The Journey Never Ends

Technology's Role in Helping Perfect Health Care Outcomes

Edited by
David Garets and Claire McCarthy Garets

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Foreword

I'm confident you and I could spend considerable time discussing and debating the advantages and disadvantages of living in a digital world. And despite our debate, I'm also confident we would be able to agree on this impressive transformation on at least two levels: (1) how quickly the changes occurred and (2) how pervasive the impact has been. Literally, after thousands of years without digital data, it's almost impossible to fathom how any business can survive in today's world without automating and digitizing its business processes. Few would argue the point. In fact, it's become an easy strategic pastime of some to equate poor market segment performance with poor market segment information technology (IT) adoption.

Clearly, healthcare has been one such market segment generally attacked as an industry quite late to the digital party. Like far too many generalizations, the criticism can be both quite fair and quite inaccurate. Given the widespread adoption of IT in the form of shared accounting systems as early as the 1960s, healthcare was pretty mainstream at that time relative to embracing IT.

Okay, so where's support for the criticism? Outside fairly isolated instances, in my personal case, LDS Hospital in Salt Lake City, Utah, the healthcare industry has been slow to apply IT to its core business processes, that is, applying IT to the processes and documentation of patient care. For example, it has only been during the past two decades that hospitals and physician practices have significantly integrated clinical information in comprehensive electronic medical record (EMR) systems.

It's hard to overstate the value to healthcare, both as a hugely important industry and as a hugely critical public service, of the pervasive installation of EMRs. It's also easy to understand why the vendor and provider components of the healthcare industry, for the past two decades, have been almost fully consumed with the implementation of EMR systems. By almost any measures, we've made significant progress in digitizing core healthcare processes via EMRs.

It has, however, come at a price—huge expenses, huge energy levels, and massive operational stress. The result? Much of the industry has little appetite to spend more money, time, and energy on "what's next" relative to healthcare IT. There are even some portions of the provider community that believe we don't need anything beyond EMRs.

I can fully appreciate the post-EMR fatigue factor. It also resonates with me when someone says why we need to continue to invest in IT. When will we harvest?

My response is straightforward. The harvest comes when we do two critical things: (1) improve work processes that are made possible because of digitized systems, especially EMRs, and (2) create learning organizations emanating from analytics insights made available as a result of these massively data-intensive digital systems. The data "exhaust" from these digitized operational systems, properly organized in an enterprise data warehouse and effectively analyzed and displayed with exciting new tools and technologies, is already permitting healthcare organizations to

eliminate health care waste (operational mistakes, inaccurate diagnoses, and unnecessary orders) and improve patient outcomes.

Major harvesting is now possible from our significant investments in health IT (HIT) operational systems by those seeking to learn from the data! Furthermore, these performance improvement learnings can be codified into agreed-upon rules to drive the alerting and reminding capabilities of installed EMRs. With this feedback loop, we now have an organizational vehicle (EMRs) to "sustain the gains" from our new clinical insights and to make good on our promises to broadly and uniformly improve patient outcomes. And there's even more good to do, and to get excited about, in our post-EMR implementation phase of HIT. This is the notion of the contributions, and IT needs, of the healthcare world outside the walls of the hospital.

The new world of healthcare financing and delivery is forcing care delivery organizations to move further to the edge to keep people healthy rather than continue to inhabit a physician-centric, hospital-centric model of fee for service. Hence, the billions that were spent on hospital EMRs was necessary to ensure the most efficient, effective, and efficacious care when someone, God forbid, is sick enough to go to a hospital, but the goal now is to keep that from happening.

Therefore, all kinds of new systems are going to be required that go way beyond the EMR, for sure using the data from it, but combining those data with other information from the patient, from other care delivery organizations the patient has visited, from remote monitoring devices, and other sources of wellness data. Plus, you'll need investments in precision medicine technologies, including pharmacogenetics. Thought you'd spent all you needed to spend on IT with your EMR investment—think again!

The authors in this outstanding compilation of post-EMR needs and benefits will further prepare you for what's required and what's possible. I'm grateful to say that I know many of these authors personally. I'm also grateful to say that Dave Garets and Claire McCarthy Garets are among my closest professional and personal friends. I'm pleased to recommend the insights of these respected professionals to you as you further your efforts to create the enviable healthcare systems we can now only dream of.

Good luck and Godspeed!

Larry Grandia
St. George, Utah

Preface

We never had to go to "Plan B."

It is generally acknowledged that getting an EMR in place is a starting point, not the end of the journey to becoming a modern healthcare organization. That's what this book is about—the many other things that need to be addressed after your EMR is in place. As you move forward on the never-ending path to increasing quality, excellence, safety, service, and so on, the human change leadership challenges you faced when implementing your EMR continue to be important every step of the way. Why? Because each change you make requires the participation of your people in order to succeed.

As we now know, installing an EMR does not, in and of itself, deliver the anticipated benefits. It takes behavior, attitude, and process changes to generate value from the potential the EMR presents. The same is true when you tackle opportunities presented by Big Data, mobile devices, population health, interoperability, cybersecurity, and the many other things that are becoming requirements in today's healthcare world.

Though this book is not specifically about the human aspects of change, each topic covered presents yet another change that staff, physicians, executives—and patients and their families—must adjust to in some way. As you navigate the path to the future, keep the following questions in mind to help ensure you make the most of your greatest resource—your human capital.

