A PROMISE UNFULFILLED:

Why Information Technology Hasn't Improved Healthcare—and What It Will Take to Get There

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A PROMISE UNFULFILLED

Why Information Technology Hasn't Improved Healthcare—and What it Will Take to Get There

President Barack Obama signed The Health Information Technology for Economic and Clinical Health Act (HITECH Act) into law on Feb. 17, 2009 as part of the American Recovery and Reinvestment Act of 2009 (ARRA) economic stimulus bill. HITECH stipulated that, beginning in 2011, healthcare providers would be offered financial incentives for demonstrating "meaningful use" of EHRs until 2015, after which time penalties would be levied for failing to demonstrate such use.

Some have called this "…the most important piece of health care legislation to be passed in the last 20 to 30 years."[1]

While this legislation put a much-needed emphasis on healthcare—and particularly the role information technology (IT) should play in it—the reality is we have been left with a promise unfulfilled.

Today, doctors are less productive than they were before, and IT is the culprit. Rather than enabling a better, more streamlined workflow, IT has become a burden. To be clear: doctors are not doing less or more; they're doing the same things and spending more time on them. Doctors often find themselves spending time late at night writing their progress notes or reconciling their patients' medications—tasks that with many IT systems can take up to an hour per patient. No surprise, then, that physician burnout is a growing problem.

"Medicine today invests heavily in information technology, yet the promised improvements in patient safety and productivity frankly have not been realized," said Peter Pronovost, MD, Senior Vice President for Patient Safety and Quality and Director of the Armstrong Institute for Patient Safety and Quality at Johns Hopkins.

We need to do better.

We need to make healthcare work for both doctors and patients—and leverage the innovative, ground-breaking tools we have at our disposal. Information technology should enhance the healthcare experience, not hinder it.

We have a double standard in healthcare.

We expect our doctors to know everything. To be super human. Problem solvers. No matter our ailments, they should be able to not only identify the problem, but identify the most effective cure. They should know every dose, diagnosis and treatment. But without the right tools, getting everything right is nearly impossible. So rather than empowering doctors to be the problem solvers we want and expect them to be, we are shackling them to outdated processes, workflows and technology.

The promise of better healthcare has been broken.

Technology has changed the way we communicate, the way we shop, the way we watch TV, the way we drive, and the way we interact with our homes. As an industry, healthcare is lagging way behind. And the consequences are drastic. In order for us to deliver the kind of holistic care that will truly improve people's health, it's time not only to talk about the potential, but to make it a reality for users and providers across the healthcare continuum.

Chapter 1:
Where We Are Today

The HITECH Act outlined the intended plans for the adoption of electronic health records through meaningful use, defined as "providers need[ing] to show they're using certified EHR technology in ways that can be measured significantly in quality and in quantity."[2]

More specifically, Meaningful Use is using certified electronic health record (EHR) technology to improve quality, safety, efficiency, and reduce health disparities, engage patients and family, improve care coordination, and population and public health, maintain privacy and security of patient health information.

Ultimately, it is hoped that meaningful use compliance will result in[3]:

- Better clinical outcomes
- Improved population health outcomes
- Increased transparency and efficiency
- Empowered individuals
- More robust research data on health systems

While Meaningful Use's goal is to make healthcare better, the systems in place today are a far cry from making that a reality. Why?

Because we have changed the mechanism, not the paradigm.

Taking paper paradigms and moving them to the computer is a logical first step, but it can be awkward and doesn't necessarily yield positive change. For example, we still have clinical notes that are separate from orders. We have told doctors not to write on paper anymore, so now they are doing largely the same thing they were doing before, just on the computer. If anything, computerization of clinical notes has had unintended negative consequences: notes have become more cluttered—and therefore less helpful—as physicians now routinely include the last 24 hours of results in their notes simply because it's easy to do so with a mouse click. To date, no one is helping doctors take advantage of the computer to write better notes.

