

Engaging Physicians to Adopt Healthcare Information Technology

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Healthcare information technology (HIT) is one of the most expensive capital investments for any healthcare organization. HIT adoption is a complex process because adoption and implementation depend on buy-in from physicians, most of whom are not employed by the organization and whose thinking varies widely. HIT comprises systems such as the electronic medical record, computerized physician-order entry, and decision support systems that integrate and improve access to health- and patient-related data.

This column (1) summarizes the case for HIT adoption and the issues that give physicians pause about HIT, (2) provides a real-world example of a successful HIT journey, and (3) presents strategies for HIT implementation. In addition, we discuss the role of HIT in the patient-centered medical home model.

THE CASE FOR HIT ADOPTION

Both clinical and economic arguments support the adoption of HIT. Following is a brief summary of the clinical and economic advantages of HIT.

- *Opportunity for patient–physician partnership.* HIT powers the patient-centered medical home, a framework for coordinating healthcare with a team of practitioners that transcends episodic visits. (See sidebar for further discussion.)
- *Decision support for clinicians.* Physicians face myriad clinical challenges, including more than 68,000 diagnoses treated by more than 4,000 procedures and 6,000 different drugs, each of which presents potential adverse side effects (Gawande 2009).
- *Access to and storage of medical and patient information.* HIT allows users to retrieve and store vital information, which allows patients to be notified of medication recalls, side effects, and interactions. In the event of a disaster, stored data can be pulled up from a remote location, preventing service interruptions.
- *Reduction in filing, transcription, and staffing costs.* Electronic medical record (EMR) minimizes the need for paper clinical records and thus the support staff who file,

SIDEBAR:
The Patient-Centered Medical Home

HIT complements the patient-centered medical home (PCMH), a model in which the patient obtains healthcare in collaboration with a primary care physician and a comprehensive network of providers. The PCMH approach relies on HIT, which enables most of the features of the model, including care coordination and communication. A recent decision by the Massachusetts Special Commission on the Healthcare Payment System recommends that all providers be part of a global payment system within five years (Vesely 2009).

Traditional fee-for-service medical practice is episodic (based on patient visits), reactive (depending on which patients show up on the schedule), and dominated by the physician. PCMH, in contrast, is continuous, proactive, and is directed by the healthcare consumer. Here, patients have regular communication with and access to the physician and other providers; providers, in turn, reach out to patients to give guidance and resources on various health issues, including self-management. PCMH care is facilitated by IT systems such as patient registries and health information exchange, all of which ensure that patients get the care when and where they need it and in a culturally and linguistically appropriate manner (NCQA 2009).

Earlier this year, Medicare's PCMH demonstration project was launched in eight states and will run for three years. Under this project, primary care practices participating in PCMH will earn between \$40 and \$52 each month per patient, depending on the practice's

Medical Home score, which measures the following (NCQA 2009):

- Access and communication
- Patient tracking and registry functions
- Care management
- Patient self-management support
- Electronic prescribing
- Test and referral tracking
- Performance reporting and improvement
- Advanced electronic communications

Key Points to Note About PCMH

All primary care practices that want to thrive should prepare to participate in the PCMH approach.

- A vital first step in becoming a PCMH provider is to invest in HIT, which will enable a patient registry for diseases, medications, and laboratory results. Without a patient registry function, a PCMH practice cannot readily measure patient outcomes.
- Electronic prescribing with clinical decision support is critical for patient safety.
- Teamwork is a core element of PCMH. A physician cannot perform everything successfully without help. Medical assistants are the most likely partners for physicians; they can help physicians deliver care proactively and relieve them of tasks such as calling patients who have missed visits or have gaps in their care.
- An online patient portal greatly facilitates the care coordination and communication functions of a PCMH.

transcribe, and pull them (Grieger, Cohen, and Krusch 2007). The savings are substantial. In one Pittsburgh practice, two physicians netted \$94,000 in the first year after installing an EMR system (Grunden 2008).

- *Decreased duplication.* HIT has been shown to prevent the duplication of imaging and laboratory tests by up to 20 percent (Grunden 2008).

- *Improved coding accuracy and revenue capture.* See the report by the Congressional Budget Office (2008).

PHYSICIAN PERSPECTIVE REGARDING HIT

Despite HIT's benefits, many physicians are still hesitant to switch to an electronic system. This reluctance falls into three categories: bad medicine, disenfranchisement, and bad economics.

