



# HEALTHCARE IT 2017-2022:

First Comes Change, Then Comes Value

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# CHAPTER 1:

## The Digitization of Healthcare

**In eight years, the healthcare industry has seen a monumental increase in information technology (IT) adoption.**

Under 2009's Health Information Technology for Economic and Clinical Health (HITECH) Act, the Office of the National Coordinator for Health Information Technology (ONC) was given the authority to manage and set standards for the adoption of electronic health records (EHR) and supporting technology in healthcare facilities across the United States. Providers began receiving financial incentives for demonstrating the "meaningful use" of these technologies, which eventually progressed into penalties for those who failed to use the tools effectively. The direct government spending on this was over \$30 billion and, by some estimates, the total cost of the healthcare industry's EHR efforts during this period topped \$3 trillion.<sup>1</sup> The goal of this massive investment was to provide more efficient, effective and higher quality care to patients across the country.

Given the political process, some of the initial Meaningful Use requirements bordered on the absurd. Mandating one CPOE medication order per patient for 30 percent of patients was never going to help patient care.<sup>2</sup> That is like trying to solve global warming by mandating every backyard chef use one fewer charcoal briquette on their BBQ grill one out of every three times they light a fire.

From the vantage point of 2017, we can say that at least one objective of the HITECH legislation – widespread EHR deployment – has been achieved. According to ONC, nearly 96 percent of hospitals have moved to using a certified electronic health record.<sup>3</sup> This is a nine-fold increase in EHR usage since the HITECH Act became law.

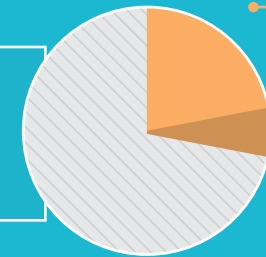
But while healthcare has generally "gone digital," many in the industry are left wondering, "So what?" Has the technology improved care efficiency, streamlined delivery or improved patient outcomes?



**3 out of 4 physicians believe EHRs increase practice costs, outweighing any efficiency savings**

**physician satisfaction with EHRs is only in the 20 to 30 percent range.**

No other industry would accept customer satisfaction rates at this level.



20-30% satisfied with EHRs

According to Deloitte's 2016 Survey of U.S. Physicians, three out of four physicians believe EHRs increase practice costs, outweighing any efficiency savings, and seven out of 10 think EHRs reduce their productivity.<sup>4</sup> American Medical Association former president Dr. Steven Stack states that EHRs are the number one frustration of doctors today.<sup>5</sup> A recent physician survey from a leading hospital company revealed that physician satisfaction with EHRs is only in the 20 to 30 percent range. No other industry would accept customer satisfaction rates at this level.<sup>6</sup>

**It's not all doom and gloom, however. A recent report presented to ONC confirmed that healthcare technology has started to improve care quality and safety across a wide range of settings and applications, though not to the extent that the industry had hoped for.<sup>7</sup>**

So why aren't we doing better at fulfilling the promise of healthcare digitization and realizing a return on our \$3 trillion investment? There are several parts to that answer. One relates to the government's involvement. For the past eight years, everyone has focused on meeting government-imposed requirements. For many, of necessity, this was about meeting the letter of the law, not the spirit. This essentially killed innovation as R&D budgets and deployments focused on meeting the specific requirements of Meaningful Use rather than innovating to improve the cost/quality of healthcare.



## The fact is that it is extremely difficult to innovate in a highly regulated environment.

Look at the airline industry. When the U.S. government lifted restrictions over fares, airline routes and new vendor market entry with the Airline Deregulation Act of 1978, market forces began to work.<sup>8</sup> The industry saw a massive upsurge in innovation and new competition – hello, Southwest and JetBlue – that, on balance, benefited the traveling public.<sup>8</sup> Today you can fly from Boston to Nashville for \$55, and the total number of passengers who fly annually has more than doubled.

Secondly, we have to realize that using computers in medicine is necessary but not sufficient to achieve transformation. We cannot expect to see major benefits from computerization if we simply use computers to do the same things we would have done without them.

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Today, more than 80 percent of health-care providers use electronic health records, and 70 percent of doctors e-prescribe using an EHR. But that’s where the revolution stalled...EHRs provide data that is necessary for changing how we deliver care, but they’re not sufficient on their own. We need vision, leadership and innovation to complete the task.

Glen Tullman<sup>9</sup>

Former CEO, Allscripts, writing in Forbes

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# CHAPTER 2:

## Building upon the Digital Foundation

In order to realize the full potential of healthcare digitization, the industry must begin to rethink how it operates, given that records now are digitized.

