Project Management for Healthcare Information Technology

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CHAPTER 1

Introduction

In this chapter, we will:

- Review the current healthcare crisis and the solution healthcare information technology (HIT) can provide
- Explain how HIT, itself in crisis, is part of the problem instead of contributing to the solution
- Define project, information technology (IT), and change management as an integrated methodology that can help solve the healthcare and HIT crises

Virtually anyone involved in healthcare over the last several years would agree that healthcare information technology (HIT) is among the top—if not the top—strategic and operational challenges facing healthcare leadership today. As well, it is clearly known that implementing HIT, whether it is the electronic health record (EHR), telemedicine, a personal health record (PHR), or any of the other myriad healthcare applications, is fraught with obstacles and pitfalls. Rarely does a hospital or clinic complete this HIT journey within scope, on time, and within budget.

Our book explores the challenges faced by healthcare delivery organizations (HDOs) in this process of moving from the paper to the electronic medical record. (We refer to HDOs throughout as a generic healthcare provider instead of addressing the differences associated with community hospitals, teaching hospitals, physician groups, ambulatory centers, and so on.) This is particularly important given the highly complex nature of healthcare organizations as well as the fundamentally transformative nature of HIT. To avoid as many failures as possible, to maximize the efficiency of their available project resources, and to streamline their path toward digital medicine, we integrated project, IT, and change management together as a single methodology that organizational leaders, managers, and clinicians should follow. We believe that while individually these methodologies have critical key success factors, HIT project leaders will perform best with this integrated approach.

The Challenge

It should come as no surprise to the reader that healthcare in the United States currently faces several crises—a crisis in the costs of care, a crisis in the quality of care, and (despite the enactment of health insurance reform in 2010) a crisis in access to care for millions of Americans. The data supporting these claims are well-known. The United States spends almost $7,500 per capita annually on healthcare, nearly twice the amount of other Organization for Economic Cooperation and Development (OECD) countries.
We consume 17% of our GDP in healthcare. For this roughly $2.3 trillion each year, we get what many would call second-class care.\textsuperscript{1} The Institute of Medicine’s (IOM) 1999 publication, *To Err Is Human*,\textsuperscript{2} reports that 44,000 to 99,000 people die annually due to preventable medical errors costing between $17 and $29 billion yearly. The average time it takes physicians to adopt clearly proven and effective diagnostic and therapeutic interventions is 17 years.\textsuperscript{3} A large national study by the RAND Corporation in 2003 found that a patient walking into a clinic or hospital anywhere in the country has a 55% chance of getting the right medical advice.\textsuperscript{4}

In the same way we face major societal challenges in healthcare cost, quality, and access, individual HDOs face equally complex and demanding challenges. The environment is extremely complex, influenced by constantly shifting political, social, technical, and financial trends. U.S. healthcare provides fragmented services that include simultaneously competitive and cooperative participants. For example, in many hospitals the physicians who admit patients function as independent contractors of the hospital and as such are not employees of the hospital. In addition, the range of services these physicians provide in their private practices may overlap with those offered in the hospital so the incentives faced by the hospital and the physicians may at times be at odds.

By and large, in the United States medical practice remains a cottage industry. As of 2008 almost one-third of private practices were groups of one or two physicians, with another 12% in practices of three to five physicians.\textsuperscript{5} Commonly these practices have an arm’s-length relationship with the hospital. In many cases this relationship puts them at odds over HIT projects.

*Healthcare IT implementations are just projects like any others, on one level. There’s technology you need to implement, and then shepherding people through the changes. At the same time, there are unique aspects in healthcare that make these implementations more challenging. Namely, the doctors rule the roost, for better or worse, and in many instances the doctors might not even be employed by the healthcare entity where they are providing care. That adds a significant wrinkle. You hear about these nightmare implementations where the doctors just refuse to participate. You wonder, how can they refuse? Don’t they ultimately report to someone in the organization that is trying to do this? In some cases, that answer is “no,” they’re not employed by the institution where they’re providing care, they’re independent. It is these aspects that make healthcare IT projects even more complex than in other industries.*