- Do you have a change methodology, and more importantly, are you using it? If not, you are probably missing many of the following questions.
- Is there a clear picture of the desired future state? Does it describe the employee experience, the patient experience? Do people understand why you are changing and what will happen if the changes aren't successful?
- People want to know what they are expected to do. How are you managing expectations and showing people what a good job looks like?
- What is the role of leaders in effecting the organizational transformation, as opposed to their role in installing new technology or a new program?
- Change happens when people let go—what is it time to let go of now?
- How strong is change leadership in the organization? How committed are the executive leaders to significant change initiatives? How do you know?
- What is the most important job of your leaders today? If it's not guiding their teams through change and building change capacity, what is it?
- When time and resources are tight, what can you stop or postpone until the top priority is successfully implemented? Is there agreement about what the top priority is?
- People do what they are rewarded for. Are you reinforcing change or reinforcing the status quo?

- What is the cumulative impact of all the changes underway in your organization? Which stakeholder groups are hardest hit? How can you sequence change to reduce the impact?
- How are you ensuring that your organization is increasingly change enabled so that change goes faster, is less painful, costs less, and achieves the anticipated outcomes?
- How much alignment is there between what leaders say, what they do, and what they reinforce?
- How effective are the feedback mechanisms in the organization? Do leaders pay attention to staff feedback and respond to it in a timely manner?

We ask these questions because the hardest things are often those considered to be soft—ruptured relationships, broken trust, crises of confidence, emotional outbursts, unclear expectations, poor performance, miscommunication and misunderstandings, and so on. Why are these things so hard? It's difficult to predict the outcome of these situations; there is no prescribed, sure path to resolution, and people are weird, meaning they are unpredictable and have their own reasons for the things they do.

Why should you care? Just read the news about implementation failures, executive firings, lost revenue, lost market share, security breaches, mergers and acquisitions, and bankruptcies.

This book describes some of the major initiatives that most healthcare organizations here, and internationally, are involved in now or will be undertaking in the next decade. Most of them are transformational. None of them are IT initiatives. All of them are business or clinical initiatives with an IT component. If you or your board thought you were done spending large amounts of money on IT after implementing your EMR, you're dead wrong. Welcome to the new reality!

When we were contemplating the structure of this book and figuring out the chapters, we very quickly knew who we wanted to write them. Because both of us have been in the industry for more than 25 years and sat in some interesting domestic and international catbird seats, we have prodigious networks of friends and colleagues who rank among the most knowledgeable experts in their fields.

And every one of the people we asked to write a chapter for us said "yes." We never had to go to "Plan B." These people know their stuff, and you are the beneficiary.

We hope you enjoy the book and that it helps you understand what it's going to take to be successful in the transformed healthcare delivery world of the future, starting now.

Dave Garets and Claire McCarthy Garets
Blaine, Washington
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Editors

Dave Garets, FHIMSS, is an internationally known industry analyst, author, and speaker on healthcare information strategies, technologies, and change. The cocreator of the HIMSS Analytics EMR Adoption Model, he was elected to the HIMSS 50-in-50, the 50 most memorable contributors to healthcare IT in the last 50 years. He is also coauthor of two newly released books—*Analytics in Healthcare: An Introduction* and *Effective Strategies for Change*.

In his 25-year career in healthcare, Dave's been

- A hospital CIO
- Group vice president and head of the healthcare IT research organization at Gartner, Inc.
- President and CEO of HIMSS Analytics and board chair and EVP of HIMSS
- EVP of Healthlink
- General manager and executive director of The Advisory Board Company

He's now failing in his attempt to semiretire, and is general manager of Change Gang, LLC, a healthcare change management consulting firm, and senior advisor at Next Wave Advisors.

What Dave brings to the industry is 20 years of healthcare IT industry analyst experience, having advised not only many of the largest healthcare delivery organizations but also health IT companies and investors in the United States and around the world. He's spoken at conferences and advised clients in 22 countries, and sits on five governing or advisory boards in the United States and Europe.

Claire McCarthy Garets, MA, FHIMSS, is an organizational sociologist and an internationally recognized change management and technology adoption strategist. She has more than three decades of experience supporting diverse healthcare organizations (HCOs) through transformative technology implementations. In addition to her IT work, Claire's change leadership experience includes mergers, downsizings, and reorganizations.

Claire is the CEO of Change Gang, LLC, a boutique healthcare change management consulting firm. She specializes in transformational leadership development; supports HCOs in electronic medical record planning, implementation, and optimization; and advises IT companies. Recent work includes organizations in the United States, Sweden, Australia, and the Kingdom of Saudi Arabia.

Claire spent her career in healthcare, working with organizations such as Cottage Health; Providence Health & Services; Kaiser Permanente; Premier, Inc.; Premera Blue Cross; Group Health Cooperative of Puget Sound; and a variety of private practices.

Claire is the coauthor of the critically acclaimed book, *Change Management Strategies for an Effective EMR Implementation*, and the second edition, *Effective Strategies for Change*. She is a

founding member of the Association of Change Management Professionals, is certified in multiple change methodologies, and has served as an adjunct professor at Kent State University. She is widely recognized for her collaborative systems approach to managing large-scale change and has given presentations at renowned healthcare conferences across the United States, as well as Australia, the Middle East, and Europe.

She earned an MA in sociology from the University of Montana.

Contributors

Michael Blum, MD, is the associate vice chancellor for informatics and a professor of medicine in cardiology at the University of California, San Francisco (UCSF). As an active clinician, Dr. Blum is passionate about wellness and prevention of heart disease through a heart healthy lifestyle.

As UCSF's chief medical information officer (CMIO), Dr. Blum led clinicians in the successful enterprise-wide deployment of Epic's electronic health record as well as enterprise data warehousing. He is now working across the University of California system with the other UC chief information officers and CMIOs to establish a UC-wide data warehouse that captures the experience of the University's 13.5 million patients and drives innovation into clinical care, research, and commercial partnerships.