**Getting this right is going to take time, creativity and some missteps.**

One mistake that Meaningful Use led us toward is around alerts. Without careful thought, in a single day, a provider may receive hundreds of alerts – medication alerts, critical lab values, two-midnight rule alerts, and other “clinical decision support warnings.” This phenomenon has been referred to as “alert fatigue.” Unfortunately, the old adage applies: “If everything is critical, nothing is critical.” We have not yet found the best way to curate electronic alerts sent to physicians and have other members of the care team (pharmacists, nurses, etc.) manage the rest. Ironically, in the paper world, when getting an alert to the physician involved paging and a call back, there were fewer alerts and the percentage of those that were meaningful was much higher.

In addition, the current generation of EHRs fell victim to the “automate what is there” problem. Almost all EHRs present the same information, the same way, regardless of the specialty of the user, the patient situation, or the care setting. This is because these EHRs are modeled after the paper chart. It is impossible to make a paper chart dynamically adapt and present the most pertinent information given the situation, but it is very possible to have computers do this.

For all the well-publicized problems of EHRs, however, physicians have seen benefits from technology, too. For instance, not long ago consulting physicians had to spend the night in the hospital just in case their expertise was needed. Then came pagers, and consultants were able to come to the hospital only as and when needed. Fast-forward to 2017, and today’s technology allows providers to completely review up-to-the-second information about a patient and properly triage that patient directly from the provider’s mobile device.

In some specialties, technology is leading to care delivery transformation. As the treatments for stroke have become more sophisticated and effective, for example, it is now critical to have neurologists available immediately 24x7. For many hospitals, this isn't practical or even possible. With a digital record, neurologists can work remotely and cover many hospitals, enabling more facilities to deliver world-class stroke care.

## More creative and focused use of digital technologies also stands to benefit other clinicians and patients directly.



Allowing nurses to leverage mobile technology would free them from the constraints of the desktop computer and the nurse's station. Mobility enables nurses to spend more time with patients and communicate, document, and administer medications without dragging a workstation with them. We have known for a long time that more nursing time leads to better patient outcomes; streamlining each nurse's administrative work through mobility is a cost-effective and logical way to accomplish this.



Nurses spend a lot of time communicating with physicians – asking for a PRN medication to help comfort a patient, alerting physicians of change in patient status, or contacting a physician about critical labs. In most hospitals today, this work still follows the “page” and call-back model, supported in some organizations by unsecure text messages. Purpose-built communication tools that work in the patient context, with patient information, that allow nurses and physicians to communicate and easily act on information would be far more efficient. They are coming.



While repeated studies have shown that use of patient portals improves chronic disease management, patient engagement and overall health, adoption rates remain incredibly low. A recent study from The Journal of Medical Internet Research found that poor practice workflow and healthcare's IT infrastructure may be the culprits.<sup>10</sup>



**I think our industry is ripe to be disrupted. And it's going to be disrupted because there's so much we do that doesn't add value. Waiting rooms have never cured anybody. They're really not fun when your wife has just suffered a stroke. Treating people like a number is fine at the DMV because you don't have to go there all the time. It's not right in the healthcare system.**

David Feinberg, MD<sup>11</sup>  
CEO, Geisinger Health System

Healthcare digitization holds immense promise. It represents table stakes – with this technology in place, with the right encouragement and the government stepping back from its role of trying to legislate innovation, we can use these technological underpinnings to improve care quality and efficiency across the entire healthcare continuum. Then, and only then, will we start to see the full value of healthcare's digital transformation.



# CHAPTER 3:

## The Future of Digitally-Transformed Healthcare

What will the future of digitally-enabled healthcare look like? Here are a few examples of the transformation that is occurring:



**New technologies** are starting to emerge that meaningfully support providers' clinical decision-making. Applied artificial intelligence (AI), for example, is putting the power of "machine learning" at the forefront of care delivery. Think of Amazon's "suggestions" when you make a purchase online - through data analytics and information technology, the site automatically makes recommendations on what additional items you may be interested in purchasing. The same concept can be applied to physicians' orders, where AI can suggest which orders should be considered based on an analysis of treatment patterns in similar patients. At minimum, this saves providers time by putting orders a click away. In some cases, this will help avoid a missed order or delayed order that could make the difference between a great outcome and a less than ideal one.



**Adaptable user interfaces** have the potential to revolutionize the way providers work. Today's technology has the ability to tailor clinical data presentation based on a provider's specialty, personal preferences and the patient's situation. Highlighting the most important information saves time and reduces the chance a provider will miss an important result. This ensures timely, effective care and ultimately will improve outcomes and reduce cost.



**Clinical insights** driven by "big data" analytics will contribute to more efficient, actionable and effective healthcare. One of the first targets for this type of effort is sepsis in the hospital environment. According to The National Institute for General Medical Sciences, severe sepsis strikes more than a million Americans every year, with an estimated 28 to 50 percent of those infected succumbing to the ailment.<sup>12</sup> That accounts for more than the number of U.S. deaths from prostate cancer, breast cancer and AIDS combined.<sup>12</sup> One of the biggest reasons for this high mortality rate among patients is the fact that the disease progresses rapidly and requires quick detection and intervention. With a digitized record and the constant vigilance of an inference engine, patients at risk for sepsis or in the early stages of sepsis can be identified more quickly, which will save lives.