—Dan Nigrin, MD, MS, CIO, Children’s Hospital, Boston

In addition to the role of physicians, information exchange requirements amplify the unique characteristics of the U.S. healthcare industry. There are literally millions of codes associated with the human body, disease, diagnosis, procedures, and reimbursement that HIT must interchange amongst providers, insurance carriers, and patients. Some examples of data exchange standards are:

- Code sets, such as International Classification of Diseases, Volume 10 (ICD-10), and the American Medical Association’s Current Procedural Terminology (CPT). ICD-10, a numeric list of diseases arranged alphabetically by disease name, helps systems render a patient’s chart to a series of coded conditions. Clinicians use CPT descriptive terms and identifying codes to report medically performed procedures to payers for reimbursement.
Languages, such as the Systemized Nomenclature of Medicine (SNOMED) designed by the College of American Pathologists, represent clinical information in an electronic medical record, including signs, symptoms, diagnoses, and procedures. Nursing Interventions Classification (NIC), a standardized language, describes treatments nurses perform. Nursing Outcomes Classification (NOC) provides standardized language that describes patient outcomes from a nursing perspective.

Data exchange protocols, such as Health Level 7 (HL-7), are a standard series of messages packaged for data exchange among administrative, financial, and clinical systems. Digital Imaging Communications in Medicine (DICOM) is a digital format and exchange protocol for images and related information.

Finally, the individuals who are at the core of healthcare—patients—face challenges of their own. In early 2010, one out of seven U.S. citizens was uninsured or underinsured—roughly 45 million people. In addition, uninsured medical costs are the number one cause of personal bankruptcy.

Without a doubt, healthcare is currently in a quality, safety, and cost crisis—one that exhibits symptoms at the individual, organizational, and societal level. However, we must acknowledge that this sense of crisis is not new. You can find newspaper reports decrying the healthcare crisis in virtually every decade of this past century. In fact, it may well be that healthcare is an industry that will always be in crisis. It is an industry that affects everyone because it deals in life and death. As such, it is one in which emotions play an equal role to pragmatism.

We believe one factor that did not exist in past decades now affects the current healthcare crisis in a grand way, which is the exponential growth of IT. Granted, during the past six decades the healthcare industry used computing and communications technologies, but it is only in the last two decades that the capabilities of IT expanded at a phenomenal rate.

IT affects every aspect of society and personal life, for example, the Internet, e-mail, texting, cell phones, and handheld computing. Healthcare is no exception. Many say healthcare is relatively slow to accept IT. The IOM called for nationwide adoption of the computerized patient record within ten years as far back as 1990. The IOM reiterated this call in 1999 and again in 2003 with the issuance of the two landmark reports To Err Is Human and Crossing the Quality Chasm. Yet, progress in this direction is painfully slow.

Key events have effectively accelerated this pace. First, there was the election of the Obama administration in 2008 on a platform that emphasized healthcare reform. Second, there was the contemporaneous global economic meltdown and the subsequent enactment of the American Recovery and Reinvestment Act (ARRA), including the section entitled Health Information Technology for Economic and Clinical Health (HITECH). HDOs, as well as state and federal legislative and regulatory agencies, are now entrants in an HIT compliance race. Current federal law directs the Centers for Medicare and Medicaid Services (CMS), to begin a fundamental redefinition of reimbursement for healthcare services by effectively mandating all healthcare providers install and meaningfully use HIT (primarily by using electronic health records that share information freely through health information exchanges or HIEs).

Nearly a decade of research outlines the ways in which HIT can address cost, quality, and access problems; however, the adoption rate of HIT in HDOs remains lower than one might hope. The New England Journal of Medicine’s (NEJM) July 3, 2008, article,
Electronic Health Records in Ambulatory Care—A National Survey of Physicians,8 indicates that only 4% of physicians report having extensive, fully functional EHR systems. On March 29, 2009, the NEJM article Use of Electronic Health Records in U.S. Hospitals9 stated, “only 1.5% of U.S. hospitals have a comprehensive electronic-records system (i.e., present in all clinical units), and an additional 7.6% have a basic system.” The reasons for this slow rate of adoption are myriad and well-known, and include very high capital costs, an immature and rapidly evolving vendor market, and unconvincing evidence on the return on an HIT investment as well as major failures with acquisition and implementation efforts.

