize true transformation.

In recent years, the amount of IT available to our clinicians has increased significantly. Many departments, most notably lab, radiology, and pharmacy, have deployed automated systems, and many sites have actually provided some integration between these technologies. They have provided clinicians with additional information, easier access, and generally are effective support systems for the day-to-day activities of the caregiver. However, they did not require or result in major change initiatives. They generally were driven by the information systems leadership and the main focus was on the technology and getting the system to work.

The new generation of system software is so much more. It can provide the framework for significant process change, supported by the IT. The technology is much more than a support item, it is mainstream to the primary clinical activities. This is the transformation described in the article.

It is difficult, costly, and takes time. It is a destination that an organization should only undertake if it is ready to commit to the transformational strategy highlighted in the white paper.

This is why Step #1 in the transition process is “Engaging Leadership” and Step #2 is clearly “Communicating the Vision.” This includes administrative leadership and physician leadership. Securing physician support and buy-in can prove to be the more challenging. As pointed out in the paper, physicians belong to an expert culture that nurtures individuality. System processes work better and more effectively by deploying standardization of best practices and reduction in variation. Standardization can run head-first into the culture of the individual. It can challenge years of practice behavior.

“Identifying Stakeholders” (Step #3) and “Working with Project Champions” (Step #4) can begin the transition process. In teaching institutions, residents will often lead the way in the process, willingly adopting the new systems and processes. They have not developed nor are they vested in the old manual way of work processes. Similarly, hospitalists and physicians on staff may be more open to the new processes. Working with physicians that are more open to the change will lead to more “Early Wins” (Step #5).

As discussed in the paper, the approach to training can be a critical element in the success of the technology. IT personnel can be very effective at training staff on how to use the functions of the system, how to make it work. But they may lack the clinical knowledge to educate the clinicians on how to best make the functions work effectively in a clinical environment. The training effort needs to be bi-level, training the clinicians how to use the system, with the second level focused on how to make the system work in the clinical environment. This second level of training requires clinical knowledge and expertise, and is often provided by current staff members that have shown an interest and aptitude for the use and deployment of technology. This may require new structures and positions in the organization that did not exist before. The organization must grow and adapt in order to effectively deploy and utilize the new technologies.

In summary, this paper provides an accurate and effective account of the healthcare environment today in relation to the effective use of IT adoption: its status, challenges, and opportunity. It also encompasses a methodology for addressing the barriers to moving forward with technology as a catalyst for change and improvement.



Joint Team of Clinicians and IT Professionals is Essential to HIT Success

by Andrew M. Wiesenthal, MD, SM, Associate Executive Director,
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Implementing health information technology (HIT) has progressed slowly and with difficulty in the U.S. There have been some successes, and also some spectacular failures. This white paper addresses the proposition that change management strategies and techniques are vital to successful HIT deployments, even more important than solving the many technical problems attendant on such deployments. I could not agree more. Even so, I take issue with some of the positions the paper takes.

First, the attitude that institutional leaders are *separate* from clinical leaders is a precursor to failure, not success. Grace Terrell had it right: “physician leaders, and not the CEO, must take the lead on the project.” This concept seems, in turn, to be derived from the notion that an electronic health records (EHR) implementation is something that the institution does *to* its clinical staff. Success is more likely when an implementation is something that the staff does *for* itself, driving toward a shared vision of the future of health care in the institution.

The potential value delivered by EHR must not be conflated with a vision. The latter is crucial and should ideally be a view of what the healthcare delivered by the institution or practice should look like. Once you know where you want to go, then you can decide what road to take, what vehicle to use to get there, and who should drive. The CEO and the executive team would do well not to create a vision in isolation. Rather, the process of creating the vision can be very inclusive and a foundational component in getting key physician engagement and commitment.

In an environment where a shared vision is developed, the notion of resistance to change applied to the adoption of HIT may be inappropriate and even damaging at this stage. Most physicians and nurses in active practice today would likely acknowledge the inevitability, if not the desirability, of the implementation of an EHR. They know that they routinely suffer from a lack of key patient data and that EHR would eliminate that problem. The arguments are now not about “if” but “when,” not about “why” but “what” system or method. Further, although the numbers of EHR users remain disappointingly small, most clinicians know someone who is using an EHR, and they also know that person would never return to a paper record system.

Those early physician adopters are necessary but not sufficient as physician champions in a broader deployment of HIT. They

are usually technophiles and technically adept (although the two do not necessarily go hand-in-hand), and other, “normal” doctors may not be swayed by their enthusiasm. They will be swayed by their opinion leaders—the doctors they respect and who they think have good judgment about what will and will not work in practice. Dr. Margolis is closer to the right idea. Identify the opinion leaders *and* the technophiles, and build a team with them and the IT professionals.

Creating a joint team of clinicians and IT professionals is essential and difficult. As is often the case with different types of knowledge workers, they do not share the same approaches to problem identification or problem solving, and they do not use the same language. Clinicians typically know nothing of the IT project life cycle, and IT professionals know nothing of clinical workflows, among the most complex workflows of industrial society, according to Peter Drucker. A chief medical information officer can be an effective bridge between the two. Before they start working together, clinicians and IT professionals have to gain mutual understanding. It is an investment that will pay off handsomely when project difficulties are encountered.

There is no question that early wins breed long-term successes. A key element in any successful change is “trialability”—“can we see how this works in a real setting and make sure that there are no serious problems before we roll it out in the entire organization?” Two pitfalls have to be avoided in creating this initial deployment. First, it should not be called a pilot. Piloting an intervention is a subtle way of killing it. It means that we are going to have a look and, if there are problems, we are not going to proceed. Leadership needs to be very clear, as the paper states, that the organization is going to proceed, and the purpose of the initial site is to work out the kinks. Second, it is better to find a site or department with enthusiastic but otherwise “normal” staff. Success there will be far more compelling for other “normal” folk.

Finally, ongoing governance and training are critical. The leaders of most successful deployments retrospectively point to two success factors. First, they ran the project as a clinical change project, not an information technology project. Clinicians of all types were directly involved in decision making and governance at every level. Second, they gave their clinicians adequate advance training, adequate time to learn both before and after the go-live, and intense support from the go-live date forward. There is no better advice than urging attention to these key lessons, and the paper wisely does precisely that.





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