# CHAPTER 4:

## How to Maximize Value from Healthcare's Digital Transformation

**Ultimately, the computer will become as integral and indispensable to patient care as the stethoscope.**

Physicians don't think twice about using a stethoscope; indeed, they couldn't imagine not using one. Within 10 years, it will be the same for computers.

But there is a long way to go. After all, the foundation of digitized healthcare – the EHR system – is still not there. Many hospital executives surveyed by Healthcare IT News in late 2016 said they continue to refine the EHR basics: improving interoperability, workflow and usability.<sup>13</sup> This is important work, of course, because without it whatever is built on the foundation will not stand.



As we look ahead to the next phase of construction, here are **three key building blocks for transforming healthcare delivery:**



### IT interoperability

In order to improve patient care decision making and reduce unnecessary costs, it is critical that all systems can communicate and share data with one another. Clinicians must be able to see the full patient picture in order to make well-informed clinical decisions. Similarly, having the ability to share clinical data has become essential for emerging shared-risk payment models. The Fast Health Interoperability Resources (FHIR) standard should help to make ubiquitous health data sharing a practical reality. Some additional pressure from purchasers of technology not to accept “closed” systems is likely necessary as well.




### Learning healthcare systems

This concept, discussed for more than a decade, hinges on “a collaborative approach that shares data and insights across boundaries to drive better, more efficient medical practice and patient care.”<sup>14</sup> With growing stores of “big data” and powerful, AI-enabled analytic capabilities, the learning healthcare system is not only possible, but also inevitable; and as it becomes reality, we will produce a virtuous circle “in which scientific evidence informs clinical practice while data gathered from clinical practice and administrative sources inform scientific investigation.”<sup>14</sup>



### Telemedicine

The embrace of new communication technology and mobile devices by healthcare providers and patients alike is catalyzing one of the most significant developments in healthcare. The hospital walls, which once limited the reach of an institution’s clinical expertise and services, are no longer a barrier. Why does a radiologist or neurologist need to physically be at the hospital where a patient is located? Why can’t the top neurologist in San Francisco be working with a radiologist in Chicago for a patient in New York? With telemedicine, they can.



**Within a decade, IT will transform the way we think of, deliver and receive healthcare.**

**Providers should not let their frustrations with the current state of EHRs sour them on the potential of this transformation.** All constituents in the healthcare ecosystem have a stake in bringing the full value of healthcare IT to life – and all have a role to play in making it happen. The result will be better patient care delivered by clinicians who are empowered by technology to practice more effectively and efficiently than they ever dreamed possible.

# About the Author:

Paul Brient

CEO, PatientKeeper Inc.



As CEO of PatientKeeper, Paul Brient brings more than 20 years of experience in healthcare information technology including physician workflow automation, physician practice automation, payer-based medical management, pharmaceutical-based disease management and medical devices.

Prior to joining PatientKeeper in 2002, Brient held senior executive-level positions at leading healthcare and consulting firms including McKesson Corporation, HPR and The Boston Consulting Group. Brient began his healthcare IT career as the founder and president of BCS, an early physician office management software company. He earned his master's degree in business administration from Harvard Graduate School of Business Administration with High Distinction (Baker Scholar). He also holds a Bachelor of Science in Electrical Engineering and Computer Science summa cum laude from Princeton University.

# Resources



## Chapter 1

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2. **HealthIT.gov** - [Computerized Physician Order Entry \(CPOE\) for Medication Orders](#)
3. **HealthIT.gov** - [Adoption of Electronic Health Record Systems among U.S. Non-Federal Acute Care Hospitals: 2008-2015](#)
4. **Deloitte** - [Deloitte 2016 Survey of US Physicians](#)
5. **AMA Wire** - [Physicians, we hear you: EHR meaningful use isn't meaningful](#)
6. **Perspectives in Health Information Management Journal** - [Electronic Health Record Use a Bitter Pill for Many Physicians](#)
7. **HealthIT.gov** - [Recent Evidence that Health IT Improves Patient Safety](#)
8. **Library of Economics and Liberty** - [Airline Deregulation](#)
9. **Forbes** - [Health Care Doesn't Need Innovation -- It Needs Transformation](#)

## Chapter 2

10. **The Journal of Medical Internet Research** - [Adoption of a Portal for the Primary Care Management of Pediatric Asthma: A Mixed-Methods Implementation Study](#)
11. **Becker's Hospital Review** - [Geisinger CEO Dr. David Feinberg: 'I'd like to eliminate the waiting room and everything it represents'](#)

## Chapter 3

12. **The National Institute for General Medical Sciences** - [Sepsis Fact Sheet](#)

## Chapter 4

13. **Healthcare IT News** - [2017: The Year Ahead in Healthcare Information Technology](#)
14. **Duke University "Rethinking Clinical Trials"** - [Learning Healthcare Systems](#)