#### CHAPTER 1

# Intent

The time has come for an electronic medical record in every group medical practice in America. Period. End of story.

—Donald Berwick

WHY CONVERT?

No hospital should convert to an electronic health record (EHR) simply to computerize care. Conversion is **not** a computer project; it is a medical project that requires technical resources and technical support.

Computerizing a hospital is much like building a laboratory or buying a new MRI machine: The goal is not to improve the hospital's pathology or radiology departments or its technology but to improve the patient care it delivers. Technology is a tool, but it isn't the goal. Too many hospitals view conversion as an information technology (IT) project with medical implications, which is simply and disastrously **wrong**. It needs to be driven and governed by a medical perspective, not an IT perspective.

Patient needs, compassionate care, better health, patient safety, hospital finances, regulatory needs, ease of practice, medical costs, and staff support are motivations that should underlie and drive hospitals' decisions. Yet, hospitals sometimes put more money than thought into their decisions. The purpose of hospitals—to provide quality patient care—should underlie both the conversion and the continuous optimization that occurs after the conversion.

### **Facts and Figures**

February 2012 data from the US Department of Health & Human Services showed that over 41,000 physicians and almost 2,000 hospitals received incentive payments in excess of \$3.1 billion related to meaningful use of health IT, including EHRs. Additionally, the number of hospitals using health IT has increased twofold since 2010.

There is more to providing quality patient care than meets the eye.

While many of us are unaware of it, the quality of medical care has been undergoing a revolution that is finally making itself felt and transforming medicine globally. A century ago, medical care in the United States and Canada was transformed by publication of the Flexner (1910) report *Medical Education in the United States and Canada*. Flexner condemned the quality of medical training in the United States and recommended that

- admission to medical school require applicants to have completed high school and two years of college focused on the study of basic science,
- medical students be required to complete four years of study in a curriculum approved by the Council on Medical Education, and
- medical schools be part of a university and have full-time clinical professors.

His report led to improved medical training that has become the envy of many other nations.

Yet over the past decade or so, the quality of care—especially in the United States, but globally as well—has been questioned and often found to be embarrassingly low. In 1999, the Institute of

## **Drivers Motivating Conversion to EHRs**

In a recent report published by The Advisory Board Company and HIMSS Analytics (2012), 100 percent of responders reported that the major driver that motivated their organization to adopt an EHR was the belief that it would improve quality and effectiveness.

Driver Motivating Organizations to Adopt an EHR	Percentage Response
Belief that it would improve effectiveness and quality	100
Competing hospital was implementing an EHR	24.2
Board member or CEO was a believer in EHR value	24.2
Challenge with recruiting new physicians or nurses	3.0
Well-publicized adverse event or other quality issue	3.0
Other	21.2

Medicine released the infamous report *To Err Is Human: Building a Safer Health System*, decrying the prevalence of medical errors and recommending strategic changes in the organization and delivery of medical care at both the national level and in local hospitals and universities. The key point of those recommendations was not a better education but a better system:

Preventing errors and improving safety . . . require a systems approach in order to modify the conditions that contribute to errors. People working in health care are among the most educated and dedicated workforce in any industry. The problem is not bad people; the problem is that the system needs to be made safer. (IOM 1999)

The problem is not that we lack knowledge, resources, intelligence, or training but rather that we lack the will and the understanding

to transform the knowledge and resources into a system that can provide effective, compassionate care.

The key issue is not what we have but how we use it. Patients are injured not because we lack MRIs but because they wait needlessly, not because of a lack of surgical skill but because of a lack of organizational skill, and not from the dangers inherent in certain drugs but from our mistakes in prescribing and administering those drugs.