Before his medical career, Dr. Blum was trained as an engineer, and he applies his expertise in technology to health care as UCSF's CMIO and the director of the UCSF Center for Digital Health Innovation (CDHI). CDHI develops, validates, and commercializes novel, impactful digital health applications, devices, sensors, and platforms in pursuit of precision medicine. Dr. Blum serves as an advisor to numerous start-up, early-stage, and established healthcare technology companies and serves as the founding director of the UCSF-Samsung Digital Health Innovation Lab.

Ronnie D. Bower, Jr., MA, director, adoption and sustainment, Applied Clinical Informatics, Tenet Healthcare, has more than 20 years of progressive leadership, training, and support experience assisting healthcare entities through organizational change endeavors. Tenet Healthcare has long been committed to the field of informatics, and Ronnie's current role affords him the opportunity to engage in cultural change activities with more than 80 hospitals spanning approximately 16 states. He is engaged in all informatics communications, cultural/change readiness assessments, change leadership training, informatics orientation, and sustainment efforts and supports additional physician adoption activities.

Ronnie helped develop and cochair the HIMSS Change Management Taskforce, pulling multiple healthcare change leaders together to share best practices and leverage change management tools. He has presented hundreds of organizational change management sessions at every organizational level, from national conferences to individual department sessions, and takes pride in knowing he helps move organizations one individual at a time. Assisting people through change is his passion and he is committed to helping individuals endure and embrace the complexities that change offers.

Jeff Cobb, principal security consultant, World Wide Technology, joined the World Wide Technology (WWT) team in June of 2015. Before WWT, Jeff served as the VP of IT, CISO for Capella Healthcare where he was responsible for the enterprise information security program,

ancillary clinical systems for radiology/imaging, meaningful use interoperability/reporting, and data analytics.

With a 15+-year career in IT and security, Jeff has an extensive background covering healthcare, IT and security leadership, enterprise architecture, strategy and integration, risk management, governance, and regulatory compliance. Jeff has held technology and security leadership positions with Ingenuity Associates, UnitedHealth Group, AIM Healthcare, and National Renal Alliance.

Jeff served 3 years as president of the Middle Tennessee Information Systems Security Association Chapter. He also chairs the Metro Nashville Information Security Advisory Board.

Michael W. Davis, MS, MBA, has more than 30 years of healthcare experience in both provider organizations and healthcare solutions companies. Mike assisted in starting a successful research and advisory service for The Advisory Board Company, serving as a managing director. Mike also helped launch HIMSS Analytics as the executive vice president overseeing products and services. Mike held the position of managing vice president of Gartner's Healthcare Research & Advisory Service when he led that division. He has managed clinical departments in healthcare organizations and has held product management and director positions with Micromedex/Thomson, American Express Health Systems Group, First Data Corporation, and Motorola. Mike is the coauthor of the HIMSS Analytics EMR Adoption Model, which tracks the adoption rate of EMR applications in the United States and Canada. Mike has published 2 books and more than 300 research articles on computerizing healthcare information. Mike has extensive experience with the design, development, implementation, and management of healthcare IT solutions for established and start-up companies.

Mike is known as an experienced, accomplished, and respected healthcare professional. Mike earned a Master of Science degree from the University of Nebraska Medical Center and a Master of Business Administration degree from Pfeiffer University.

Doug Eastman, PhD, executive director, Usability Center of Excellence, Kaiser Permanente Information Technology, is an organizational development executive with extensive experience leading large-scale change, pioneering technology readiness, and optimization strategies/programs and unleashing human potential. Dr. Eastman established and oversees the Usability Center of Excellence (UCOE) within the Kaiser Permanente National IT Care Delivery Business Information Office. The UCOE combines usability and user adoption expertise to create and sustain positive user experiences across the enterprise.

Dr. Eastman coauthored the 2010 HIMSS book of the year, *Change Management Strategies for an Effective EMR Implementation*, recently rewritten as a second edition entitled, *Effective Strategies for Change*.

He earned a PhD in organizational psychology from the California School of Professional Psychology (now Alliant University), a master's degree in psychology from Pepperdine University, and a bachelor's degree in psychology from The Ohio State University. Dr. Eastman served as president of the Psi Chi National Honors Society at Pepperdine University and served as board president for SMG, a national child anxiety nonprofit organization.

David Finn, MA, CISA, CISM, CRISC, is the health information technology officer for Symantec. Before that role, he was the chief information officer and vice president of information services for Texas Children's Hospital. He also served as the security and privacy officer for Texas

Children's. Before that, David spent 7 years as a healthcare consultant with IMG/Healthlink and PwC, serving last as the EVP of Operations for Healthlink.

He is focused on creating and maintaining trust in and value from information and information systems. David has presented nationally and internationally on such topics as project management, professional leadership and staff development, and privacy and security. He has contributed to or written articles on IT management, disaster recovery, and security for journals such as *CIO Digest* and *Baseline*.

Finn earned a BA degree from the University of North Dakota and an MA from Angelo State University. During 2014, he worked closely with College of Healthcare Information Management Executives (CHIME) management to create and initiate the Association for Executives in Healthcare Information Security. He also is a long-time board member of Healthcare for the Homeless—Houston (two FQHCs) and is vice president of the Primary Care Innovation Center in Houston.

Richard F. Gibson, MD, PhD, MBA, healthcare IT industry analyst, Portland, Oregon, is a research director at Gartner, Inc. and an affiliate assistant professor in the Department of Medical Informatics and Clinical Epidemiology at Oregon Health and Science University. Formerly, he was chief of healthcare intelligence at Providence Health & Services, Renton, Washington. Previously, he was senior vice president and chief information officer at Legacy Health in Portland, Oregon. Before that, he served 11 years as CMIO at Providence Health System, Oregon Region.