Bad Medicine

Koppel and colleagues (2005) note that a computerized physician-order entry (CPOE) system increases medication errors when it is poorly designed. In this study, lack of physician participation in the initial design process led to a system that was imposed on physicians. This system resulted in physicians making mistakes in writing vital orders because their customary routines were disrupted.

Similarly, Hartzband and Groopman (2008) worry that EMR is touted as a panacea for nearly all the ills of modern medicine. They argue these points:

- The capacity to copy and paste parts of the electronic record makes it too easy for medical students and residents to avoid taking the patient's medical history and thus erroneously deduce what might be wrong with the patient.
- EMR templates direct physicians to ask restrictive questions rather than engage in open-ended dialogue, which is critical to making correct diagnoses.

Disenfranchisement

In implementing HIT, providers bear all the disruptions to their established system while payers and patients gain most of the benefits. Dr. David Brailer, former U.S. healthcare IT czar, estimated that physicians obtain only 11 percent of the savings from HIT (Lohr 2007). The real benefit goes mainly to private and public insurers because they are paying for fewer unnecessary tests, and automated record handling is a big cost savings for payers.

In a survey of physicians regarding HIT, approximately 40 percent of respondents listed insufficient financial resources as the biggest impediment to implementation. However, 20 percent cited lack of buy-in from other physicians; one said, "The biggest issue is not necessarily physician resistance—it is the administrative resistance to admitting that these are not just IT projects" (Weimar 2009).

Bad Economics

Studies indicate that inadequate project management plays a role in implementation breakdowns. A Standish Group study found that 51 percent of HIT projects were seriously late, over budget, and lacking expected features (Hayes 2004). A report from the Office of the National Coordinator for Health IT states that about 50 percent of HIT efforts fail. The reasons identified include poor planning, miscommunication, mismanagement, overspending, and rejection by users (Merritt 2009).

SUCCESSFUL HIT IMPLEMENTATION: THE CASE OF CONCORD HOSPITAL

Concord Hospital in New Hampshire is a 230-bed community hospital. In 1995, the hospital decided to invest in HIT to improve care delivery. The rapid progress it made in HIT adoption made the hospital a model of improvement for other mid-size hospitals. Concord's chief executive officer (CEO) Michael Green received *Modern Healthcare's* CEO IT Achievement Award in 2009 for his demonstrated leadership in and commitment to using HIT to advance his institution's strategic goals. The IT team at Concord includes Dr. Joel Berman (chief medical information officer), Dr. David Green (chief medical officer), Dean Morrison (chief information officer), and physician informaticists Dr. Paul Clark, Dr. Wendy Angelo, and Dr. David Picard.

User Focus

As Concord Hospital transitioned to CPOE, the HIT project team created a methodology that set users (primarily physicians) up to succeed.

The team worked one department at a time to prototype workflow processes and to develop forms that reflected the way that physicians thought and cared for patients. The goal was to meet the "five rights" of technology—the *right* information at the *right* time to the *right* person in the *right* format and the *right* medium.

- Right information is specific to the patient and actionable at the point of care.
- Right time focuses on presenting clinical decision support at the moment most congruent with the clinician's workflow; for example, a prompt about the need for an echocardiogram should be given when the provider is thinking about cardiovascular orders.
- Right person addresses issues such as, "Should a prompt about undocumented smoking status go to a physician, nurse, or medical assistant?"
- Right format refers to the interface properties within a specific medium; for example, within CPOE, a prompt should come up about a CMS (Center for Medicare & Medicaid Services) core indicator with passive text guidance, an intrusive pop-up, or a mandatory hard stop.
- Right medium specifies the application used to deliver the clinical decision support; examples of a decision support medium include the CPOE, physician portal, intranet, or a third-party resource such as UpToDate or Micromedex.

Concentrating on one department at a time allowed for rapid turnaround on clinical suggestions, promoted the perception that the team is listening to users, and minimized us-versus-them interactions between physicians and the team. Creating a supportive culture was important because the success of the project depended on dotted-line influence rather than top-down mandates. As Dr. Berman, the chief medical information officer, stated, "We tried to create a gravitational pull based on 'do no harm'."

Physician Champions

Physician champions, as discussed in Cohn (2009), played an integral role in the design and implementation of the CPOE system and subsequent HIT projects at the hospital.