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AMA President Steven Stack, MD, says EHRs are the #1 frustration of doctors:

"We live in a world where a 2 or 3-year-old can pick up a smartphone and use it with no instructions. If you're not careful, they'll order from Amazon and have something delivered to your house two days later. But we have graduate-educated physicians who are being forced to use software that looks like it's on an old-fashioned, DOS-based system, a [TRS-80], an Atari, the kind of software you can only see in a museum. And that's the software we've been given to manage patients' health and well-being. So you have physicians whose efficiency is decimated. Their ability to communicate with each other is completely crippled. And then they're told you're not doing a good job." [4]

In a recent article, Ron Smythe acknowledges that, to date:
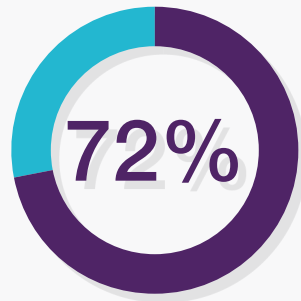
Only "a small number of [provider] organizations, namely those that have been in the EHR game for much longer periods of time, have realized improvements in clinical workflow and productivity using these tools." [5]
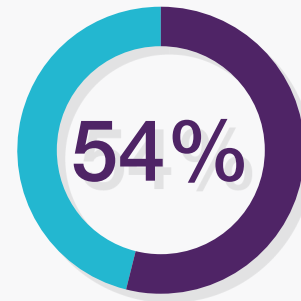
A report from AmericanEHR Partners and the American Medical Association (AMA) shows that compared to five years ago, more physicians report being dissatisfied or very dissatisfied with their EHR systems. The survey on Physician Use of EHR Systems 2014 found that more than half of all respondents reported their EHR system had a negative impact on costs, efficiency or productivity.[6]
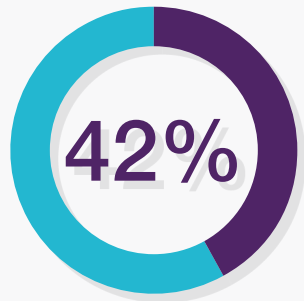
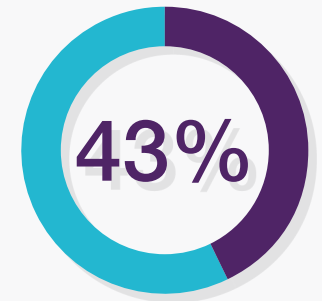| 42%	72%	54%	43%
thought their EHR system's ability to improve efficiency was difficult or very difficult.	thought their EHR system's ability to decrease workload was difficult or very difficult.	found their EHR system increased their total operating costs.	said they have yet to overcome the productivity challenges related to their EHR system.

In every other industry in our economy, technology has increased efficiency, reduced costs, and improved productivity. Why not healthcare?

Here's the reality.

We have today what 10 years ago was called a supercomputer in front of physicians—a device that knows virtually everything about the patient—but it isn't helping out in ways we take for granted in our everyday lives when we shop online, use Google Maps or order an Uber.

We had to get to the computer first.

What a physician understands about a patient's situation—the patient-specific "knowledge base" upon which his/her clinical diagnosis and treatment plan are based—is determined by the information that's presented on the EHR screen. Which points to another problem. Unlike the world of paper records, with its illegible handwriting and overstuffed files, today's primary obstacles to communication clarity and efficiency are poorly designed data presentation on computer or tablet screens, fragmented information sources and unwieldy interfaces that require dozens of mouse clicks or screen taps by busy clinicians.

WHERE WE ARE HEADED

Imagine for a moment what would happen if computers could actually learn based on what your doctor is doing and what's happened with other similar patients. (Think Amazon observing your shopping behavior, comparing it to other similar customers buying similar products and making recommendations accordingly.) We are faced with an industry-changing opportunity for computers to do medical research and deliver healthcare that way. In yesterday's world, we "learned" only from clinical trials— long, formal processes conducted by an organization that had a treatment they wanted to see approved. In tomorrow's world, every time a doctor treats a patient will represent a learning opportunity—a real-world clinical trial if you will. **That is technology-enhanced healthcare.**

In 10 to 20 years, I believe we'll look back on many of our medical practices today and regard them as antiquated as applying leeches for bloodletting. In the coming decade, for example, we will begin to realize the benefits of computing and genomics in determining patient care. For example, modern medicine delivers anesthesia based on a number of factors, such as height, weight, and age. But people metabolize it very differently, and you can't know how an individual will react unless you look at the genome. For the 20 percent of people for whom drugs do not work, it's usually because of their specific DNA. But since this is something we're currently not tracking, physicians are left to trial and error.

When we talk about technology-enhanced healthcare and the future, doctors should know what works for each type of person— perhaps based on what has worked for similar people in similar situations in the real world in the past.

