

# PRACTICALITY

**MUCH MORE  
THAN I.T.**

## **OPTIMIZATION E-BOOK**

Authors:

**Jim Boyle**

Vice President of Information Services  
St. Joseph Heritage Healthcare

**Sue Schade**

Chief Information Officer  
Stony Brook Medicine

**Justin Campbell**

Vice President, Strategy  
Galen Healthcare Solutions

**Julie Champagne**

Strategist  
Galen Healthcare Solutions

[galenhealthcare.com](http://galenhealthcare.com)

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## Foreword

KPMG's recent survey of CHIME members found that at least 38% of CIOs are investing in EHR optimization projects this year. They plan to spend more on EHR optimization than any other area of healthcare information technology. Why are so many planning to invest in improvements this year? The answer is simple: Doctors and nurses still don't like their EHRs. The solution, however, is more complex.

So much of the focus of an EHR implementation is on the go-live and all the other aspects that precede a practice's launch of their new system. EHR optimization is the process of refining an install of software to serve a practice's own needs. This tends to focus on clinical productivity and efficiency.

Poorly executed implementation is one of the main reasons physicians and other users dislike their EHRs. Given the differences between individual implementations, does one EHR have distinctive superiority over others? The context of the question is everything. What are the specific needs of the hospital? What upcoming challenges need to be addressed? If these and other questions are not included in a hospital's implementation planning, it is not surprising that there's a flood of serious problems and complaints.

"You commonly hear that clinicians understand and accept EHRs are here to stay but still acknowledge how cumbersome certain features are. I've been involved in different optimization efforts at organizations post-implementation, and I will say we haven't focused so much on ROI as we have workflow and user satisfaction. You often get into a situation with a big implementation that at a certain point you must get it done and start creating that list of things that are going to be in the next phase of optimization. Once the go-live is complete and you've stabilized, you start looking at your growing optimization list." – Sue Schade, Principal, StarBridge Advisors, LLC

Before an EHR optimization can be considered, users must first learn the basics of their current EHR technology and take the time to adjust to its nuances. Once this adjustment period has passed, then the conversation can turn to optimization opportunities. EHR design and customization is a process that is never finished. The ever-changing medical practice guidelines, and federal and state regulations mean that EHRs and workflow continue to develop. Regardless of how well or poorly your EHR was installed, an organization will have to make sure their EHR is changing with them.

"Our providers are looking at this thoughtfully and are actively involved in it, but we'll know more when we get into training and go-live. I've been through enough of these to know that everything looks good in a demo and you need to get through the first couple of weeks before you figure out what have been the great wins and what have been the challenges that you didn't appreciate until you got there." –Dr. R. Hal Baker, Sr. VP Clinical Improvement & CIO, WellSpan Health

The push for value-based care and reimbursement has raised new needs for EHR optimization among physicians. A recent Black Book survey indicated that most practices are demanding more integrated and useable EHR, practice management programs, and revenue cycle management system as a result. Essentially, every hospital must continuously dedicate time and talent to workflow and other operational improvements.

In this e-book, we cover the cost of EMR replacement and the benefits of clinical optimization; how optimization can work through application portfolio rationalization, efficiency and automation; and how to measure the success of your optimization initiative. Implementing EMRs out of the box, most HDOs leveraged prescriptive, templated workflows to speed deployment. Often, this came at the expense of efficiency. We look at how adopting a data-driven approach to optimization provides organizations with the ability to diagnose and correct problems by measuring and evaluating performance across specific metrics. Looking at the broken promises of the EMR, we highlight the massive opportunities that exist to harvest EMR operational data for workflow improvement.

Gain perspectives from HDO leaders who have successfully navigated EMR clinical optimization and refine your EMR strategy to transform it from a short-term clinical documentation data repository to a long-term asset.

"I think we're moving into a very interesting time. We still haven't quite figured out how to optimize our electronic health record systems. We still have physicians struggling with utilization of these systems, yet now we're being asked to add on new technologies whether it's connected health or population health initiatives." – Jeff Weil, CIO, District Medical Group



## The Value of EMRs: Broken Promise or Unintended Consequences?

HIT Consultant | Written by Justin Campbell, Vice President, Galen Healthcare Solutions | November 6, 2017

In the world of healthcare many are tempted to believe in panaceas. There will be a magic bullet that finally cures the worst diseases. There will be a regulatory fix that will bring greater benefits to more people at reduced costs. There will be technological breakthroughs that will facilitate the digitization of medical records and, as predicted by President Obama in 2009, “cut waste, eliminate red tape, and reduce the need to repeat expensive medical tests.”

The goals are worthy and the efforts will never cease, but progress is not the same as success. The potential benefits of Electronic Medical Records remain valid, but results to date have too often fallen short.

For example, the percentage of hospitals in the United States utilizing digital records increased between 2008 and 2014 from 9.4% to 75.5%. But this startling growth obscures the fact that it was not always possible to transfer a patient chart from one healthcare provider to another. In fact, 56% of hospitals received electronic records from other practices last year but only 40% managed to merge the information into their own databases. Doctors report that the software they use makes their jobs harder. Fewer than 10% say they can exchange records in their entirety by means of their digital systems.

Nurses are also frustrated. An athenahealth survey quotes a nurse manager who says, “we customized many programs, (but) they don’t necessarily speak to each other.” A CNO reports, “When we purchased this system four years ago, we were told that everything would be unified on one platform within two years, but this did not happen and will not happen.”

Exacerbating these difficulties is the fact that EMRs were inherently designed for data entry and structured data gathering, with workflow and clinical decision support tacked on. It’s inherently a multi-platform, multi-vendor issue, as the EMR has complex “evolved” data schema and is poorly suited to unlock the data, thus creating interoperability challenges between health information systems and healthcare delivery organizations.

### EMRs Should be a Means to an End: Are They?

What is the purpose of an EMR? It is not simply a short-term clinical documentation data repository. The capture of information is only the most basic feature of an EMR. Health

delivery organizations must move from using EMRs as systems of records to making them systems of engagement, to transition from EMR-centric improvement to strategic improvement. The greatest value that can be derived from EMRs is to leverage their data to drive strategic decisions, improve patient care and control costs. A data-driven approach provides organization with the ability to diagnose and correct problems by measuring and evaluating performance across specific metrics.