He earned his BS from Stanford University, MD from Case Western Reserve University, PhD in medical informatics from the University of Utah with a fellowship at Intermountain Health Care in Salt Lake City, and MBA from the Wharton School. He is a founding board member of the Association of Medical Directors of Information Systems. Dr. Gibson is a family physician and emergency physician. His interest is in using claims data and electronic health records and their data to improve the quality and reliability of healthcare and to decrease the cost of care.

James Hereford, MS, is the chief operating officer of Stanford Health Care. In his role at Stanford, he is operationally responsible for all aspects of care delivery throughout a system of inpatient, ambulatory, and ancillary care settings. He is also a recognized leader nationally in the implementation and use of Lean and Lean management in healthcare and has led the implementation of Lean as the chief operating officer of the Palo Alto Medical Foundation and as the executive vice president of Strategic Services and Care Delivery Services at Group Health Cooperative.

During his 25-year career in healthcare, James has been responsible for the design and implementation of one of the first and most expansive care delivery patient web portals while at Group Health and for the selection and implementation of the Epic electronic medical record. At Group Health and at Palo Alto Medical Foundation, James led the redesign of primary care and several other organizational transformations.

At Stanford, he is again leading the implementation of the Lean management system and is focused on helping Stanford create the preeminent academic care delivery system in the world, delivering leading-edge and coordinated care.

He has also served on the faculties of the University of Washington, The Ohio State University, and the Institute of Healthcare Improvement and continues to teach in programs at Stanford University.

John Hoyt, MHA, FACHE, FHIMSS, is executive vice president, HIMSS Analytics, at HIMSS, the largest US not-for-profit healthcare caused–based organization focused on providing global

leadership for the optimal use of information technology. John is responsible for providing executive leadership and direction to HIMSS Analytics worldwide where he also provides direction for all Stage 6 and Stage 7 validations and derivative research.

Throughout his healthcare career, John has been instrumental in defining business and IT strategy as well as selecting, implementing, and integrating mission-critical healthcare information systems across the enterprise. Before joining HIMSS, John served as a hospital chief operating officer and twice as a chief information officer with various healthcare organizations accumulating more than 22 years of hospital executive committee leadership experience. John also served in consultancy practices, including with IBM Healthlink Services and First Data Health Systems Group.

John earned a BA in economics from Xavier University in Cincinnati, Ohio, and an MHA from St. Louis University in Missouri. He is a HIMSS fellow and a fellow of the American College of Healthcare Executives.

Jacquelyn Hunt, PharmD, MS, serves as the chief population health officer at Enli Health Intelligence. Acting as a knowledge partner, Dr. Hunt advises organizations on aligning strategy, care team design, technology, and culture to deliver Triple Aim results in the market. She oversees Enli's Knowledge to Action health program design, helping organizations reduce clinical variation and gaps in care by ensuring that the most current evidence informs care delivery across the enterprise.

Before joining Enli, Dr. Hunt served as chief quality officer and chief information officer at Bellin Health System. Dr. Hunt completed a Merck Foundation Fellowship with the Institute of Healthcare Improvement (2008–2009) focused on Triple Aim, large-scale transformation, and patient-centered health technology. Before her Institute for Healthcare Improvement Fellowship, Dr. Hunt served as the executive director of Quality & Care Redesign with Providence Health & Services.

Dr. Hunt earned her BS in pharmacy from Oregon State University with a certificate in gerontology. She completed a doctorate with residencies in pharmacotherapy and ambulatory medicine in pharmacy at the University of Texas Health Science Center. She later earned her Master of Science in clinical research design and biostatistics from the University of Michigan.

James Jerzak, MD, is a board-certified family practice physician at Bellin Health. He has been a family physician for more than 25 years in Green Bay, Wisconsin, providing a full spectrum of care for patients of all ages.

He graduated from medical school at the University of Wisconsin in Madison and did his residency in family medicine at St. Michael Hospital, Milwaukee, Wisconsin.

Dr. Jerzak is on the leadership team for the Patient Care Redesign Pilot Program and is currently the physician leading the prototype for this program at Bellin Health.

He has received a number of awards, most recently the 2014 Wisconsin Family Physician Educator of the Year.

J. Scott Joslyn, PharmD, MBA, is the senior vice president and CIO for MemorialCare, a six-hospital system in Southern California with revenues exceeding $2 billion, 1500 inpatient beds, 2500 affiliated physicians, and approximately 11,000 employees. As CIO, Scott is responsible for IT, networking, and telecommunications. Beyond IT, Scott oversees MemorialCare's research function with some 381 currently active studies representing 39 service lines and 28 specialties. He is the executive sponsor for system-wide pharmacy services, including inpatient, ambulatory, infusion center, and specialty pharmacy practices.

Dr. Joslyn is also a board member of Summation Health Ventures, a venture capital fund and joint venture with Cedars Sinai Medical Center that invests in and oversees promising, start-up, and young companies that develop products and services in various healthcare market segments. In that capacity, Scott's service includes membership on company boards and advisory committees.

Dr. Joslyn earned a Doctor of Pharmacy degree from the University of the Pacific and a Master of Business Administration from UCLA. He has taught health care information technology at California State University, Long Beach, and the University of Southern California. He is an active and long-standing member of CHIME, HIMSS, and other industry groups.

Kathy Kerscher has been with Bellin Health for 15 years. In that time, Kathy has served in several operational leadership roles in ambulatory care. Currently, Kathy is the team leader of operations for primary care for the past 6 years. As the team leader of operations, Kathy oversees the operations of 23 primary care clinics, 4 FastCare clinics, and 120 employer clinics with on-site services. Kathy is also the change and operational leader for achieving population health management through team-based care.