GETTING THERE

A View Beyond Healthcare

Remember when you had to call or visit a travel agent to book a trip? That was partly because the computer systems that facilitated the ticketing transactions required extensive training and special access to use. Then came the Web and the emergence of consumer-friendly travel sites like Kayak.com, which (among other things) put an intuitive front-end on legacy, behind the scenes Global Distribution Systems like Sabre. (These systems were created back in the 1950s for the purpose of rate and availability planning and sharing between airlines.) The back-end transaction processing system is still there; but now, as you click your way to that beach vacation, you use Kayak—and Kayak works with Sabre. In this way, Kayak and other sites like it have made booking travel a comfortable and completely self-service experience for consumers.

Now think about healthcare IT and today's EHRs. Unlike the travel industry, which has mastered the art of delivering a seamless, easy-to-use interface for users, the healthcare industry is still requiring its users—doctors—to endure outdated and complicated systems every time they log in. It's no wonder, then, that we have to put our physicians in a classroom for days just to teach them to enter an order. Meanwhile, nobody has ever taken a class on how to use Kayak to book a trip.

Moving forward, the government needs to deliver realistic rules and regulations. As a nation and an industry, we need to foster creativity and innovation, rather than hinder it. From a technology perspective, it has been challenging to innovate while the industry was focused on following thousands of pages of Meaningful Use regulations and related "Certified EHR Technology" specifications—the Meaningful Use final rule released in October 2015 alone was nearly 800 pages. Mercifully, it seems that the Meaningful Use program may end soon. Hopefully whatever comes next will support the kind of innovation the industry needs.

We must look to data, data scientists and innovative start-ups.

EHR vendors aren't going to get us to technology-enhanced healthcare. We are at such an exciting time, with data scientists working to apply data science techniques to our industry. For example, medical research and development is poised to move from a traditional molecular "hypothesis/proof" model to a data-centric "observation/analysis" model, in which it's possible to do a trial without a (clinical) trial. Upwards of 90 percent of Americans are willing to share their medical data to benefit care and treatment research.[7] We currently have enough institutions with enough data to build algorithms and apply them to other populations in such a way that we can change—and dramatically improve—healthcare.

We will start to see a change over the next several years as the Meaningful Use program winds down and we are able to get back to innovation that's focused on streamlining physician workflow and improving patient health at the local level rather than complying with government mandates.

THE "REDUCE MRSA TRIAL"

MRSA[8]**:** Methicillin-resistant Staphylococcus aureus, an infection caused by a type of staph bacteria that's become resistant to many of the antibiotics used to treat ordinary staph infections.

Conducted by: Hospital Corporation of America (HCA), in partnership with researchers from the CDC, Harvard Pilgrim Health Care Institute and Harvard Medical School, University of California Irvine School of Medicine, Rush Medical College and Washington University.

Made possible by: HIS (Hospital Information Systems). When the data was on paper, the "Reduce MRSA trial" was not even a possibility; it wasn't until records were housed electronically that physicians and organizations like HCA and CDC could look at the treatment and outcomes of 74,000+ patients to determine the best approach for reducing MRSA in hospitals.

- **74 intensive-care units at 43 hospitals**
- **More than 74,000 patients**
- **18-months**

Before the trial, the CDC didn't have enough information to determine which of three treatment approaches was most effective:

- **Option 1:** screen patients for MRSA and, if they test positive, isolate them from other patients.
- **Option 2:** screen patients for MRSA and, if they test positive, isolate them and apply the "decolonization" (eradicating bacteria by using antimicrobial soap and nasal ointment to prevent bacteria from entering the bloodstream).
- **Option 3:** decolonize all patients immediately on admission to intensive-care units.

THE "REDUCE MRSA TRIAL"

The third approach proved unequivocally the best. Universal decolonization reduced all bloodstream infections, including those caused by MRSA, by 44%. (The other approaches were not nearly as successful; a negligible change in the reduction of bloodstream infections using the first approach and a 22% reduction with the second).

The results have helped educate and inform prevention and treatment strategies across healthcare facilities, across the country.
The question we need to be asking ourselves:
"What other answers to pressing questions can we find in the data?"