Yes, this is easier said than done. The strategic use of data has largely been embraced by all providers. What has been so frustrating is the complex task of executing data’s strategic uses, of determining how to unlock the data, in short, we need a road map to the optimization of data. Here’s a guide to routes that have reached that destination.

### A Road Map to Making EMRs Optimal

If there is a single practical dilemma that most frequently undermines efforts to optimize EMR usage it is the temptation to do too much at once. To extend the roadmap analogy to its logical conclusion, you can’t plan a trip that will take you to Paris and Tahiti at the same time. There are many endpoints but if you try to get to each simultaneously, you’ll run out of gas.

Here are the most accessible targets, the areas that have historically generated the most tangible return on investment in the effort to optimize the data contained in EMRs:

- Rationalizing legacy clinical systems
- Establishing clinical quality markers that indicate co-morbidities or factors associated with an increased risk of infection
- Using automation to generate efficiency
- Eliminating care variation
- Leveraging the full capacity and capabilities of EMR note functionality
- Implementing an alerting regimen with notifications that drive insights to the point of care

Each of these targets can be achieved if measurable and attainable metrics are established at the outset. In our experience we have found the strongest foundation requires the following commonsense measures:

- Prioritize and address the basics: reliability, usability, security, privacy, training, and application support
- Redesign workflows to eliminate gaps in care and strengthen continuity of care
- Help clinical staff understand that IT can assist in the transformation of care
- Incorporate professional project planning and design
- Create a realistic budget
- Make all initiatives continuous and interdepartmental

We can break this down further by focusing on some typical frustrations of care givers.

If providers' workdays are unsustainably long, and/or have not returned to pre-EMR productivity levels, measure:

- System hours per day
- Proportion of encounters that include use of EMR documentation tools (versus free text)

If providers report that the amount of time they spend with patients has decreased and that patient wait times have increased, measure:

- Total patient wait time per encounter
- Total clinician face time per encounter

If nursing staff reports that it is taking longer to follow up with patients, measure:

- Average time to respond to patient calls
- Average time to contact patients regarding abnormal test results

If care teams are concerned that they are not managing their diabetic patients, measure:

- Compliance rates with preventative screening measures
- Average HbA1c scores

Employing this kind of disciplined, data-driven, outcomes-based approach to meet defined objectives will generate eye-popping, meaningful optimization. In one institution, where the total time of tasks per patients had been 5.93 minutes before optimization, it was 4.89 minutes afterwards, an 18% decrease. In real terms, if, for example, there are 20 visits per day, providers will be able to see an additional 3-4 more patients per day.

We know that EMRs have not yet realized their full potential, but a properly integrated and fully utilized system can establish the foundation for significant and sustained organizational improvements in efficiency, end user satisfaction and data quality. In short, you can find the way to render the value of EMRs a reality.

## How to realize the benefits of EMR optimization

Becker's Hospital Review | Written by Justin Campbell, Vice President, Galen Healthcare Solutions | August 08, 2017

Healthcare organizations spent more than 20 billion dollars adopting electronic health record systems from 2008 to 2016.

Although the 2009 American Recovery and Reinvestment Act gave health systems a financial incentive to achieve Meaningful Use of Electronic Medical Records, many healthcare organizations have struggled to capture value. As the capabilities and sophistication of EMRs continue to grow, there is a widening divide between healthcare organizations that harness the capabilities for a competitive advantage and those that are crippled by poor usability, workflows and adoption.

### The Cost of EMR Replacement

To meet the requirements of the Meaningful Use program, most EMRs were implemented using a Big Bang approach, and very rapidly. But this approach has produced several unintended consequences and widespread user dissatisfaction. In 2013, with the process well underway throughout the nation, two thirds of doctors polled said they used EMR systems unwillingly, with 87% of these aggravated physicians complaining about usability and 92% of physician practices complaining that their EMRs were "clunky" and/or too difficult. Specifically, only 35% reported that it had become easier to respond to patient issues, one third said they could not more effectively manage patient treatment plans, and despite the belief that technology would permit caregivers to spend more time with their patients, only 10% said this was occurring.

Recently, three prominent Boston-area physicians wrote about "Death by A Thousand Clicks." They argued that when doctors and nurses turn their backs on patients to pay attention to a computer screen, they cannot offer the "time and undivided attention" required to provide the right care. They complain that multiple prompts and clicks in an Electronic Health Record system can adversely affect patients and contribute to physician burnout.

The medical side was not alone in expressing dissatisfaction. Hospital executive and IT employees who had replaced their EMR systems reported higher than expected costs, layoffs, declining revenues, disenfranchised clinicians and serious misgivings about the benefits gained:

- 14% of all hospitals that replaced their original EMR since 2011 were losing inpatient revenue at a pace that would not support the total cost of their replacement EMR
- 87% of hospitals facing financial challenges now regret the decision to change systems
- 63% of executive-level respondents admitted they feared losing their jobs as a result of the EMR replacement process
- 66% of the system users believe that interoperability and patient data exchange functionality have declined

Today, HDOs are at a crossroads. They can start over with a new EMR or optimize the one they have.

Many HDOs are cash-strapped and the transition from fee for service to value-based care exerts downward cost pressures, exacerbating the problem. But patchwork fixes have not improved matters. Alternatively, some attempted to do too much too quickly and became frustrated because they lacked the depth of experience and knowledge to perform remediation. And, as KPMG concluded after studying the problem, "The length of time to resolve the issues increased and frustrations mounted as clinical, senior management, IT and human resources staff found themselves spinning their wheels."

Nevertheless, a recent survey conducted by KPMG in collaboration with CHIME, shows 38% of 112 respondents ranked EMR/EMR optimization as their top choice for the majority of their capital investments for the next three years.

### The Benefits of EMR Clinical Optimization

The case for optimization is strong. Optimization should help HDOs meet regulatory requirements, enhance the quality and cost-effectiveness of patient care and increase the ROI on technology. Furthermore, optimization of medical records ought to increase patient satisfaction because information will be more transparent and more accessible. If this proves true, it will take less time to obtain care and patients will also experience more intuitive, user-friendly payment systems.

Optimization should also contribute to higher levels of satisfaction among physicians whose work flows will be more flexible, whose hours will be reduced and who will more easily secure information because it has become more transparent.



How is it panning out in practice, now that more and more health care organizations are committing to the clinical optimization of their EMRs?