- Aside from the veteran physicians on the team, seven additional physician champions from a variety of fields were enlisted. These physicians, all of whom are well respected by colleagues, helped build consensus on clinical processes and order sets.
- Two cardiologists lent their illegible orders to a “Stump the Staff” exercise to illustrate that illegible handwriting caused confusion and that a CPOE system is safer for patients.
- A general surgeon showed his surgical colleagues variation in their orders for vital signs, temperature elevation, low urine output, and incentive spirometry as well as the consequences of the variation. His presentation demonstrated the need for consensus building and the benefits of standardization and led to a unified appendectomy order set.
- Physician champions in pediatrics, obstetrics, orthopedics, and internal medicine also leveraged their credibility, communication skills, and time.

Because physician champions are experts in the workflow critical to care delivery, their input increases the probability that the new care processes will be embraced by other clinicians and improve medical outcomes.

Case Analysis

The success of Concord Hospital’s approach is multifactorial.

- *Planning.* Seeking physician participation at the planning stage is critical to the design and widespread use of the HIT project. The challenge has become keeping up with the demands of physicians to include more functions to the system rather than convincing the physicians to use the system.
- *Sufficient resources.* The planning process also involved the allocation of sufficient human and financial resources to the effort, including a group made up of 13 physicians and clinical staff members.
- *A logical framework.* The team used Kotter’s (1996) 8-steps change model as an implementation framework. One of the benefits of Kotter’s model is that it urges teams to perform the ground work (steps 1 through 4, which Kotter referred to as “defrosting activities”) first and then embed the change (step 8). In this way, the change is more likely to be sustainable.
 - Step 1: Create urgency for change. The “Stump the Staff” exercise mentioned earlier revealed life-threatening dangers of paper-based orders. While the demonstration began humorously with bad handwriting samples, it led

to a serious presentation of a case that involved an 18-month old's nearly fatal overdose from an anti-seizure drug. The primary care practitioner who wrote the illegible order was a respected 26-year veteran of the medical staff, driving home the point that medical errors are caused by bad systems, not bad doctors.

- Step 2: Pull together a guiding team. As mentioned above, having a well-respected team to champion the process and align resources to achieve the objectives is critical to success.
- Step 3: Create a clear, uplifting vision. For example, the team spelled out the CPOE vision using the easy-to-remember initials of the project:
 - C is for clinical decision support at the point of care. Order sets must be right for most patients most (80 percent) of the time.
 - P is for patient-centered care. Tools that customize care for the other 20 percent of orders must be tailored to individual needs, on the basis of patients' diseases, other medications, metabolism, and preferences.
 - O is for ordering efficiency. Transmission of orders to the receiving department must be near instantaneous, when compared to paper-based orders.
 - E is for electronic database. The back-end clinical repository of orders and outcomes that the team analyzes must be informative so that improvements can continually be made to the C, P, and O components. This vision points out that CPOE is not an application but a transformative, iterative journey to improve patient care.
- Step 4: Communicate the message many times using multiple channels. For example, the team presented "Stump the Staff" at grand rounds, medical staff quarterly meetings, and department meetings as well as to nurses, allied healthcare professionals, and other employees who could spread the word about the hospital's efforts.
- Step 5: Empower people by removing obstacles. This step entailed establishing CPOE order sets (tools) and enlisting physician champions in each specialty. Doing so facilitated the use of the system and engaged users, thereby removing barriers to implementation. The team's message to physicians who opted not to use CPOE is consistent: "Don't use CPOE if you think it might compromise the care your patient receives, but please tell us why you chose not to use CPOE so that we can address the problem and improve it."
- Step 6: Create short-term wins that provide momentum. At Concord, the Diabetes Physician Recognition Program bound physicians to the optimal way to care for patients with diabetes and heart disease and who suffered a stroke. Showing physicians a quality dashboard that displays how well/

poorly their patients are doing compared with those of their colleagues and with national averages can trigger healthy competition (Cohn 2009).

- Step 7: Maintain momentum so that wave after wave of change is possible. Following improvements in the prophylaxis of patients with venous thromboembolism, for example, the team piloted an inpatient diabetes order set that in its early stages reduced hypoglycemic reactions by 67 percent, compared with results from previous diabetes management systems.
- Step 8: Make change stick by nurturing a new culture. When the team embarked on establishing electronic tools (see step 5), the team invited physicians to get involved. As an enticement for participating in after-hours meetings, physicians were offered gift certificates to local stores. Many physicians declined the gift certificates, stating that work to improve patient care did not require extra reimbursement. The team interpreted the physicians' response as a sign that it conducted the "defrosting activities" well.