Pete Knox, MS, BS, executive vice president, chief learning and innovation officer, Bellin Health System, has been associated with Bellin Health System in Green Bay, Wisconsin, in a variety of leadership roles for the past 35 years. Bellin has been on the leading edge of quality for many years and is recognized nationally for superior results. Currently, Pete is executive vice president, chief learning and innovation officer. In this role, he is responsible for population health strategies, physician networks, employer strategies, learning and innovation, and execution of strategy.

In addition, he is a consultant for health care and non–health care organizations. He is a senior fellow at the Institute for Healthcare Improvement and serves on faculty for a number of programs. He is also on the board of trustees for the University of Massachusetts Health System in Worcester. His book titled *The Business of Healthcare* is being used by a number of universities and organizations across the country and he is currently working on a second book, *The Strategy Execution Playbook*. Pete is a frequent speaker on strategy, strategy alignment, population health, and accountable care in the United States and Canada. In addition, he serves on the strategic advisory board for HFMA related to the transformation of healthcare from fee-for-service to value-based payment.

Brian T. Malec, PhD, earned his doctorate from the Maxwell School at Syracuse University specializing in healthcare economics. He has an extensive teaching background in health administration graduate programs and for the past 25 years has been at California State University, Northridge. He is the past department chair of health sciences and current graduate program coordinator of the Master of Science in Health Administration program. His main areas of teaching include healthcare economics and national health policy, health information systems, and quantitative decision-making. His areas of research include HIT workforce development, measuring and managing the economic value of HIT, and teaching HIT in graduate programs.

Dr. Malec is a frequent presenter and moderator at national and international conferences including HIMSS, HIMSS Europe, and HIMSS Asia Pacific. He is also the leader of the Association of University Programs in Health Administration (AUPHA) Academic Forum, which presents faculty research each year at HIMSS. He has recently written and edited a book on careers in health information technology.

Jan Oldenburg's (FHIMSS) purpose is to support better healthcare through digital tools and practices that help patients participate more actively in their own care. She is currently a senior

manager in Ernst & Young's Advisory Health Care Practice, where she supports healthcare organizations focused on improving capabilities for patients. Jan is the former vice president of physician and patient engagement at Aetna Accountable Care Solutions, working in emerging accountable care organizations to create and implement population health and patient engagement programs. Before Aetna, Jan was a senior leader in Kaiser Permanente's Digital Services Group developing and implementing consumer capabilities for both care delivery and health plan operations.

Jan is a past president of the Northern California HIMSS Board, a HIMSS fellow, and cochair of the National HIMSS Connected Health Committee. She frequently speaks and writes about patient and physician engagement. Jan served as the primary editor of *Engage! Transforming Healthcare through Digital Patient Engagement*, published by HIMSS Press in March 2013. She wrote the Patient Engagement chapter of the third edition of *Medical Informatics*, published in March 2015. She is currently working on another book on health engagement, written from the perspective of consumers, patients, and family members.

H. Lester Reed, MD, FACP, served 25 years in military medicine in both the Navy and the Army retiring as the chief of medicine at Madigan Army Medical Center and came to MultiCare Health System in 2001 as associate medical director of the MultiCare Medical Group, where he eventually became medical director. He left MultiCare in 2004 to become a clinical director at South Auckland Health in Auckland, New Zealand, and returned to MultiCare in 2005. Dr. Reed was promoted to vice president of medical affairs, for Acute Care, in 2007, to senior vice president for quality in 2010 and to senior physician executive—practice improvement in July 2014. He then accepted his current role as president and chief physician executive of the Centra Medical Group, Centra Health System on May 1, 2015.

Dr. Reed earned his medical degree from the University of Kentucky and completed his internal medicine residency and an endocrinology and metabolism fellowship at the National Naval Medical Center in Bethesda, Maryland. He has published more than 35 peer-reviewed manuscripts and continues to have a small clinical endocrine practice. He is a fellow of the American College of Physicians, board certified in endocrinology and internal medicine, and is a clinical associate professor of medicine at the University of Washington, past clinical professor of medicine at the University of Auckland, and past professor of medicine at the Uniformed Services University of the Health Sciences.

In his physician executive role at MultiCare Health System, he helped describe clinical improvements that supported the HIMSS Stage 7 recognition at MultiCare in 2015 as well as the HIMSS Davies award presented to MultiCare. He was an integral part of the physician engagement in 2008 that supported the inpatient installation of an electronic medical record. Then, again, he was instrumental during two other facility installations between 2010 and 2013. Dr. Reed has presented nationally for the American College of Healthcare Executives and The Leadership Institute on physician performance and clinical outcomes and published on these topics.

Wes Rishel has more than 30 years' experience designing and implementing electronic health records (EHRs) and other clinical IT systems based on open architecture and advising commercial, nonprofit, and government clients on the design and governance of such systems. He has provided substantial pro bono service to government and nonprofit organizations that support healthcare IT.

He currently describes himself as a "retired health IT nerd" but occasionally provides advice to not-for-profit and for-profit healthcare organizations.

As vice president and distinguished analyst at Gartner, Inc., he wrote more than 100 research notes on the IT manifestations of reimbursement changes such as accountable care and patient-centered medical homes, provider-led care management, the CMS EHR Incentive Programs for the "meaningful use" of EMRs, technologies of healthcare software, healthcare interoperability, standards, health information exchange (HIE), eHealth Exchange (formerly the Nationwide Health Information Network), service-oriented architecture in healthcare, medical device interconnection to clinical IT systems, Continua, Dossia, the personal health record, and Health Insurance Portability and Accountability Act of 1996 (HIPAA).