The short answer: even better than any dared hope:

- Nurses are saving 28-36 minutes per shift
- Lab test use and drug costs have declined by 15%
- The average length of stays has been reduced by 5% to 10%
- The incidence of adverse drug events dropped by 334 to 481 annually
- Turnaround time for orders was cut by at least one hour
- Vaccination compliance reached 99%
- Costs of paper forms were reduced by 67%
- Charge capture improved to 64%
- Costs of transcriptions were cut by 61%
- Administrative staff (82%) reported noticeable improvements to the operational or financial capabilities of their practice management and EMR systems

Matching these striking improvements for healthcare organizations is the evidence from physicians:

- 59% report cost savings by eliminating management and paper records storage
- 70% report faster, more accurate service billing and overall time savings
- 53% report increases in worksite efficiency
- 71% describe their EMR vendor to be "meeting or exceeding" their expectations for EMR optimization

## How Optimization Can Work

Committing to the optimization of EMR systems is not like waving a magic wand. It must be executed with a clear notion of what must be done and how to do it. We see two focal points that will lead to success:

### Application Portfolio Rationalization:

At most HDOs, IT operations feature an assortment of disconnected applications, with most large organizations deploying thousands across the enterprise. But these systems are costly to maintain and represent an ever-growing, significant liability the longer they exist. With consolidation of organizations into large integrated care delivery networks and growing dissatisfaction with the efficiency of existing electronic healthcare record systems, many of these clinical applications can and are being retired. Thoughtfully rationalizing some of those siloed legacy systems can produce a significant reduction in TCO. For example, the total cost of ownership can range from \$1MM to hundreds of millions per year, often requiring ~50% of incremental annual IT operating costs on top of licensing costs. Archival of legacy data allows for legal decommission of legacy systems, resulting in savings of 80-95% when compared to the cost of systems' licenses and infrastructure.

### Efficiency and Automation:

EMR optimization can generate cost reductions up to 10% through gains in operational efficiency. Time-stamped, event data-driven workflow optimization - Clinical Cycle Management (CCM) – produces measurable productivity and efficiency gains, but more importantly, enhanced clinical decision support. Profiling an EMR application allows for robust and rich usage data gathering, including clicks, mouse movements, and time spent.

Analysis of these workflows, using a temporal query tool, allows for identification of bottlenecks, poor workflows, and other time sinks. It shows both individual user activity, as well as aggregate data, and lets you define logical EMR "tasks." It provides the basis for realizing workflow optimization efficiency gains through workspace modification, training, automation through macros and EMR UI Augmentation. Such analysis also facilitates the ability to introduce real-time clinical decision support through workflow interventions. Taking this a step further, clinician generated clinical automation would completely automate a clinician decision

### Measuring Success

An implemented EMR does not guarantee a return. Organizations that fail to properly integrate and leverage EMR capabilities can quickly find themselves in post-implementation purgatory, paralyzed by disenchanting users

and underwhelming provider performance. Adopting a data-driven approach to optimization provides organizations with the ability to diagnose and correct problems by measuring and evaluating performance across specific metrics.

Suppose, for example, that the workdays of providers are unsustainably long, or, that despite the installation of an EMR, productivity is no better than it was before the new system was adopted. This situation can be addressed if the new EMR collects – as it must – easily reportable data. There should be operational data gathering that records messaging and tasking to illuminate workflow opportunities and project goals to be benchmarked prior to optimization efforts. If workdays are still too long and productivity is still too low, the EMR must be set up to diagnose specific windows of time – system hours per day and/or the proportion of encounters that include the use of EMR documentation tools (versus free text).

If providers report that the amount of time they spend with patients has decreased and that patient wait times have increased, the EMR must be programmed to assess total patient time per encounter and total clinician time per encounter. If the nursing staff reports that it is taking longer to follow up with patients, there must be records of the average time it is taking to respond to patient calls and of the average time required to contact patients regarding abnormal test results. If care teams express concern that they are not effectively managing their diabetic patients, for example, it is essential that compliance rates with preventing screening measures and average HbA 1c scores are accurately captured.

## **Conclusion: Driving Outcomes Through Optimization**

EMRs have not yet achieved their full potential, providers are weary of their inefficiencies, and more resources must be spent to optimize the original investments. But, a properly integrated and fully utilized system can establish the foundation for significant and sustained organizational improvements in Health

Delivery Organization efficiency, end-user satisfaction, and data quality – and the full utilization of an EMR to its capacity will rationalize and justify investment. To accomplish this, HDOs must address the deficiencies that threaten productivity, including proper training and IT support, full utilization of automation capabilities, and workflow optimization. If this is done, it will result in an increase in provider capacity. And by increasing provider capacity by an additional three visits per day (averaging \$150 per visit in reimbursement), HDOs have the potential to increase revenue by more than \$60,000 per provider each year.

For many EMR end-users, performance is still impeded, causing continuing and often mounting frustration. An AMGA Physician Retention Survey found 11.5% provider turnover rate among advanced practice clinicians. Losing and replacing a single provider costs a minimum of \$250,000 but the actual cost often exceeds \$1 million. A focus on provider retention through enhanced RMR interaction produces truly significant returns; increasing retention by just four providers equates to \$1 million to \$4 million in savings in costs associated with provider loss and replacement.

With the move from fixed-fee reimbursement to value-based care, HDOs are required to demonstrate and document their effectiveness measuring and reporting outcomes. With outcomes measures directly linked to financial incentives and reimbursement rates, data liquidity and quality is of greater importance, rendering accurate information an invaluable asset. Insight into performance and outcomes data allows HDOs to achieve quality metrics and foster sustained performance improvement.

A robust EMR optimization strategy can—and will—help HDOs realize the promised value from implementation of an EMR. EMR optimization is the driver of strategic value and can—and will—become a sustainable competitive advantage through leadership, innovation and measurement.



## 8 Metrics to Quantify the ROI of Data-Driven EMR Optimization

Galen Healthcare Solutions Blog | Written by Justin Campbell, Vice President, Galen Healthcare Solutions | July 21, 2017

In implementing EMRs out of the box, most HDOs leveraged prescriptive, templated workflows to speed deployment. Often, this came at the expense of efficiency, as best-practice, canned workflows may work for some groups, but also are likely to introduce unnecessary clicks. Customization of workflow to streamline is a large area of opportunity for optimization. Not only does it translate to tangible dollars and cents, but it positively impacts end-user satisfaction, enhances clinical decision support, and allots more time for your providers to interact with patients.