The passage of ARRA/HITECH is a game changer. With significant financial and regulatory incentives, it is likely that HDOs will move quickly to electronic clinical care systems over the next several years. A recent study suggests the global market for health information technology applications will grow to $18 billion over the next five years. Electronic health records represent the largest segment of this growth, but related applications such as practice management systems, pharmacy systems, lab systems, and radiology systems, also play a role.10 As we enter a decade in which effectively all HDOs, from the 1000-bed tertiary care hospital to the two-person primary care clinic, begin the transition from paper to fully interoperable HIT foundations, it is unfortunately predictable that many of these organizations will find the path a very rocky one. This transition requires understanding, support, and commitment from all levels of the organization over a multi-year period to avoid failures. Of these factors, one that is exceedingly clear is a critical organizational capability for HIT project management.

Of the few good IT project management resources, only a limited number address HIT. This makes resolving the healthcare and HIT crises challenging. This book is about HIT project management and dedicated to helping solve these crises. Our intent in this book is to better define the role of IT project management in healthcare settings, using a methodology that encompasses standard models from project, IT, and change management.

Definitions

A project is a short term endeavor to achieve specific objectives. Project management is the discipline devoted to planning, organizing, and coordinating resources to successfully achieve the objectives of a short term endeavor. For example, project management focuses on managing scope, time, and cost processes that produce outputs to achieve project objectives. While much of the work that goes on in an HIT project is indistinguishable from projects in other industries there are several distinct and unique factors involved in an HIT project as described above.

In other industries formal project management methodologies are highly effective in controlling scope, time, cost, and quality. There are many approaches to formalizing project management and arguably the most well-known is the Project Management Institute, A Guide to the Project Management Body of Knowledge (PMBOK® Guide)—Fourth Edition, Project Management Institute, Inc., 2008, the formal methodology of the Project Management Institute (PMI).11 The PMBOK® Guide defines a structured framework that catalogs the knowledge, skills, and competencies as well as the tools and techniques important to project management success. While healthcare has a growing understanding of the value of this project management methodology, we believe unique healthcare aspects may make this methodology insufficient for successful HIT acquisition and implementation. We argue that HIT projects will substantively benefit
by integrating concepts, methods, tools, and techniques from two additional, and often overlapping, disciplines:

- **Product Management**—Product management is the discipline devoted to planning, organizing, and coordinating resources to analyze, design, develop, deliver, maintain, and retire a product. It is important to distinguish between product management and project management. Product management focuses on what the project produces. Project management focuses on the processes, for example, scope, time, cost, etc. For example, construction management focuses on building a product like a bridge, while project management addresses the schedule and cost. Because the product in this book is HIT, we refer to product management as Information Technology Management. It generally relies on tangible or hard skills (e.g., requirements definition, building an IT infrastructure, and security management). IT management is codified in a fashion similar to project management. Perhaps the best known of these is the Software Engineering Body of Knowledge (SWEBOK), authored by the Institute of Electrical and Electronics Engineers (IEEE). When one reviews formal methodologies such as PMBOK and SWEBOK, it is apparent there is a good deal of similarity in their models and methods. There are also differences. Perhaps the best way to appreciate the subtle difference between these two is to consider the fundamental focus of each. In IT management models, the primary focus is the technology itself—the **product**. In project management, on the other hand, the primary focus is on the **project** as opposed to the product. In other words, project management focuses on the process of leading various people and teams that design, build, test, and deploy the product—HIT. Subsequent chapters make clear how these two methodologies intersect.

- **Change Management**—As any HDO that went through the process of implementing an EHR will tell you, having the most skilled and able project and technology managers in the world may well result in unacceptable IT solutions resoundingly rejected by users, the front-line clinicians who care for patients. Multiple experiences with failing HIT projects over the past decade make it clear that success requires equal measure of attention to managing the people in the organization who will use the product of the project. Change management is the discipline devoted to planning, organizing, and coordinating the resources necessary to transition individuals and groups in an organization from the current to a future state. The outcome is human behavioral change, which relies on intangible or soft skills, such as sponsorship, training, and optimization. In the case of HIT, it is increasingly obvious that the **human issues**—and not the technology or project issues—are key to success. Change management, unlike project and IT management, does not yet have a clearly defined or broadly understood formalized methodology. The principles of change management are, however, based on well-developed theories and practices from such fields as organizational behavior and organizational development.