Rishel was a charter member of the Health IT Standards Committee from its founding in 2009 through January 2016. This federal advisory committee to the Office of the National Coordinator for Health IT advised on the standards regulations related to the meaningful use of EHRs.

Rishel has also been a member of the boards of directors of HL7, the North Coast Health Information Network, The eHealth Initiative, HIMSS, Workgroup for Electronic Data Interchange (WEDI), and Certification Commission for Health Information Technology (CCHIT) and served 2 years as the chair of HL7. Additionally, he served in an advisory role to The Joint Commission.

Alan Smith, MPH, senior vice president, chief information officer joining Capella in May 2011, leads the company in implementing information systems to achieve the most effective enterprise-wide IT operations. With more than 20 years of experience, Al has worked in hospitals, hospital management companies, health insurance plans, and technology consulting firms. In 2013, Al received Capella's Shining Star Award in recognition of his outstanding work in all five of the company's pillars.

Before joining Capella, Al served as vice president of applications and interim CIO for Vanguard Health System in Nashville where he was responsible for IT applications for the company's hospitals and affiliated physician clinics across all geographic markets. Before that, he was a client results executive for Cerner Corporation in Kansas City, Missouri, as well as VP–clinical applications for Carolinas Healthcare System in Charlotte, North Carolina. He began his career with Andersen Consulting (now Accenture) and First Consulting Group in Detroit, Michigan, providing technology consulting.

Al is currently serving as chairman of the HIT Task Force for the Federation of American Hospitals. He is also serving on the board of the Tennessee Health Information Management Society. He completed his undergraduate degree in financial administration with highest honors at Michigan State University. He also earned a master's of public health from the University of North Carolina at Chapel Hill. He was also named to Becker's Hospital Review's "100 Hospital and Health System CIOs to Know" list.

Douglas Ivan Thompson, MBA, FHIMSS, is a leading national expert in defining and measuring the value of healthcare information technologies and translating these technologies into operations improvements and strategic advantage for their buyers.

In his 25-year career as a consultant, Doug has worked with more than 300 leading hospitals, including several Davies Award winners, and numerous vendors including Microsoft, Cardinal Health, McKesson, and GE Healthcare.

As a senior research director at The Advisory Board Company, he has authored dozens of monographs on healthcare information technology and is a frequent speaker to business and professional audiences.

As an IT vendor executive, he founded several businesses focused on IT benefits realization.

Doug earned a BS from Brigham Young University and an MBA from Columbia University.

Brad Wozney, MD, graduated from the University of Wisconsin Medical School in 1995. He completed a Family Medicine Residency Program at the University of Wisconsin/St. Mary's Hospital in Madison, Wisconsin. He has been a family physician at Bellin Health in Denmark, Wisconsin, since 1998.

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LEVERAGING YOUR EMR TO DERIVE VALUE

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If your healthcare organization is typical, you got your EMR "installed" on-time and within budget, declared victory, and collected some money from Meaningful Use. But very quickly, you realized you weren't getting the return on the investment that management and the board expected; you didn't have the frontline clinicians using the technology to its fullest advantage, at least on the basis of the expectations you'd set from vendor promises, and you probably had more unhappy people in the organization than you thought you'd have. So you started the "optimization" process to make refinements, do some stuff over, and get it right this time.

This first section of the book is dedicated to helping you understand how to get value from your investment in the software and the people in your organization. Doug Eastman, executive director, Usability Center of Excellence at Kaiser Permanente, and Ronnie Bower, director, adoption and sustainment, Applied Clinical Informatics at Tenet Healthcare, explain how to most effectively optimize your EMR and sustain the improvements you make in adoption, process, and workflow.

Doug Thompson, senior research director at The Advisory Board Company, shares a structured methodology for getting measureable return on your EMR investment, and Les Reed, president and chief physician executive, Centra Medical Group at Centra Health System, expertly explains how to use the data from your EMR to improve clinical protocols, outcomes, and patient safety.

James Hereford, chief operating officer at Stanford Health Care, takes you through some case studies in how to apply Lean principles and thinking to the workflows and processes enabled by your EMR. Mike Blum, CMIO and associate vice chancellor at UCSF, shares some of the EMR innovations his organization has implemented, and John Hoyt, executive vice president at HIMSS Analytics, describes what some of the lessons HIMSS Analytics EMR Adoption Model Stage 7 organizations have learned and the advanced capabilities they can now bring to patient care.

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Chapter 1

The User Experience: An Underexploited Opportunity

Doug Eastman, PhD

> *"Any darn fool can make something complex; it takes a real genius to make something simple."*
>
> **Albert Einstein**

Implementing an EMR is a major undertaking and involves a significant amount of change for HCOs. The overall effort is monumental. The stakes are high and this kind of investment is not made without the promise of a compelling return or benefit to the patients, caregivers, organization, and industry. HCOs seek increases in clinical quality and safety, revenue capture, and operational efficiencies. And ultimately, the EMR not only has to support the organization's current needs but also should be scalable enough to grow with future transformational plans. This is no small feat.

To add to the complexity, the launch of the EMR is really just the beginning. The new system becomes central to a growing body of optimization efforts, the success of which is largely dependent on users being willing and able to change their behavior. Technology solutions must be both **usable** and **adopted** by users to reach their potential. This gets tricky at times, because what we want users to do with the technology may not seem intuitive, convenient, or efficient to them. If the technology is too clunky, users become frustrated and the solution loses credibility. This is where problems arise, and some of these situations are difficult to reverse.