Most suggestions and prescriptions for improvement cite two themes: single-minded dedication to quality and more effective use of the tools we already have. Among these tools, the use of computers and information access are unanimously cited, not because computers **solve** our problems but because they **enable** us to solve our problems. It is not the computer itself that has value; rather, there is enormous value in our ability to access information, track and avoid errors, find what we need quickly and reliably, make decisions, and implement care without error or delay. At their worst, computers can, as one pharmacist said, "let us make mistakes faster than ever"; at their best, computers can help us achieve a level of quality care we could never achieve without them. But they cannot help us if we do not have a single, clear goal: **quality. No mistakes, no delays, and no exceptions.** 

Computers are not the end, yet they can be the **means** to achieving our end: a total transformation of patient care. How can we effectively transform both our hospitals and ourselves? Part of that transformation—and if done well, the most effective part—is moving our hospitals into a world of informed decisions, errorless

#### Did You Know?

Only one in seven medical errors is recognized and reported in US hospitals. The Inspector General estimates that more than 130,000 Medicare patients experience one or more adverse events in hospitals per month (Sweeney 2012).

#### Did You Know?

Medical settings using EHRs are more likely than those using paper-based records to adhere to quality-of-care standards. As a result, it is in the best interest of hospital systems (and the patients they serve) to adopt "meaningful use" of EHRs (Cebul et al. 2011).

therapy, and seamlessly integrated medical care: a world that makes optimal use of computers.

Bringing a hospital into the computer age is easy; doing so successfully is much harder. The difficulty lies not in the technical complexity—turning software into a clinical tool—but in the human complexity: converting **people**. We must ask people to change the way they do what they do and then continually modify, tweak, and optimize it. To reprogram computers is straightforward; to reprogram human beings is a daunting but necessary challenge. People need to learn and relearn, evaluate and reevaluate, make decisions and remake even better decisions.

Converting hospitals requires careful planning; converting people requires patience, hard work, a good understanding of human nature, and a sense of humor. To practice medicine, we need a compassionate understanding of reality; the same is true when converting people. To be a good social worker, a good psychologist, or a good politician, we must have our feet on the ground while keeping our eyes on the sky. Successful conversion requires no less. We need to understand the nitty-gritty of the hardware, the complexities of the software, and the realities of medical care; equally, we need to understand **why** we are converting in the first place. The rationale for conversion and subsequent changes may seem obvious, but too often it is not. Statements of purpose—the vision, the goal, and the point of the process—commonly are no more than wishful thinking, and sometimes bad thinking at that.

### Тір

Training is crucial to converting hospitals and people and to ensuring utilization. It is also tied to federal incentive payments requiring that healthcare providers and workers meaningfully use the system. Some doctors, nurses, and healthcare workers doubt the benefits of EHRs, particularly for improving the care of their patients and even their own productivity. A broad range of approaches can be taken to get them on board and fully participating, including a combination of peer-to-peer training sessions, online and offline sessions to meet custom schedules and needs, assignment of executive sponsors and team leads, and even components of competitive gaming, such as team or individual leader boards.

## **DEFINING A VISION**

In many organizations, the vision statement is window dressing. It is made to please the public relations department and crafted to ease the politically correct. It is calligraphy for the organization's website and nothing more. The hypocrisy is exposed in the veiled sarcasm of physician staff and the eye-rolling of staff nurses when no administrators are present: *"Sure* they believe in better patient care, as long as it doesn't involve helping *my* patients." While these colleagues do need a vision—an honest one—they also have a vision of their own that keeps them coming to work, one that drives the professionals in any well-run hospital.

A vision statement should **be** concrete, and it also should inspire concrete **results**. Although it is only an informal motto, the Royal Canadian Mounted Police's famous claim "We always get our man" must have given pause to many a potential lawbreaker and made it easier for the force to meet its formal motto *Maintiens*  *le droit* ("maintain the law"). The US Postal Service, its function now increasingly undercut by e-mail and the erosion of established communication patterns, once was driven by the unofficial motto "Neither snow nor rain nor heat nor gloom of night stays these couriers from the swift completion of their appointed rounds." The fact that this "vision statement" was unofficial and plagiarized from Herodotus's description of the Persian courier service did not undermine the respect it engendered for the postal service of a young nation. In the popular culture of times past, the postman, especially the rural postman, was an example to emulate.

In the case of hospitals, an accurate, credible vision can have measurable effects on EHR implementation and optimization, reimbursement, and patient survival rates.

## Example of Success: Hospital #1

One example of success comes from a large medical center in the Midwest that achieved total compliance with computerized physician order entry (CPOE), largely because of the center's vision and the way in which it was applied.