Today, approximately 135,000 of the 150,000 patients served by Concord Hospital have electronic health records, and 95 percent of Concord physicians use the EMR system. In addition, Concord has helped three other hospitals in the area with technology adoption (Rhea 2009).

STRATEGIES FOR HIT IMPLEMENTATION

Implementing new technology throughout the organization is inherently disruptive, especially in healthcare where patient care cannot cease to make way for the unfettered installation of a new system. Often, parallel systems must run to accommodate the transition, despite the additional burdens and workflow challenges it places on healthcare staff (Chaiken 2008a).

The ideal way to implement HIT is to pay attention to the details before the implementation, including the following:

- *Selecting a HIT system.* The clinical strategic vision of the organization must drive the HIT system purchase. A poorly chosen system can lead physicians to move their practice to competing facilities, disrupt patient care, and usher in lawsuits. The purchase decision must be based on surrogate information, such as the system's clinical decision support feature, other organizations' and users' satisfaction with the system, and perceived relevance and ease-of-use of the system's applications. The safest way to evaluate an installed HIT system is to visit the current clients of each vendor to observe the system's functioning in various patient care areas and at peak usage times. Selecting a HIT system requires patience and time.
- *Forging a vendor relationship.* An outstanding working relationship with a system vendor may trump the minor upgrades in features and functionality of another

system that offers suboptimal customer support. A vendor relationship extends far beyond the adoption and implementation phase, so it is important to partner with a trustworthy vendor who can offer guarantees that the system will deliver expected results long after the purchase. Because unexpected problems will arise, a positive vendor relationship can ensure that problems are resolved immediately and support is available at all times.

- *Negotiating prices.* The products, services, and support included in the system's price should be scrutinized during the negotiation with the vendor. Cost of ownership includes not only the purchase price but also ongoing maintenance, support, and upgrades.
- *Preparing physicians for implementation.* Following is our recommended method for preparing the medical staff for HIT implementation.
 - Convene a panel (6–10 members) of physicians who have clinical credibility and who represent various disciplines.
 - Ask the panel to discuss with their colleagues the features and traits of a HIT system that are most important to their work. Panel members should encourage physicians to talk to peers at other organizations that have rolled out a HIT project.
 - Invite vendors to submit a proposal and perform a demonstration for the panel and the medical staff.
 - Use a scoring system to evaluate the HIT system according to features, reliability, training, service, upgrades, and cost.
 - Visit organizations that are using the top 5 systems as presented by the vendors. Visit at peak hours and talk with users about the system's strengths and weaknesses.
 - Request all departments to review their workflows and clinical processes to identify those that may be streamlined.
 - Schedule meetings with physicians to discuss their concerns.
 - Schedule meetings with nursing, pharmacy, laboratory, and other allied departments to discuss their concerns.
 - If necessary, hire a consultant to help evaluate different vendors; systems; pricing; features; and time frames for installation, training, assistance, and repairs.
 - Designate internal trainers and ensure that the selected vendor provides them with comprehensive training. These internal trainers will serve as a resource for physicians and staff during implementation.
 - Provide mandatory training sessions for physicians and their assistants/support staff. Trained physician users become invaluable champions of the HIT effort (Chaiken 2008b).

- *Planning the “go-live” date and beyond.* Plans must be in place for the date that the system is scheduled to begin operating and beyond that date.
 - Minimize elective clinical procedures for one month after the go-live date to accommodate initial system inefficiencies.
 - Install vendor representatives and internal trainers on patient care floors for at least the first week after the go-live date.
 - Offer refresher courses periodically or advanced sessions monthly/quarterly after the system is in place.
 - Compile frequently asked questions and answers in a web-based data repository (wiki media) to facilitate training of new physicians and clinical staff.
 - Track quality and safety metrics, billing accuracy, adoption, and user satisfaction before and after implementation. Then, display these data on a dashboard and distribute them for monthly review to physicians, organizational leaders, and board members.

LESSONS LEARNED

- Physician engagement is the primary determinant of HIT implementation success.
- Unintended problems and consequences will arise. Do not expect any system to work as advertised by the vendor.
- Consensus building is essential not only to HIT implementation but also to establishing improved clinical processes and outcomes.

CONCLUSION

The success of HIT adoption and implementation are as much a matter of organizational culture as engineering design. Healthcare organizations that welcome innovation, rather than view it as a threat, can reap gains in quality, safety, and coordination of care. The next column will discuss ways to engage physicians and other healthcare professionals in innovation despite the challenges of the current recession.

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