### DATA: IT IS OBJECTIVE

- **A function of an EHR is collection of data in a fashion that can be easily reportable**

- Operational Data Gathering



- Reporting off of messaging/tasking to help better understand where workflow opportunities lie.
- Can Project goals be benchmarked prior to optimization efforts
- Data can influence priorities surrounding build/configuration efforts.
  - E.g. Care guides/plans based on diagnosis assessed in specific time windows.

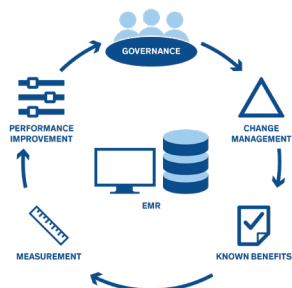
Organizations that fail to properly integrate and leverage EMR capabilities can quickly find themselves trapped in post-implementation purgatory, paralyzed by disenchanted users and underwhelming provider performance. Adopting a data-driven approach to optimization provides organizations with the ability to diagnose and correct problems by measuring and evaluating performance across specific metrics.

Insight into performance and outcomes data allows for HDOs to achieve quality metrics and foster sustained performance improvement. A robust EMR optimization strategy can help HDOs realize the promised value from implementation of an EMR. EMR optimization is the driver of strategic value, and can become a sustainable competitive advantage through leadership, innovation and measurement. Success requires a disciplined, data-driven, outcomes-based approach to meet a defined set of objectives.

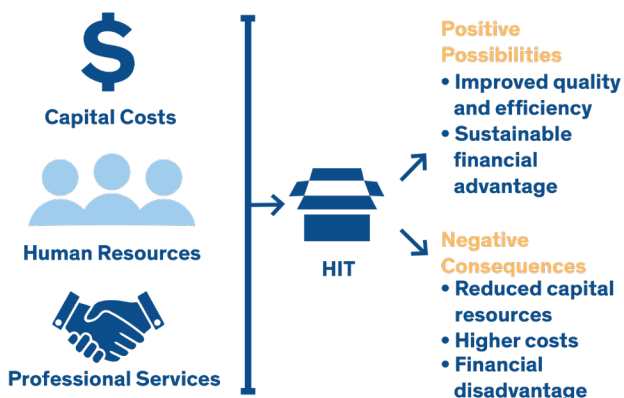
Problem	Suggested Metrics
<b>Providers' workdays are unsustainably long, and/or they have not returned to pre-EMR productivity levels</b>	<ul style="list-style-type: none"> <li>• System hours per day</li> <li>• Proportion of encounters that include use of EMR documentation tools (versus free text)</li> </ul>
<b>Providers report that the amount of time they spend with patients has decreased and that patient wait times have increased</b>	<ul style="list-style-type: none"> <li>• Total patient wait time per encounter</li> <li>• Total clinician face time per encounter</li> </ul>
<b>Nursing staff reports that it is taking longer to follow up with patients</b>	<ul style="list-style-type: none"> <li>• Average time to respond to patient calls</li> <li>• Average time to contact patients regarding abnormal test results</li> </ul>
<b>Care teams are concerned that they are not effectively managing their diabetic patients</b>	<ul style="list-style-type: none"> <li>• Compliance rates with preventative screening measures</li> </ul>

EMRs have not yet achieved their full potential, providers are weary of the inefficiencies, and more resources must be spent to optimize the original investments. A properly integrated and fully utilized system can establish the foundation for significant and sustained organizational improvements in HDO efficiency, end-user satisfaction, and data quality.

## Initial Focus EMR-Centric Improvement Effort



## Long-Term Focus Strategic Improvement Effort



## Outcomes

### Task Optimization

Task	Total time of tasks per patient (min)
Pre-Optimization (Oct 2013 - Sept 2014)	5.93
Post-Optimization (Oct 2013 - Nov 2014)	4.89
<b>Improvement</b>	<b>18%</b>

Actual baseline metrics and outcomes of task completion time pre- and post-optimization

### Signed Notes: Finalized by 6PM

Provider	Nov 2013	Nov 2014
A	70%	94%
B	74%	95%
C	69%	98%
D	75%	94%
E	64%	63%
<b>Grand Total</b>	<b>70%</b>	<b>89%</b>

Actual completion times for signing notes by 6PM versus 10PM pre- and post-optimization.

### Outcome

18% decrease in total time to complete tasks post-optimization effort of patient-centric tasks

What does this mean in real terms?

- Using 20 visits per day as an example, an 18% improvement could mean seeing an additional 3-4 patients per day

### Outcome

16% increase of notes finalized by 6PM

What does this mean in real terms?

Direct correlation to:

- Provider satisfaction
- Improved patient care
- No longer taking work home

## Top 4 Efficiencies From Leveraging EMR Metadata to Drive Optimization ROI

Galen Healthcare Solutions Blog | Written by Justin Campbell, Vice President, Galen Healthcare Solutions | July 19, 2017

It's indisputable that there are tremendous insights to be gleaned from the interaction with clinicians and EMR software. Arcadia Healthcare Solutions did a great job of illustrating this in its recent data visualization "A Day in the Life," research into click-level data. The data visualization was motivated by a WBUR piece authored by three prominent Boston physicians, who decried the impact of poorly-designed or poorly-implemented electronic medical records on patient care.

Inspired by an exchange in last Friday's #HITsm tweetchat, it spurred a need to highlight the massive opportunities that exist to harvest EMR operational data for workflow improvement. In the tweetchat, healthcare workflow guru, Chuck Webster, MD postured that we should be focused on workflow as the issue rather than the data. Chuck's thesis is supported by his plethora of research on the topic. In his research, Chuck postures that MU incentivized the wrong things, resulting in poor EMR interoperability, functionality, reporting, navigation & stability.

While its true that big-bang EMR implementations – with prescriptive workflows – were a direct result of the incentives put in place, they were a means to an end. One of my colleagues, Robert Downey, Vice President, Product Development, elaborated on this point at Galen's Partner Advisory Council.



# 4,000

Mouse clicks per shift, per doctor

**IF 1 CLICK = 1 SECOND**

# 66

Minutes clicking  
per shift, per doctor



**365 days**  
per year



**2 doctors**  
per shift



**803 hours**  
spent clicking

At 2.1 patients per hour...