#### Тір

For a hospital to realize its vision, members of the hospital staff must be able to answer three key questions:

- 1. How do you see yourself practicing medicine within the next five years?
- 2. What objectives and goals does the hospital vision incorporate to enable you to do so?
- 3. What tools and systems can help you and your peers achieve those goals and objectives?

Keep in mind that success depends on each person's ability to tie the vision to concrete, personal actions. In converting its eight hospitals—a combination of community and academic, inner city and suburban, general and specialty—the center kept to a single, firm vision: **improving patient care**. This goal was consistently hammered into staff at all levels; the management team meant it and made it stick. The mantra of improving patient care was not empty fluff, a mere "framed message," or saccharine hypocrisy; it was concrete and inarguable. The message underlying the vision could be summed up in three concepts:

- 1. We can use computers and CPOE to improve our patient care.
- 2. If you don't agree, tell us why so we can make it work.
- 3. If you still don't want to use the system, you must not value patient care—in which case, why are you practicing here?

Many physicians and nurses faced with EHR issues (and, historically, any other hospital issue) use the trump card of patient care: They claim that a given change will compromise patient care. Because quality of care is ultimately a medical evaluation rather than an administrative one, their claim is difficult to challenge, absent good objective data. In this case, the center preempted the trump card and communicated a clear message: *If we all are trying to improve patient care, you should be helping improve, rather than obstructing, our project.* Staff couldn't easily evade this statement: Go along with the project and help fix problems, or leave. The center achieved 100 percent compliance, both initially and over the ensuing years as it strove to optimize patient care.

# Defining Goals to Support the Vision

A supported, consistent vision is overwhelming and inescapable and drives a hospital to achieve what it could never achieve otherwise. Beyond a vision—even a concrete, credible one—we must define reasonable, achievable, and measurable goals that support that vision.

A clear understanding of our goals enables us to plot our course, correct our mistakes, and measure our success—if we have succeeded

at all. We may have a vision, but the purpose of clearly stating our goals is to understand **why** we are doing what we do, **how** to achieve our goals, and **whether** we have succeeded when we finish. If we can't see and measure concrete benefits, our vision is mere words. It is sterile.

The goal isn't to convert to an electronic world or to install a pretty interface. It is deeper and more difficult to attain. What is the point of installing that interface? Until we understand our goal, we risk spending money and using resources only to achieve something that no one wanted in the first place.

When we convert a hospital, what is our goal? Why bother?

Is our goal better patient care, patient safety, improved financial return, staff satisfaction, or regulatory compliance? IT is an **enabler**; at best, it can help you **reach** your goal, but it should not **be** your goal. Likewise, when we evaluate a system, we should not focus on its features but on the **usability** of those features. Do they improve patient care? Do they make us safer? Faster? Better?

A computer may **enable** us to document in exquisite detail, but do staff actually **use** it to document effectively and efficiently? A computer may record every order and warn us about medical errors, but can staff place those orders in the midst of providing compassionate patient care? Will those warnings improve patient care, or will staff ignore the warnings because they are too frequent, too intrusive, or mindlessly confusing? A computer may offer us generous displays of patient information, but in that glut of data, will we be able to find the details we need in time to make the best clinical decision?

The key question is not "What is a **system** capable of?" but rather "What will a system make **us** capable of?"

Once we know our goals, a good system must support those goals. It must protect our patients and staff, promote good care and caring, lower our costs and our patients' costs, and enable us to improve what we do; otherwise, it is not worth installing. Some hospitals forget this crucial point—or act as though they have. They concentrate on features, aesthetics, or a narrow regulatory interest to the neglect of their mission, staff, and patients. Neither aesthetics nor a narrow attention to legal pressures is a sufficient reason for converting, and neither contributes to the project's credibility—an element essential to recruiting clinical staff to support such systems or, indeed, such hospitals. If physicians, nurses, and other clinical staff perceive the rationale for conversion as purely a reaction to legislation or finance—and even more important, if it is perceived as a purely executive decision made behind closed doors and without consultation—they will not support the system.