### Standards

As noted, there are numerous resources available for IT project management used successfully in many industries and settings. This book relies on the following standards or widely recognized reference works:
This book relies on change management best practices because there are no formal standards.

**Integrating the Methodologies**

Project, IT, and change management are not entirely distinct disciplines or methodologies. The concepts, activities, and outputs in one discipline have parallel—and sometimes identical—features in the other two. We argue that to optimally plan and execute HIT projects in HDOs requires all three adopted in concert. In this book, we combined these standards and best practices to create an integrated project, IT, and change management methodology.

Success with HIT projects is never a guarantee. There is no management methodology that guarantees an HDO will complete its HIT projects within scope, on time, and within budget. Projects undertaken without the judicious and conscientious use of some formal methodology are far more likely to suffer setbacks and perhaps complete failure. Therefore, it is imperative that organizational leaders and managers who choose to adopt one or more methodologies fully understand the limitations therein. Effective implementation of our integrated methodology requires consideration of the following caveats:

- **Guidelines, Not Rules**—Many formalized management methodologies can give the impression that success simply requires following a set recipe or stringently enforcing rules. Nothing could be further from the truth. Because every organization, project, and Project Manager is different, methodologies must be employed as guidelines. All three methodologies of project, IT, and change management have a myriad of tools and techniques; knowing which to use when is core to good management. The Project Manager should always be asking, *Will the tool or technique I am considering really add value to my project?* Managers need to avoid a sense that they must use every single part of our integrated methodology. Doing so may result in an unruly exercise, significant overload, and possible failure. At the same time, one should also recognize that some HIT projects are of sufficient scope and complexity such that the tools and techniques described in this book may be insufficient. Our book is not an exhaustive coverage of the disciplines of project, IT, or change management (e.g., we do not cover the use of project management software). It should be clear from this caveat that there is no substitute for experience in good project management.

- **Conciseness**—Many project management resources focus on the goal of enabling the reader to sit for and pass examinations, such as the Project Management Professional (PMP®) certification. Instead of defining and applying every conceivable project, IT, and change management process, technique, and output
required for an exam study guide, this book describes and applies selected best practices we believe help HIT projects succeed.

- **Selectivity**—Our book derives from instead of adheres to standards. This book relies on selective standards to fully exploit them for their best potential. For example, the *PMBOK*® Guide outlines requirements definition as the first step in scope management. This poses two problems:

  1. Which comes first: requirements definition that cannot come without scope definition, or a scope definition that cannot come without requirements definition? Anyone responsible for the requirements definition will tell you that you must clearly define the project scope if you ever expect to finish the requirements definition. This involves a preliminary scope definition and follow-up adjustments.

  2. *PMBOK* outlines the requirements definition, i.e., documenting system needs, as a requirement to fulfill rather than as one of the most important parts of an IT project.

We resolve both of these issues by addressing requirements management as a completely separate part of IT management, rather than embedding it in project scope management. While this violates standards compliance, it resolves critical requirements management issues, thus increasing the likelihood of project success.

- **Complexity**—Our book includes varying complexity levels associated with each part of the methodology. This variability is not a measure of importance. It simply reflects the intricacy of each part of the methodology and the amount of information and number of examples required to explain it.