# 1,686

Patients could  
have been seen

**IF CASH/PATIENT = \$100**  
THE COST OF THESE CLICKS IS

# 168,630



## The Broken Promises of the EMR

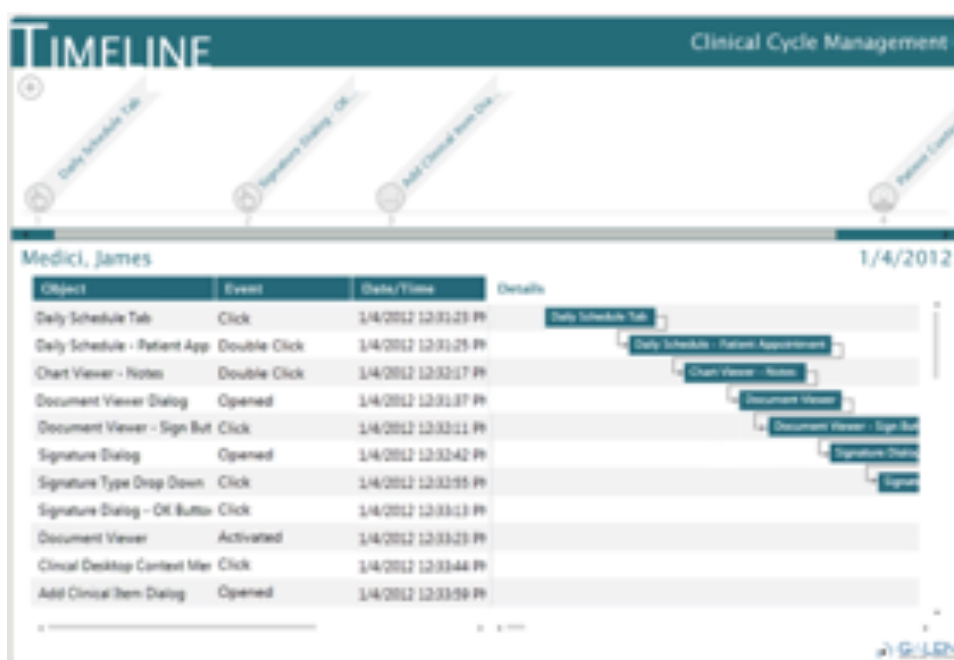
- They will save money
  - Save the healthcare organization money...
    - In-patient cost increases of 6% to 10%
    - Ambulatory cost increase of 2% to 3% (ignoring initial capital investments)
  - Save the “system” money...
    - Increased overall claims
- They will dramatically improve care
  - Early studies show little difference
    - Best practices met (in-patient)
      - 8% for advanced EMR usage
      - 7% for basic EMR usage
      - 9% for no usage
    - Quality Metrics (ambulatory)
      - No statistical difference between paper and EMR

## A Means to an End...

- Structured data gathering
- Facilitate large scale “clinical” trials
- Prerequisite for essentially everything else

## Poorly Suited to Unlock the Data

- Largely designed for data entry
  - Workflow Tacked On
  - CDS Tacked On
  - [Everything Else] Tacked On
- Don’t play well with others
  - Interface Hell
  - Few, if any APIs
  - Complex, “evolved” data schema
- Inherently a multi-platform, multi-vendor problem
  - Clinical (EMRs, care partners)
  - Claims (Clearinghouses, Payers)
  - Billing (HIM, PM, FMS CRMs)
  - Biometrics (Remote Patient Monitoring, IoT)
  - HR / Administrative (Peoplesoft, time tracking, etc.)
  - Financial
  - Genomic Data
  - Analytical (Risk analysis, population definitions, etc.)



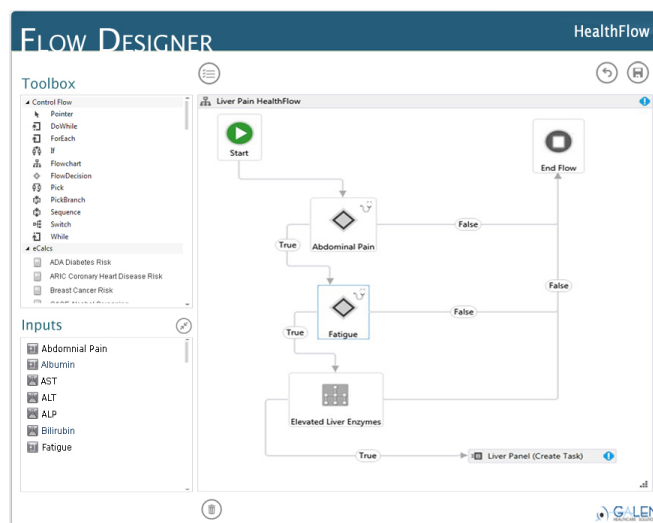
It's with this background that we introduce the opportunity to transform the EMR from a transactional system of record, to strategic asset, through time-stamped event data-driven workflow optimization: Clinical Cycle Management. Profiling an EMR application allows for robust and rich usage data gathering, including clicks, mouse movements, and time spent.

Analysis of these workflows, using a temporal query tool, allows for identification of bottlenecks, poor workflows, and other time sinks. It shows both individual user activity, as well as aggregate data, and lets you define logical EMR “tasks.” It provides the basis for realizing workflow optimization efficiency gains through: 1. Workspace modification, 2. Training, 3. Automation through macros, 4. EMR UI Augmentation.

Such analysis would also facilitate the ability to introduce real-time clinical decision support through workflow interventions. For instance, a doctor prescribing antibiotics for uncomplicated bronchitis or a doctor ordering an x-ray for lower back pain with no additional symptoms. Shown to the right is an illustration

of the concept of “smart tip” UI augmentation feature for the clinician. UI augmentation such as this improves user interaction, provides clinical decision support, and automates some UI-related tasks.