Getting physicians and nurses to use a system is often compared (like so much of human behavior) to "herding cats," and the only effective way to herd cats—or clinical staff—is to convince the majority of them to move in the direction we have in mind. The best (and only reliable) way to do so is to use their own motivations. In the hospital environment, the most common motivation shared

#### Motivation and Drive

I once asked a medical student about his motivation to become a doctor. Without doing much thinking, he honestly replied that his motivation was professional and financial security and then continued by expressing his drive to enhance patients' lives. That's when it hit me: the difference between motivation and drive. I thought about the many doctors, nurses, and other medical staff who practice in countries such as Russia, India, and China and even in some underserved regions in the United States, where dedication to patient care outweighs any financial benefit, and it became increasingly clear to me that healthcare professionals are ultimately driven to their field not primarily out of financial motivation but more so by their determination to help others.

—Susan Dorfman

by staff is to provide good patient care. Although many of us forget our altruistic goals in our day-to-day battles with the insertion of central lines, scheduling, The Joint Commission, and litigation risk, the urge to provide good care remains active. We follow this urge back to the hospital for our next shift instead of looking for a job elsewhere.

Patient care is why we work in a hospital and not in an accounting office. At some level, most of us—excited by our quotidian jobs or not, happy to admit it or not—care about the patients we serve. We work hard to provide compassionate, quality care to those patients. And our vocations and colleagues matter to us. These bonds hold a hospital together and inspire staff to convert from the world of paper to the world of computers and then continually improve it thereafter.

We have already considered the case of a large medical center whose vision—improving patient care—enabled its continuing success. Consider what happens when the opposite occurs. A hospital can make one of three mistakes in this regard:

- 1. It lacks a defined vision.
- 2. It has a vision that no one believes.
- 3. It never carries through on its vision.

The first error is the least common of the three; most hospitals make some attempt to define their *raison d'être*, even if it remains in brochures or in the tiny print on an obscure web page.

The second error occurs when the vision is well defined and even well publicized but the staff regards the vision as a window dressing. Effective visions are not the creation of a public relations consultant.

The third error occurs when the vision is credible but nothing happens. A good vision can (and probably should) be slightly ahead of reality, but it cannot be independent of reality. A slight disparity (we're good, but we want to be even better) is effective as long as hospitals carry through and catch up. The hospital must not only state the vision; it must intend to achieve it.

## Example of Failure: Hospital #2

A nationwide hospital system (of almost three dozen facilities) converted to an EHR but neglected to link its vision (the essence of which was to "create excellent patient care," although the actual statement was turgid) to the changing use of computers in its hospitals. Physicians did not have a clear (let alone consistent) idea of the rationale for conversion, so they invented several. A majority of them attributed the change to the system CEO's friendship with his golf partner, whose cousin was the CEO of the EHR vendor. This belief was the explanation they gave for both the project itself and the choice of vendor.

The fact that this rationale was a fabrication is not the point; the physicians weren't consulted about the project, so they felt it was not done to "create excellent patient care" and was therefore not worth supporting. The vision was apt, but it didn't connect with the reality of the hospital wards and the medical staff. They also felt it did not reflect the reality of management's behavior.

The outcome was not only poor support but wholesale obstruction by many of the medical staff. Even those who supported the use of computers and cutting-edge IT complained about the project and resented that the system was forcing them to use computers. Compliance was low and backslides occurred frequently—a marked contrast to the outcomes achieved by the medical center described earlier in the chapter.

Lacking a vision, having a discredited vision, and not linking the vision to reality are all causes of failure. In the absence of information, people create folklore; in the absence of a vision, people create rumors.

A vision is not words on a web page. A vision commands truth, intent, and follow-through. A credible vision is important to the day-to-day success of a hospital and even more so when we fundamentally change the way we do that day-to-day work. To implement and optimize an electronic approach to medical care, we must have a map. The map must be accurate, and we must follow it. Our vision is that map.

### **Tips for Success**

Hospital executives must formulate an actionable vision; map clear, measurable, realistic goals for the implementation; assign ownership for those goals; and secure buy-in across the hospital system. Lorenzi and colleagues (2009) emphasize "the importance of identifying a champion to serve as an advocate of the value of EHRs and provide direction and encouragement for the project. Other key activities include assessing and redesigning workflow; understanding financial issues; conducting training that is well-timed and meets the needs of practice staff; and evaluating the implementation process."

