



Electronic Medical Records: What If We Build It and They Don't Come?

How One Healthcare Organization Achieved Successful Physician Adoption

David Levin, MD, Chief Medical Information Officer, Sentara Healthcare
Colin B. Korschak, MBA, FACHE, Managing Partner, DIVURGENT

For over a decade, people have been looking at and thinking about the role of the electronic medical record (EMR) in healthcare. Historically, other industries have proven that information technology (IT) can improve productivity and contribute to a safer environment. Today, widespread adoption of the EMR is at the forefront of President Obama's healthcare reform strategies as evidenced by the American Recovery and Reinvestment Act (ARRA) of 2009, signed into law in February 2009. This economic stimulus package provides \$17 billion in incentive payments for physicians and hospitals that adopt EMR systems. As expected these incentives come with a timeline and are not without conditions, with penalties levied on health providers who have not yet installed EMR systems beginning in 2015.

This renewed focus on the EMR has resulted in increased coverage in the media and medical literature. A recent *New England Journal of Medicine* article reported that physicians currently using an EMR believe that these systems can improve the quality of care [12]. In this same piece, David Blumenthal, MD, MPP, the National Coordinator for Health Information Technology, and colleagues maintain that despite the challenges, EMRs can improve health care delivery, reduce costs and improve the quality of patient care.

So, if the consensus is that the EMR can, and will, fundamentally change healthcare, why is it only a small number of U.S. physicians have adopted these systems (and for those that do, 1 in 5 of these efforts will fail or stall)?

This paper presents a case study of how one health care provider (HCP), Sentara Healthcare (Sentara), effectively implemented an EMR and credits much of its success to one thing, engaging physicians in the adoption process.

Current State: A Growing Sense of Urgency

Current literature is full of information on EMRs. A systematic review reveals the following:

- EMRs are considered essential to future improvements in the delivery of health care [1, 2].

- Integrating primary, secondary and tertiary care providers is the goal, but the EMR has been attempted by few medical systems [3, 5, 12]. Of those attempted, about 20% are failing, in part due to physician resistance [6, 7, 8].
- EMR implementation is complex and expensive [6].
- Medical information technology improves the quality of care by increasing guideline adherence, decreasing medication errors and enhancing disease surveillance. It also improves efficiency by decreasing unnecessary utilization [3].
- **Physician EMR adoption is essential** to reducing medical costs and improving quality [3, 4].

What Drives EMR Implementation?

Market and Competitive Realities

Today's HCPs face many environmental and organizational challenges that are driving a renewed interest in the EMR such as:

- Local competition for physician services
- Managed care penetration
- Proximity to competing hospitals
- Cumulative adoption of IT products by physicians
- Increasing demands for transparency by public and regulatory agencies
- Increasing demand for more complex patient care, coupled with increased volume, requiring real-time decision support
- Expanding knowledge requirements for advanced patient care
- Increasing quality and patient safety demands
- Increasing demand for services, coupled with the growing shortage of traditional resources

Trends in consumer thinking and governmental action are also drivers. The Department of Health and Human Services (HHS) has demonstrated their public support of physician EMR adoption through two key policy changes affecting physician compensation:

- Centers for Medicare and Medicaid Services – The Physician Quality Reporting Initiative (2007) (PQRI), a program providing financial incentive bonus (1.5% reimbursement increase) to physicians who *volunteer* to report on best practice quality measures [9]. Measurements are developed from evidence-based guidelines of care. One measure is the adoption/use of EMRs. A recent physician survey on EMR adoption showed that financial incentives for purchase were among the most frequently cited facilitators of adoption [12].
- The Stark anti-kickback regulations are relaxed and hospitals may now pay for up to 85% of physician office EMR startup costs [10].

The results of a March 2009 survey of randomly selected respondents, funded by a grant from National Public Radio, the Henry J. Kaiser Family Foundation and the Harvard School of Public Health [13], found that:

- Three out of four Americans think it's important that their health care provider use electronic health records;
- 67% of Americans think it's likely that electronic records would improve the overall quality of U.S. medical care; and,
- 62% say the automated records would improve the quality of care their family receives.