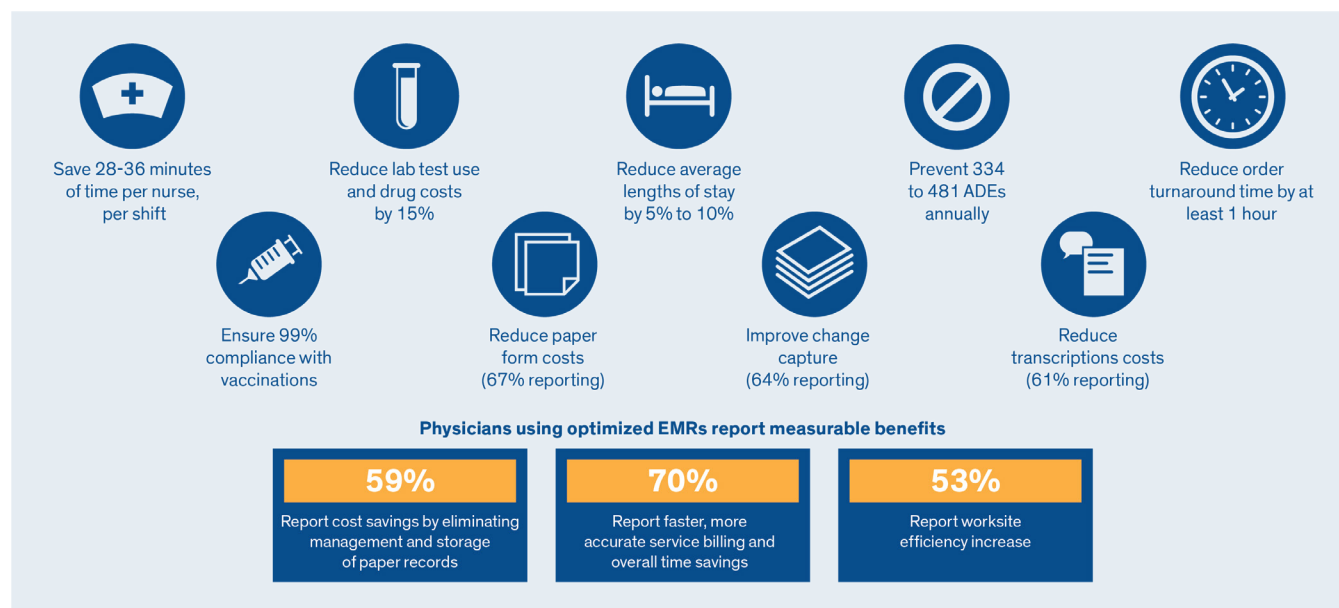
Taking this a step further, clinician generated clinical automation would completely automate a clinician decision. Below is an illustration of the concept for a clinician-generated clinical automation for liver pain.



Incredible potential exists, but data-driven optimization is no trivial endeavor. Gain perspectives from HDO leaders who have successfully navigated EMR clinical optimization and refine your EMR strategy to transform it from a short-term clinical documentation data repository to a long-term asset by downloading our EMR Optimization Whitepaper.

## EMR Clinical Optimization Series: EMR Clinical Optimization Infographic

Hospital EMR & EHR | Written by Justin Campbell, Vice President, Galen Healthcare Solutions | July 12, 2017



In this infographic, Galen Healthcare Solutions provides critical information and statistics pertaining to EMR optimization including:

- EMR Market Maturation
- EMR Capital Investment Priorities
- EMR as a Valuable Asset vs Required Repository
- Clinical Optimization Goals & Benefits
- Types of Clinical Optimization
- Clinical Optimization Effort & ROI Matrix





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# 168,630

EMR products get widely varying reviews. There is strong support and appreciation for EMRs in some HDOs, where the sentiment exists that the EMR is well-designed, saves time, and supports clinical workflows. That said, in other HDOs, providers using the same EMR complain that EMRs add work, decrease face time with patients and create usability issues and slowdowns. Multiple prompts and clicks in an EMR system impact patients and contribute to physician burnout. The resounding sentiment for these set of providers is that the EMRs are not designed for the way they think and work. Why then the varying response among providers to the same EMR products? Deficient implementations.

Under the pressure of moving ahead to meet the requirements of the Meaningful Use program, most EMRs were implemented using a Big Bang approach, and very rapidly. While this approach may have been the most effective to capture incentives, generic, rapid EMR implementation led to several unintended consequences, resulting in widespread user dissatisfaction. EMRs today serve more as a transactional system of record than a system of engagement. To be used to their full capacity, the different components and modules of the EMR should be evaluated against baseline metrics to harness additional capabilities including clinical decision support, analytics at the point of care, and efficiency of workflow. To realize lasting impact from the EMR, extensive post go-live enhancement and optimization is needed. Leveraging the operational data in the EMR system can support many initiatives to improve workflows, as well as clinical and financial performance. Prioritization of the levers that can be adjusted depends on the HDO's implementation baseline and strategic goals.