There are many stories in the healthcare industry that describe costly implementation mistakes. These shortcomings can affect an organization's reputation, compound existing inefficiencies, and increase the price tag associated with launching an EMR. But what is often not recognized is that **user experience during implementation can make or break post–live optimization efforts**, because it's the user experience that ultimately shapes how the technology is perceived and whether it is ever fully utilized.

The following list of issues is a sampling of what happens when technology is introduced without the user in mind:

- Workflow workarounds
- Decreased adoption, low utilization
- High maintenance costs
- User fatigue and frustration
- Missed revenue capture
- Incomplete fields, incomplete reporting
- Inconsistent processes
- Increased training and support costs
- Information errors
- User work/life imbalance
- Extra work, rework
- Too many mouse clicks
- Difficulty finding information

Sound familiar? Some of this may be inevitable, but more often than not, these issues can be avoided entirely if user-centered approaches are designed into implementation planning and delivery. Great care should be taken to ensure any technology solution is designed well and introduced in a way that helps ensure users see the value and readily adopt required changes.

There are two important elements of user-centered design: usability and user-ability (or technology adoption). Understanding the differences between the two and how they fit together to create an enhanced user experience are key to avoiding predictable problems and reaching the full potential of your technology.

User-Centered Approaches

Usability and user-ability (or technology adoption) are intertwined requirements of positive and sustainable user experiences. Both disciplines mitigate risk and can translate into significant quality improvements and cost savings. Unfortunately, they are often discounted or overlooked when implementing EMR systems. But when they are formally baked into the planning and development for a new system or other technology rollout, the long-term benefits are significant. On the other hand, when user-centered approaches are nonexistent or minimalized, a lot can (and usually does) go wrong sooner or later.

Let's review these user-centered approaches and how they work together to position your organization to realize the benefits from technology.

Usability

Usability is an important user-centered approach to ensuring users embrace technology to meet the organization's goals as quickly as possible.

There are a variety of definitions for usability, but generally speaking, usability contributes to the overall user experience by improving ease of use. The Nielson Norman Group (Jakob Nielsen, "Usability 101: Introduction to Usability") defines usability by five quality components:

1. **Learnability**: How easy is it for users to accomplish basic tasks the first time they encounter the design?
2. **Efficiency**: Once users have learned the design, how quickly can they perform tasks?
3. **Memorability**: When users return to the design after a period of not using it, how easily can they reestablish proficiency?
4. **Errors**: How many errors do users make, how severe are these errors, and how easily can they recover from the errors?
5. **Satisfaction**: How pleasant is it to use the design?

Another key quality component in usability is **Utility**, which refers to the design's functionality: Does it do what users need?

Usability plays an important role in ensuring that the user experience is positive and that users perceive technology as a gift, not a punishment. Think about the presents you have received in the past for your birthday or a holiday. It feels really good when someone knows you well and gives you a gift that fits your needs and interests. Can you recall times when you received a gift and it left you thinking, "How on earth did this person think I wanted this?" (Editor's Note: I got a $50,000 life insurance policy from my parents for my high school graduation gift when all the other kids were getting cars.)

With an EMR, it requires great thought to ensure what you are implementing is well received by users. The main requirement is to deliver technology solutions that support their operational requirement, and make their work more effective, convenient, and efficient. When this doesn't happen, users wonder if the development team understands their work. This disconnect creates a divide between operations and IT. Users tend to abandon solutions that don't meet their needs, like that awful gift they received. Birthday gifts can be returned, but bad technology solutions unfortunately don't come with a gift receipt. You are stuck with it until it gets fixed … and sometimes it takes forever to make simple changes.

The list below highlights some common distractions with EMRs that invariably lead to low user adoption and utilization. These distractions disrupt productivity and erode confidence in the technology, which, in turn, further negatively affects user adoption. It's a vicious circle.

Common EMR Distractions

- Too many mouse clicks
- Cumbersome navigation
- Inconsistent, illogical, and clunky process flows
- Noncontextual buttons and links
- Lengthy scrolling
- Overcrowding of screen layout
- Missing fields
- Difficult to find information
- Requires too much muscle memory
- Inconsistent button placement on screens

Usability helps ensure that the technology you are implementing is perceived as a welcome gift to users. Typically, usability professionals serve as liaisons between operations and IT, ensuring what is being built (whether a proof of concept/prototype or final solution) is comprehensive and aligns with what the business needs to perform their work successfully. To be most effective,

usability should be factored into the work plan from the very beginning. However, at this point, it is often brought in later to assess root causes of poor adoption and utilization issues, a contributing factor to increased costs and missed opportunities.

User-Ability

User-ability (or technology adoption) is another important user-centered discipline that yields great return for the HCO, because it, too, focuses on the user experience. Where usability aims to increase user adoption through the design of tools that meet user's needs, **user-ability also increases adoption through the assurance that users are ready, equipped, and on board with the changes ahead**. Technology adoption is about effectively introducing, implementing, and optimizing change driven by new and existing technology within the organization. An EMR drives a significant level of change for users, and this change must be managed effectively in order to reap the expected benefits.

Once an EMR is put in place, the journey continues. Users get more acquainted with the system and find ways to incorporate the technology more effectively into their daily routines. A sound technology adoption strategy ensures that, at go-live, a solid foundation for change has been established for the organization. This foundation sets the course for subsequent optimization efforts and helps reduce instances where change slows down because not everyone is on board. As stated earlier, we don't want users to be unduly distracted by the technology and other changes surrounding the implementation. When users are distracted, optimization and transformation efforts slow down or are not sustainable because the organization is playing catch-up with users instead of moving forward.

Assuming the technology meets user needs (it is functional and usable), users must be proficient with the system. This takes time and must be handled strategically. Proficiency improvement does not mean throwing more training at users. In fact, user dissatisfaction increases when training interventions aren't perceived to be relevant.