While the "Reduce MRSA trial" demonstrated what's possible when we have the right tools in place, it also highlights how behind modern technological capabilities we still are in healthcare. Just think about the (unnecessary) complexity. This study required extensive manual work to produce the result. It's as if you went shopping on Amazon to buy a new sweater, and Amazon had to commission a study to determine what other things you might purchase by studying what other shoppers who bought that same sweater also purchased. (This is exactly how consumer behavior was studied back in the '80s and '90s by mining data from point-of-sale terminals.) Today, this is all done with modern technology, in real time. It could be done in healthcare, too.

Chapter 2:
The Shackled Physician

What's shackling today's doctors? There are many things about today's EHRs that cause physicians to feel burdened and "shackled"—from time-consuming training to unnatural workflows to alert fatigue. Here are six factors, straight from physicians themselves[9,10]:

1. EHR-driven workflow is unfamiliar.

It is dictated not by what the physician knows about treating patients and has been doing for years, but rather by the processes that exist deep inside the hospital.

2. Training.

Hospital EHRs require extensive classroom training that often takes physicians away from their patients for days. By definition, anything that requires individuals as smart and competent as physicians to spend days in training is not intuitive and is not part of their natural workflow.

3. Process-centric structure.

Physicians waste a lot of time clicking around the hospital EHR to find all the information they need about a particular patient. That's because the data may live in multiple systems/modules, and the systems are structured in a process-centric way rather than a patient-centric way.

4. Alert fatigue.

This issue, which is rampant today, occurs when there are so many alerts that physicians no longer pay attention to them.

5. Cluttered notes.

In many computer systems, physicians are encouraged to dump large amounts of clinical information into their notes, providing little value for the next clinician who reads them. As a result, physicians are spending more time sifting through lengthy clinical notes trying to discern the vital nuggets of information necessary to inform the care they'll deliver to their patients.

6. Messy medication reconciliation.

Ensuring that patients' medications are accurately, completely and promptly reconciled between home and hospital, and back again, can be an agonizing process for nurses and doctors.

These issues cause doctors to work more hours while actually decreasing productivity. And, in a world where patients get to "score" doctors based on their satisfaction with a visit, doctors are held to higher standards than ever before—all while "shackled" to IT systems that are unnatural and inefficient.

BOTTOM LINE

We need to make it easier for doctors to do their jobs. An important outcome of that, of course, is to improve the end result—patient care.

Physicians are the most expensive and limited resource in the healthcare system. Logic suggests that IT should maximize that precious resource—not hinder it. As hospitals weigh their software options, the value of physicians' time and expertise should figure prominently in any calculation. If a hospital's computer system is not yet truly helping physicians do their jobs as best they can, IT must up its game. After all, physicians, not computers, are still the primary determinant of clinical outcomes.

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DOCTORS NEED TO HAVE A SAY

EHRs grew out of the computer systems that run the hospital's inner workings—patient scheduling, admission and discharge, staff payroll and accounts receivable. For system designers, physicians' needs were an afterthought. And that's why the typical hospital EHR frequently makes doctors who use it less efficient and productive—and far more frustrated—than they ought to be.

The American Medical Association recently launched a new initiative—"Break the Red Tape"[11] movement—to highlight the problems and challenges facing physicians today. In a July 2015 town hall meeting, physicians voiced their frustrations with EHRs: "…areas of particular concern included workflow problems, decreased productivity, lack of interoperability, the inability to meet Stage 2 of Meaningful Use and the cost of the systems. Several stated they were so frustrated with their EHRs and/or the Meaningful Use program that they either stopped using their EHR or opted not to participate and incurred the penalty."[12]

> **We have a technology that brings graduate degree-educated people to their knees. There's something not right here.**
>
> —Steven Stack, MD, AMA President

SHARE:

Chapter 3:
Victimized Patients:
How Healthcare IT's "Delay" is Affecting Care

While the impact today's healthcare IT (or lack of technology innovation) has on doctors is clear, it's important not to overlook those ultimately impacted the most by poorly-designed systems: **THE PATIENTS.**

The care doctors provide to patients is impacted by so many things, and how they work (their workflow) is one of them. Therefore, patients should care how their doctors feel about the systems they use; whether they see it or not, it ultimately impacts them and their care. From the notes taken about their visit to their health concerns to the medication prescribed, a patient's experience can be influenced significantly by the system a doctor uses, and how he or she uses it.

Unfortunately today's EHRs have done little more than "pave the cow paths." We've gotten rid of paper in the hospital and made processes electronic, which is why EHRs can legitimately claim to have reduced transcription errors.