### Solving the HIT and Healthcare Crises

*Project management was an absolute critical aspect of our CHAMPS [Children’s Hospital Application Maximizing Patient Safety] implementation. Unless you have sufficient and tuned in project management for a large-scale clinical systems initiative, it’s bound to fail. That’s not just the management and technical components, obviously that’s important and necessary. Change management, for example, includes user training, understanding user existing workflow and how those workflows might change with the implementation. I think those aspects are equally if not more important than the project and technical aspects of the implementation.*

—Dan Nigrin, MD, MS, CIO, Children’s Hospital, Boston

We believe the application of our integrated methodology increases the prospect of HIT project success—and with the successful implementation and ongoing meaningful use of HIT, will help end the healthcare crisis. However, success, particularly in healthcare, is not measured only by an event or point in time, such as system cutover, when a project completes all activities within scope, schedule, and cost constraints. Instead, this project event marks the beginning of a transition or a series of events where users learn about how to employ HIT in a live environment. Because projects are by definition short term endeavors, there is a point in time when the project ends after testing and
final acceptance. This begins the transition where an HDO’s operations make a long-term commitment to optimize use of their EHR. This book addresses what we need to do during the project transition phase to sustain and enhance project benefits after the cutover event.

**Who Should Read This Book**

Our book offers management solutions for the HIT challenge. While we targeted healthcare professionals in project management, IT, medicine, and nursing when we wrote this book, we know lessons learned in HIT project management also benefit their counterparts in other industries. Equally important is what this book is not—it is not a study guide for people looking to pass certification exams in any one discipline. It is also not an exhaustive catalog of project management, technology management, or change management tools and techniques. Numerous good texts on those subjects are available to the interested reader.

**How We Organized This Book**

This chapter (Chapter 1) introduces the reasons we felt compelled to write this book. Healthcare is in crisis, IT is part of the cure, and we want this cure to work. Chapter 2 is an overview of the three management disciplines we review—project, technology, and change management—and describes at a conceptual level how to use these disciplines synergistically. In Chapters 3 through 5, we examine each of these three management disciplines in detail. We define each discipline as a set of knowledge areas that the Project Manager and team must understand, a set of processes or activities they must undertake and complete that are specific to that knowledge area, and a set of outputs or products that are the end result of each knowledge area process. Because all projects evolve over time, we grouped these knowledge areas, processes, and outputs into a basic set of categories that help clarify particular project stages. In essence, these stages are planning, executing, and closing the project. In each of these three chapters, the format for the chapter is to first define underlying principles of that knowledge area and to then describe a set of the core processes that take place within that knowledge area in the planning, executing, and finally the closing stage. We chose a concise number of processes, generally five to seven for each knowledge area, with an eye toward describing those we felt are most crucial for HIT project success. These are by no means the only processes and outputs that we might consider in each project stage, but given that our goal for this book is to enable HIT project success, we believe that this subset of core processes is a better approach.

In each chapter, you will also find quotes from project leaders at HDOs around the country, who took the HIT journey—with successes and challenges—identifying how our integrated methodology enabled these organizations to reach their HIT project objectives.

These contributors include:

- Florence Chang, CIO, Multicare, Tacoma, Washington
- Robert Greenless, PhD, former CIO, Rancho Los Amigos National Rehabilitation Center (RLANRC), Los Angeles, California
- Ernie Hood, CIO, Group Health Cooperative (GHC), Seattle, Washington
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- Beatha Johnson, Director, Clinical Information Systems, Virginia Mason Medical Center (VMMC), Seattle, Washington
- Daniel Nigrin, MD, MS, CIO, Children’s Hospital, Boston, Massachusetts
- Michael H. Zaroukian, MD, PhD, FACP, FHIMSS, CMIO, Michigan State University (MSU), Lansing, Michigan

The end of this book includes a model of our fully integrated HIT methodology and a Glossary. The model is a graphical framework of the methodology. Please refer to this model while reading the book and afterwards as a reference tool on each component of our methodology and how they relate to each other throughout an HIT project.

Supplemental Information

Separately, a companion website is available at www.mhprofessional.com/coplan (user name—coplan11; password—instructor). It includes:

1. An interactive version of our integrated methodology with definitions of terms and concepts.
2. A syllabus for instructors.
3. A PowerPoint® presentation for each section included in this book.

Conclusion

We maintain that HIT projects require more than project management to increase success. While PMBOK focuses on project management, our methodology adds IT and change management to help healthcare reduce costly failures, including loss of life.

The next chapter introduces the components of this integrated methodology, exploring how the process group framework offered by PMBOK provides a foundation for also managing IT and change.

Endnotes