A common complaint from clinicians is that training isn't targeted to their needs, and frustration is exacerbated because training takes them away from patient access. Because of large patient loads, clinicians simply don't have time to sit through training that isn't addressing their specific requirements. A successful practice is to assess proficiency levels and segment skill gaps by audience groups. Having this information enables the organization to be strategic about its training strategy and to determine how localized or widespread the identified skills gaps are. This also enables the training team to determine the most appropriate training and support method, format, and timing to follow.

Training is expensive. To ensure sustainability, it is important to know exactly what your audience needs and to provide convenient ways to get it to them, when they need it. To meet these requirements, I recommend learning about which training interventions work best for each audience group.

There will be times when it is necessary to deploy on-the-ground resources to train people in a classroom or side by side in the field, but be careful, as this approach can become very costly and places a drain on resources. If you have a large organization that is geographically dispersed, this may require a small army of trainers. Try to determine who would really benefit from this approach.

For other users, it might make more sense to develop an online learning approach where users can access tailored videos and learning materials on their own time. Of course, there are advantages and disadvantages to electronic training methods. They allow users to learn on their own

time, but that only works when users have the desire and time to access online materials. It is best to have a variety of learning solutions, tailored to meet the needs of your various user groups.

As a side comment, users don't always know what they don't know. When collecting data to understand audience skill gaps and needs, be wary of relying solely on self-assessments. Although a self-assessment is probably the most cost-effective way to collect data (especially within a large organization), the data aren't always accurate because data are limited to what a user thinks he or she needs to know or is capable of doing. It is always best to observe users interacting with the technology to fully appreciate their strengths and opportunities for improvement in the way they interact with the technology.

A Shared Perspective

Usability (UX) and user-ability (UA) share a common perspective and complement one another extremely well (see Figure 1.1). Both disciplines focus on what users need to be successful as well as bring visibility to practical ways to meet these requirements. The following describes areas where a similar philosophy is applied to establish a positive user experience.

Informed Decisions

Both user-centered specialties rely heavily on data collected from the field. Usability experts need to observe how users interact with the technology (software, applications, and devices) to make suitable recommendations about the user, functional, and design requirements.

Beware of the Usual Suspects Syndrome. This is when you have the same people at the planning table for every initiative, making decisions on behalf of all users on the basis of their individual experience and assumptions of what is needed. Many times, these subject matter experts are more than informed to make these decisions, but other times, these individuals are too close to the project and make decisions that are not aligned with what mainstream users actually need. The pitfall here is that you risk not operating from a complete set of user requirements from the start.

Both usability and user-ability professionals ensure that users are well represented in the planning phases and are involved early and closely enough to guide decisions that affect them. It is always important to check back with representative samples of target audience segments to ensure that decisions accurately reflect the needs of the individuals that will ultimately be expected to use the solutions. This requires a strong engagement strategy with the business side of the organization.

Having good data means that you can be strategic about next steps and ensure the interventions are sustainable. In the case of usability, offering users a solution that meets their needs and is convenient and easy to use has a much better chance of being embraced and utilized effectively. With regard to user-ability, providing tailored training and support reduces cost and time and

Figure 1.1 Looking at user experience.

wins the gratitude from users because they feel understood and respected. Both user-centered approaches leverage data to drive solutions to support the adoption and effective utilization of the technology.

The Whole Picture

Let's be honest, not every solution is perfect the first go-around. Sometimes, solutions don't hit the mark well at all. You could probably guess that when things don't go well, user-centered approaches were lacking. Regardless of the reason for poor outcomes, often an assessment is needed to uncover the root cause for low utilization or why people aren't using the solution as intended.

Usability and user-ability are great companions in the search for answers and are very effective in collectively surfacing the whole picture. It doesn't work to just assume that a problem is a training, workflow, or technology design issue without truly checking under the hood first. Please continue to gather assumptions from the project team, but vet those hunches through field research. There are a myriad of contributing factors that influence any given issue.

Working together, both user-centered approaches have been wildly effective in assessing current state problems in the field or uncovering a comprehensive set of user requirements. For instance, I recall a situation in the recent past when a project team couldn't understand why a group of users refused to use a brand new system. Some leaders sensed it was due to poor training, others felt the situation was a result of bad design. After observing users in the field and working closely with them to understand the challenges, it was found that the system worked perfectly—no known issues. The training was prepared and delivered well, as it focused less on which buttons to click and placed more emphasis on how to leverage the system to support the user workflows. The training also reviewed how to think critically and troubleshoot under certain typical situations. With the whole picture in mind, it turns out that the problem rested in two main areas. First, the system was actually developed perfectly to specifications but the requirements were incomplete and did not reflect the work of the users. Secondly, leadership did not communicate expectations consistently across the department and so users were not performing their work the same way. This led to different results.

The User Comes First

It goes without saying that the patient is the ultimate focus, but in the case of ensuring the EMR and other optimized technology solutions are well received and utilized to their fullest, it is important to always keep the user front of mind. User-centered approaches, such as usability and user-ability, are advocates for the user and for the development team. We want everyone to be successful, but emphasis must be placed equally on the technology and the people side in order to achieve positive, sustainable results.

Coupling of Specialties

Sometimes we innovate and develop solutions to enhance the user experience and sometimes we do it to change behavior. Technology alone doesn't change behavior, but rather enables it. Solid change management sets the tone to develop buy-in and user engagement. Coupling technology with great design and change management is a recipe for successful adoption.

More and more organizations are instituting user-centered approaches in their work from the onset and are finding great success as a result. The progress is still slower than it should be,