That's great—but why are the processes in the electronic world the same as they were on paper? Why haven't we rethought the process and the workflow and the user experience? Eliminating paper is just table stakes; the critical next phase is to do for healthcare what Uber has done for transportation: Reinvent the process so it's optimized for and native to the technology that enables it. That's where significant benefits will be realized, including (and most importantly) improvements in patient care.

A PROFILE: THE EMPOWERED PATIENT

According to Judith H. Hibbard[13] (Professor of Health Policy in the Department of Planning, Public Policy and Management, University of Oregon; Clinical Professor, Department of Public Health and Preventive Medicine, Oregon Health and Sciences University):

"*The vast majority of Americans remain relatively uninformed and passive recipients of health care services and thus lack the confidence and skills needed to fully engage in their health care.*"

Although human genome sequencing is not commonplace today, as I mentioned earlier, that is about to change. Michael Christman, President and CEO of the Coriell Institute for Medical Research, predicts that within five to 10 years, children will have their DNA sequenced at birth.

"*The information will simply become part of an enduring set of data from which different specialists and different electronic medical records can draw down the pieces of the genome that are relevant for determining how a drug might work or the risk of a certain disease and use that as part of everyday care,*" he says.[14]

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SHARE: 19

A PROFILE: THE EMPOWERED PATIENT

But patients and physicians can—and should—advocate for change.

Today, patients have access to a vast body of information—the notes a doctor took, quality of care rankings, the level of personalization provided—and it's only going to increase. The patient of the (near) future is going to choose alternate care when she experiences poor admin practices, or doesn't feel a connection with her doctor. And she will know when technology inefficiency negatively impacts her quality of care, whether it's due to admin issues or diagnosis.

Lygeia Ricciardi[15] (Former Director, Office of Consumer eHealth, Office of the National Coordinator (ONC), US Department of Health & Human Services): **"Getting access to personal health information is the start of engaging patients to be full partners in their care."**

A PROFILE: THE EMPOWERED PATIENT

Healthcare IT is shifting from a "build it and they will come" technology-centric model to a "they need us to come to them" patient-centric model.

And, to keep up, many healthcare systems are creating jobs and communities focused on meeting the patients where they are.

- Hospitals are responding to this shift by hiring, appointing and organizing individuals and groups to focus solely on the patient experience. For example[16], HCA appointed Lyn Ketelsen as its first Chief Patient Experience Officer this year. Capella Healthcare has Patient Experience Officers in each of its hospitals.
- Saint Thomas Health, a Nashville subsidiary of non-profit Catholic hospital operator, Ascension Health, started a patient advocacy committee to bring in perspectives from people who don't work within the walls of a hospital or clinic.

In this new model, patients, doctors and systems will all be responsible for improving not only experiences, but care. And, with patients at the center, they are well positioned to set expectations for their own experiences.

With the government, businesses, physicians and patients all working towards the same goal—improved quality of care and outcomes—I believe in the not-so-distant future we will be able to say we've truly achieved technology-enhanced healthcare.

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Resources

Introduction
[1] **Gazette.net** — "Contractors Hungry For Stimulus"

Chapter 1
[2] **HiTechAnswers.net** — "Meaningful Use"

[3] **HealthIT.gov** — "Meaningful Use Definitions & Objectives"

[4] **HIStalk2.com** — "Monday Morning Update 12/28/15"

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[6] **AmericanEHR.com** — "Physician's Use of EHR Systems 2014"

[7] **FierceMobileHealthcare.com** — "Majority of consumers will share health data, embrace wearable mHealth devices"

[8] **WallStreetJournal.com** — "A Big Step in the Fight Against Superbugs"

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[9] **HealthcareGlobal.com** — "Why Patients Should Care How their Doctors Feel About EHRs"

[10] **HITconsultant.net** — "#HIMSS15: 70% of Physicians BelieveHealth IT Decreased Patient Engagement"

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[12] **FierceEMR.com** — "Docs air EHR frustrations at AMA town hall"

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[13] **NPSF.org** — "Safety is Personal"

[14] **HHNmag.com** — "Six Things Consumers Will Know About You"

[15] **WallStreetJournal.com** — "The Health-Care Industry Is Pushing Patients to Help Themselves"

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About The Author

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.

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