# **DEFINING BENEFITS**

Implementation is one thing, but defining success and optimizing usage are quite another. We not only need a map—our vision; we also need to be able to measure how far we are from our path and whether we are moving in the right direction. To do so we must define the benefits we wish to attain, and those benefits must be congruent with our overarching vision. It is all very well to have a vision of "good patient care" (who doesn't?), but what exactly is good patient care? Is it related to the rate of readmission, the rate of complications, Press Ganey scores, length of stay, bed occupancy, regulatory compliance, or financial numbers? Is it all of these measures (and dozens of others) or some weighted calculation derived from them? A number of factors that contribute to good patient care are difficult to measure; should they be included in our definition?

Defining benefits yields several benefits of its own.

We can align our departments and staffs, enabling us to settle squabbles and increase efficiency when comparing "apples to

oranges." Should we install several new servers or buy a new MRI instead? How do we resolve the conflicting trade-offs between efficient radiology department billing and the efficient workflow of the clinical physicians who are trying to order the radiology studies? For example, while radiology may find it expedient to use a name that is convenient for billing purposes (e.g., "NV" for a Doppler study), the clinical physicians who order the study find this nomenclature obscure and confusing. Would we rather have scribes or an effective word recognition dictation system? Trade-offs are endless but easier to untangle if we know what we are trying to accomplish.

If end users understand the benefits of the new technology in tangible, concrete terms relevant to their daily work, they are more likely to support the change. It is easier to understand how the role of a ward secretary or a triage nurse will change—and how to train that individual for that modified role—once we clearly understand what we are trying to accomplish. Defining our benefits helps us define how we use our clinical personnel effectively. It is not enough to merely have a rationale; the defined benefits must be continually applicable and obtainable at all levels of your organization.

Defining benefits is not a naïve process. They are useful only if they

- 1. are measurable,
- 2. are the right measures,
- 3. are measures that can be changed, and
- 4. are supported by both pre- and post-conversion data or continual data.

The first characteristic seems obvious, yet most of us have had the experience of sitting through committee meetings defining enviable but nebulous benefits such as "better patient care," "greater compassion," and "better efficiency." While all of these benefits are desirable, they are not defined—and may not be definable in many cases. A benefit need not be expressed in mathematically sophisticated terms, but it does need to be quantified. If 90 percent of our patients agree that our care is "much better" than before project implementation, we may not know precisely what our patients mean, but this outcome is still desirable. If we can't measure benefits, however informally, we can't tell if we are improving.

The second characteristic also seems obvious, yet we see the opposite every day. The problem is that we tend to choose easily measured "markers" as substitutes for the true benefits, which are less easily measured. For example, we hate to have patients waiting unnecessarily in the emergency department (ED), so we choose to measure length of stay (LOS) because we want to minimize it. In general, this marker is adequate, but it would be naïve to interpret it without looking at other measures. In the absurd extreme, we could easily reduce LOS to zero simply by discharging all patients prior to evaluation or treatment—a perfect LOS, but the worst possible patient care. In short, LOS is a useful marker, but it needs to be balanced against other, equally useful markers, such as regulatory compliance, adequacy of evaluation, and medical outcome. LOS is only a stand-in marker—and certainly not the only such marker—for the more important, overarching benefits that are

### Using the Wrong Marker

In the 1990s, a cardiac drug was touted for significantly lowering serum cholesterol. Serum cholesterol was a widely used clinical measure of drug efficacy, but in this case, it was the wrong one. The drug may have lowered patients' cholesterol, but it also markedly increased their mortality. After numerous deaths were linked to the drug, it was taken off the market, despite the earlier encomiums. remarkably hard to measure directly, such as "quality of care." Any benefit measure must be interpreted in a broader clinical context, and few, if any, can be held as single, independent measures of our greater goals.

Third, we need to be able to change what we measure. Some measurements might improve if we didn't have to meet regulatory guidelines, but we do. Others might improve if we stopped delivering a service line, increased our investment in capital items, or hired more full-time equivalents (FTEs), but these changes are not always feasible or appropriate. Measure what you can change, not what you can't change. Benefits measurement should open an opportunity, not increase our frustration.