## Clinical Optimization Effort & ROI Matrix

 OUTCOME	 VALUE	 LEVER	 COST OPTIMIZATION	 REVENUE MAXIMIZATION	 QUALITY IMPROVEMENT	 EFFORT	 MONETARY ROI
<b>Improve Caregiver Productivity &amp; Patient Throughput</b>	<ul style="list-style-type: none"> <li>Decrease length of stay and increase the number of patients seen</li> <li>Access to care through greater efficiency</li> </ul>	<ul style="list-style-type: none"> <li>Charting tools</li> <li>Bed management</li> <li>Access to imaging</li> <li>Discharge planning</li> </ul>	Little to no impact	Direct impact	Secondary impact	4	\$\$\$\$\$
<b>Improve Patient Safety Support</b>	<ul style="list-style-type: none"> <li>Mitigate risks associated with hospital acquired conditions, adverse drug events and readmissions</li> </ul>	<ul style="list-style-type: none"> <li>Infection control</li> <li>Virtual patient monitoring</li> </ul>	Direct impact	Secondary impact	Direct impact	3	\$\$\$\$
<b>Streamline Key Patient Access Functions</b>	<ul style="list-style-type: none"> <li>Standardize processes and centralize quality assurance to reduce denials and limit back-end rework</li> </ul>	<ul style="list-style-type: none"> <li>Scheduling</li> <li>Insurance verification</li> <li>Registration</li> </ul>	Little to no impact	Direct impact	Secondary impact	3	\$\$\$\$
<b>Reduce Variability of Care</b>	<ul style="list-style-type: none"> <li>Use the software and workflows as designed and enhance EHR and operational governance</li> <li>Improved Clinical Pathways</li> <li>Standardization on best practice workflows</li> </ul>	<ul style="list-style-type: none"> <li>Organizational change management</li> <li>Clinical adoption</li> <li>Workflow standardization</li> <li>Insights gathered from advanced analytics</li> </ul>	Little to no impact	Direct impact	Secondary impact	3	\$\$\$\$
<b>Reduce Volume Leakage</b>	<ul style="list-style-type: none"> <li>Keep patients in network</li> </ul>	<ul style="list-style-type: none"> <li>Identification of patients' comorbidities</li> </ul>	Little to no impact	Direct impact	Little to no impact	2	\$\$\$\$
<b>Improve Clinical Decision Support</b>	<ul style="list-style-type: none"> <li>Drive care delivery and manage acute and chronic diseases by evaluating the patient's problem list in clinical documentation</li> </ul>	<ul style="list-style-type: none"> <li>Automated rules &amp; documentation</li> </ul>	Little to no impact	Secondary impact	Direct impact	3	\$\$\$
<b>Improve Operations</b>	<ul style="list-style-type: none"> <li>Real-time performance tracking</li> </ul>	<ul style="list-style-type: none"> <li>Business intelligence &amp; integrated dashboards</li> </ul>	Little to no impact	Secondary impact	Direct impact	4	\$\$\$
<b>Improve Quality of Care</b>	<ul style="list-style-type: none"> <li>Enhance patient care while minimizing provider risk associated with reduced reimbursement</li> <li>Decrease clinical variability</li> </ul>	<ul style="list-style-type: none"> <li>Population health &amp; disease management</li> <li>Quality monitoring &amp; reporting</li> <li>Transparent performance metrics</li> </ul>	Secondary impact	Little to no impact	Direct impact	5	\$\$\$
<b>Increase Patient Satisfaction</b>	<ul style="list-style-type: none"> <li>Increase volume of select services and procedures</li> <li>Enable patients to better manage their health</li> </ul>	<ul style="list-style-type: none"> <li>Wait times &amp; throughput</li> <li>Access to information (patient portal, online statement review, mobile technology)</li> </ul>	Secondary impact	Secondary impact	Direct impact	2	\$\$
<b>Optimize supply usage</b>	<ul style="list-style-type: none"> <li>Flag tests, orders and medications as high cost</li> <li>Embed alternate suggestions reducing unnecessary costs</li> </ul>	<ul style="list-style-type: none"> <li>Rules engine allows for outlining additional protocols in documentation and ordering tools</li> </ul>	Direct impact	Little to no impact	Secondary impact	3	\$\$

A robust EMR optimization strategy can help HDOs realize the promised value from implementation of an EMR. EMR optimization is the driver of strategic value, and can become a sustainable competitive advantage through leadership,

innovation and measurement. Success requires a disciplined, data-driven, outcomes-based approach to meet a defined set of objectives.

## EMR Clinical Optimization Series: EMR Clinical Optimization CIO Perspectives

Hospital EMR & EHR | Written by Julie Champagne, Strategist, Galen Healthcare Solutions | July 26, 2017

Most HDOs today face a decision: start over with a new EMR or optimize what you have. A poorly executed implementation, coupled with substandard vendor support, makes EMR replacement an attractive and necessary measure. Further, the increase in mergers and acquisitions is driving system consolidation and consequently increasing the number of HDOs seeking EMR replacement to address usability and productivity concerns.

Galen Healthcare Solutions spoke with two prominent health information technology leaders, who have quite a bit of experience in the optimization field to hear their views on the topic. Sue Schade, MBA, LCHIME, FCHIME, FHIMSS, is a nationally recognized health IT leader and Principal at StarBridge Advisors, providing consulting, coaching and interim management services. Jim Boyle, MPH, CGEIT is Vice President of Information Services of St. Joseph Heritage Healthcare (Anaheim, Calif.). In his current role, Jim oversees the delivery of applications and technology and is a member of the executive leadership team. Below are their perspectives. Opportunities for EMR optimization generally fall into three categories:

“ You kind of need to think of optimization as ‘this is a list of things we want to do.’ We are going to funnel it down to what we think we can do. You run a lot of things concurrently, and if things gain traction, you push the gas pedal on it. I thought optimization was going to be a little more integrated – we are going to tackle this, this, and this problem and wrap under optimization label. For us, it was a little fragmented - not that it was a bad thing - because we had the dedicated resources and project management to pull it all together. But it was doing a lot of different things across the board and not just one specific thing or two specific things.

– Jim Boyle, VP of IS, St. Joseph Heritage Healthcare

- Usability & efficiency: Improve end-user satisfaction and make providers more efficient and productive
- Cost Avoidance: Improve workflows to increase utilization and decrease variability
- Increase Revenue: Implement analytics to transition from volume to value

“ Usability and number of clicks are clearly something that we hear over and over from clinicians, more so for physicians, but I think it's an issue for our nurses as well. The main point with workflow is: do you adopt your workflow to the product or do you adopt the product to your workflow? I think there's some happy medium there and what you don't want to do is a lot of hard-coded customization, because every time you get a new upgrade from the vendor you'll have to do all the retro fitting; Organizations are trying to do less of that so that they can work within the base product. Vendors are exploring how they can be more user-configurable to adapt to the uniqueness of an organization and their specific workflows.

–Sue Schade, Principal, StarBridge Advisors; Interim CIO, Stony Brook Medicine





Recently, three prominent Boston-area physicians contributed an opinion piece to WBUR, “Death By A Thousand Clicks”. They postured that when doctors and nurses turn their backs on patients in order to pay attention to a computer screen, it pulls their focus from the “time and undivided attention” required to provide the right care. Multiple prompts and clicks in an EMR system impact patients and contribute to physician burnout.



“A lot of the issues of usability surrounded the visual design. We performed a lot of improvements to make how you get information easier. For instance, we put on one page visually versus one section, one piece of content, another section for labs, jumping in and out of screens, going back and forth. We improved the visual experience and realized efficiencies through consolidating clinical data and presenting in one place.

— Jim Boyle, VP of IS, St. Joseph Heritage Healthcare ”

HDOs should then limit their intake to what can be accomplished within one quarter, referred to as a sprint. Accountability should be assigned, and visual controls or Kanban should be leveraged.

For HDOs that experienced failed EMR implementations, making corrections and reengineering is a necessary first measure. Typically, a deficiency in the additional support for the system implementation is to blame, and employing qualified application support staff will help to address and resolve end user dissatisfaction.

“Once the go-live is complete and you've stabilized, you start looking at your growing optimization list. It's important that you have clear governance and have a partnership with your clinicians and IT so that your clinicians, with support from leadership, are driving the high priority changes that are needed in that optimization effort.