Fourth, useful measures comprise data from more than one point in time; they illustrate a trend. If, after converting to CPOE, we find that we have a 1 percent rate of medication error, does this information indicate a growing disaster or a vast improvement over our previous (unknown) rate of error? It is often difficult to obtain data on events prior to a conversion because we may need to have an electronic system to gather certain data in the first place. Equally, we may have data that don't imply anything useful, such as the compliance rate with CPOE prior to instituting CPOE. Before CPOE, compliance was obviously zero. In either case, comparison of pre- and post-conversion measures does not yield useful information, but comparing data over time does. We can track physician compliance with CPOE over the first several weeks after implementation and look for a trend. If, for example, we have no record of the number of times the wrong antibiotic was ordered pre-CPOE because no one wrote it down and a paper audit would be too costly, we can gather data over time after conversion. A strong downward trend in inappropriate antibiotic choice during the first 12 months is a benefit, regardless of the number of incorrect antibiotic prescriptions written prior to the conversion.

Having viewed potential benefit measures "from 35,000 feet," let's finish at ground level with examples of specific benefits.

The goal is **not** to measure every possible benefit but to focus on a cluster of key benefits. Typically, a hospital CPOE implementation focuses on a dozen (or fewer) benefits, while an ED implementation focuses on half a dozen (or fewer) benefits. The following list includes examples of benefit measures for an ED implementation:

- ED throughput—meaningful use
- Resource time to track 72-hour returns to ED
- Accounts receivable days
- ED reimbursement and total charge capture
- Capture of wait times (e.g., door to doctor)
- LOS for patients discharged from ED

Here is an extensive list of potential hospital-wide benefit measures:

- Clinical measures
  - —Operating room turnaround time (TAT)
  - -LOS (inpatient and ED separately)
  - ---Monthly LOS per Diagnosis-Related Group (DRG) of interest
  - —TAT from lab order to result documentation (both stat/now and routine types)
  - -Number of adverse drug events per 100 admissions
  - -TAT from medication order to administration
  - -Intensive care unit (ICU) LOS
  - —ED LOS
  - -TAT from blood order to first administration
  - -Number of ventilator days per ICU stay
  - -Mortality rate per DRG
  - -Complication rate per DRG
  - —ICU mortality rate
  - -Infection rate (e.g., per year, per unit)
  - -Missed or delayed orders (e.g., medications, EKG)

- System measures
  - -Percentage of physicians using CPOE
  - -Downtimes (e.g., frequency, duration)
  - -Number of order sets used per admission or per physician
  - Percentage of radiology orders with completed "reason for exam"
  - --Percentage of consult orders with completed "reason for consult"
  - -Number of RN calls requesting clarification of orders
  - -Time required for physician to write orders (e.g., post-op)
  - -Percentage of orders placed using CPOE
  - -Percentage of orders placed by each communication type
  - -Clicks per order
  - -System speed
    - -Response time per click
    - -Time to view labs
    - -Time to view diagnostic studies
    - -Time to view documents
- Financial measures
  - -Increased revenue per financial quarter
  - -Revenue: charges per ED visit
  - -Gross visit-level charges: use of proper coding
  - -Total cost per discharge for DRGs of interest
  - —Use of automated protocols/guidelines to reduce expensive variations in medications (therapeutic substitutions)
- Regulatory compliance measures
  - -ED compliance with ED core measures
  - —Fall risk assessment
  - -Pressure ulcers present on admission
  - —Delinquent charges
  - —Delayed order signing
  - -Pain assessments after medication
  - —Joint Commission core measures for acute myocardial infarction, community-acquired pneumonia, congestive heart failure, and pregnancy

# **KEY POINTS**

- Conversion is **not** a computer project; it is a medical project.
- Define a vision:
  - -Make it reflect the reality of your reasons for converting.
  - -Communicate it at all levels.
  - -Maintain and enforce it.
- **Define benefits** that are (1) measurable, (2) accurate measures of your goal, and (3) attainable, and measure them over time.