— Sue Schade, Principal, StarBridge Advisors; Interim CIO, Stony Brook Medicine ”

To realize lasting impact from the EMR, extensive post go-live enhancement and optimization is needed. Leveraging the operational data in the EMR system can support many initiatives to improve workflows, as well as clinical and financial performance. Prioritization of the levers that can be adjusted depends on the HDO's implementation baseline and strategic goals.

The most important deciding success factor for an optimization project is focusing effort and ensuring the scope is not too large. Further, it is of critical importance to set measurable and attainable metrics and KPIs to gauge the success and ROI of the initiative. Quantification of staff effort and IT investment is also important.

“Our physicians were at a tipping point. If you look at our physician engagement scores, there is a specific question around their rating of the organization's pursuit of an appropriate EMR strategy. Our physicians rated 30% below the benchmark on that score. The raw comments weren't too much around strategy, but rather the way the system was configured, the level of support that they had, and the ability to make change. We had a burning platform and this led us to write a value proposition to apply for operating capital for our division.

— Jim Boyle, VP of IS, St. Joseph Heritage Healthcare ”

## Contributors:

### Sue Schade

Sue Schade, MBA, LCHIME, FCHIME, FHIMSS, is a nationally recognized health IT leader and Principal at StarBridge Advisors providing consulting, coaching and interim management services. Sue is currently serving as the interim Chief Information Officer (CIO) at Stony Brook Medicine in New York. She was a founding advisor at Next Wave Health Advisors and in 2016 served as the interim CIO at University Hospitals in Cleveland, Ohio. Sue previously served as the CIO for the University of Michigan Hospitals and Health Centers and prior to that as CIO for Brigham and Women's Hospital in Boston. Previous experience includes leadership roles at Advocate Health Care in Chicago, Ernst and Young, and a software/outsourcing vendor. Sue can be found on Twitter at @sgschade and writes a weekly blog called "Health IT Connect" – <http://sueschade.com/>



### Jim Boyle

Jim Boyle, MPH, CGEIT is a Vice President of Information Services of St. Joseph Heritage Healthcare (Anaheim, Calif.). Jim Boyle is nationally recognized as part of a new generation of health care informatics professionals who understand IT's full potential to greatly improve peoples' lives. In his current role Jim oversees the delivery of applications and technology and is a member of the executive leadership team for St. Joseph Heritage Healthcare, which comprises over 860 medical group providers and 1300 affiliated physicians across California. Since joining St. Joseph Health 12 years ago, he has held eight different positions, including project manager, application analyst and IT director at Fullerton, Calif.-based St. Jude Medical Center. Jim can be found on Twitter at @JBHealthIT and LinkedIn.



### Justin Campbell

Justin is Vice President, Strategy, at Galen Healthcare Solutions. He is responsible for market intelligence, segmentation, business and market development and competitive strategy. Justin has been consulting in Health IT for over 10 years, guiding clients in the implementation, integration, and optimization of clinical systems. He has been on the front lines of system replacement and data migration, and is passionate about advancing interoperability in healthcare and harnessing analytical insights to realize improvements in patient care. Justin can be found on Twitter at @TJustinCampbell and LinkedIn.

### Julie Champagne

Julie is Strategist at Galen Healthcare Solutions. Specifically, she sits at the intersection of data, research, and consulting to help interpret the best strategies to support healthcare organizations across the country. Julie manages and is a content creator for their Blog, Twitter, LinkedIn, Facebook, Case Studies, and Webcast Series.

### References

1. "2016 Essentials Brief" 8th Annual PM & EMR Solution Study Snapshot Report," HIMSS Analytics, 2016

## Clinical Optimization

An implemented EMR does not guarantee a return on investment. Organizations that fail to properly integrate and leverage EMR capabilities can quickly find themselves trapped in post-implementation purgatory, paralyzed by disenchanted users and underwhelming provider performance. Adopting a data driven approach to optimization provides organizations the ability to diagnose and correct problems by measuring and evaluating performance across specific metrics. EMRs deliver value when data can be leveraged to drive strategic decisions, improve patient care, and control costs. Let our team of experienced clinical application specialists conduct an onsite visit in order to review all aspects of your clinical application efforts, regardless of the stage of the project.

### Types of Optimizations

- Functional optimization: tasking, worklists, menu, chart structure, flow sheets
- Specialty-based notes & template
- Nomenclature harmonization: dictionary synchronization & consolidation
- Infection prevention and syndromic surveillance
- Automation: macros, scripting
- Integrated clinical decision support through alerts and notifications
- Rationalization and consolidation of duplicative legacy and ancillary clinical systems
- Clinical quality benchmarking: clinical pathways from HIMSS
- Leverage full capacity and capabilities of EHR note functionality
- Alerting and notifications-driving actionable insights to the point of care

### Why Optimize?










- Usability & efficiency: improve end-user satisfaction and make providers more efficient and productive
- **Align clinical workflow and technology** to improve and increase utilization and decrease variability
- Increase revenue: implement analytics to transition from volume to value
- Meet regulatory requirements
- Provide higher quality, cost effective care for your patients

### Galen's Approach to Optimization

- Promote a data-driven approach to diagnose and correct problems with metrics
- Engage and partner with clinicians to align clinical workflows and technology
- Metric driven performance measurement to support continual hospital process improvement
- Use of automation to drive efficiency

### Clinical Optimization Goals & Benefits<sup>1</sup>

As organizations seek to optimize EMRs, they need to recognize EMRs deliver value when data can be leveraged to drive strategic decisions, improve patient care and control costs.

								
Save 28-36 minutes of time per nurse, per shift	Reduce lab test use and drug costs by 15%	Reduce average lengths of stay by 5% to 10%	Prevent 334 to 481 ADEs annually	Reduce order turnaround time by at least 1 hour	Ensure 99% compliance with vaccinations	Reduce paper form costs (67% reporting)	Improve charge capture (64% reporting)	Reduce transcriptions costs (61% reporting)

1. "2016 Essentials Brief" 8th Annual PM & EMR Solution Study Snapshot Report," HIMSS Analytics, 2016

To learn more about how we can help with your clinical optimization, [galenhealthcare.com/professional-services/ehr-optimization/](http://galenhealthcare.com/professional-services/ehr-optimization/)