Benefits and Opportunities

The benefits and opportunities of a successful EMR implementation are among the strongest drivers behind today's interest in EMRs. Dr. Blumenthal and colleagues argue that EMRs are essential to HCP's ability to contain costs and improve the overall quality of healthcare [11]. Examples of these benefits include:

- Providing one real-time chart for patients for all points of care
- Streamlining the medication process
- Reducing illegible orders and wasted time due to handwriting issues
- Improving physicians ability to round for others from office/home
- Enhancing recruiting and retention of physicians and staff
- Increasing ease of scheduling
- Eliminating duplicate tests
- Providing evidence-based medicine alerts and reminders
- Streamlining care management and discharge processes
- Minimizing staff time spent retrieving patient information
- Improving reporting capabilities
- Enhancing patient education and disease management programs

The bottom line on today's interest in EMR adoption is this: ***Lives will be saved and health will be improved.***

Case Analysis: Sentara Healthcare & The Sentara eCare Health Network

Sentara Healthcare

In 1888, a small, not-for-profit hospital, Sentara Norfolk General Hospital, opened in Norfolk, Virginia, whose mission was to provide the Hampton Roads community the best medical care possible.

Today, this small hospital has grown to become one of the premiere healthcare providers in the region and a nationally recognized leader in health care. While much has changed since those early days, Sentara Healthcare (Sentara) remains committed to its original mission and operates more than 100 care giving sites, including seven acute care hospitals with almost 2,000 beds, nine outpatient care facilities, seven nursing

centers, three assisted living centers, and approximately 380 primary care and multi-specialty physician practices or groups. Sentara also offers a full range of award-winning health coverage plans, home health and hospice services, physical therapy and rehabilitation services, including Nightingale - the region's first air ambulance service.

The Sentara eCare Health Network™ (eCare)

The Sentara eCare Health Network™ (eCare) is a shared medical record for patients across the continuum of care and includes multiple clinical and administrative IT applications, from scheduling and registration, to clinical documentation, to order entry. eCare consists of the EMR (Epic inpatient and ambulatory), bar coding, document management and device integration. eCare is a five year mission to achieve automation of 400 physician practices, including both corporately-owned and community-based practices, eight hospitals, a physician portal to over 7,000 physicians and practice staff, and linkages to home health and long-term care environments.

Sentara's Six Key Success Factors in Achieving Physician EMR Adoption

Sentara's implementation was not flawless and errors were made along the way. However, the organization learned from its mistakes and identified six key success factors for achieving successful physician EMR adoption of the EMR, including:

1. Start and End the Journey with Your Physician Community.

Sentara's executive leadership recognized from the beginning that ***physician engagement was the key to successful EMR adoption***. It was this mindset that drove much of the implementation design process at Sentara. The physician community was engaged from the very beginning – well before vendor selection – and remained engaged throughout the process. To add further credibility, the medical staff was asked to pass a resolution at the onset of the project requiring all physicians to use the EMR to be able to care for patients in Sentara hospitals. This set the tone that this was “their project”, not just another IT dictate, and held physicians accountable at the local level.

2. Make a Case for Change.

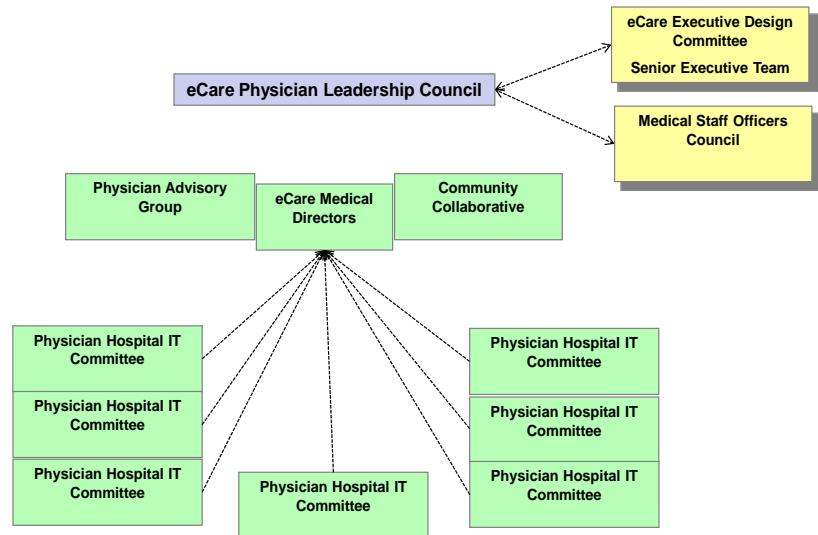
Sentara's case for change included a strong clinical, quality and safety argument, as well as a strong business case promoting change. Sentara put together a very careful analysis of the total cost of ownership (TCO) over a 10-year period and developed a sophisticated model that predicted potential EMR benefits over this time period. **The Sentara EMR project encompasses a \$40 million dollar operating budget, a 10-year, \$237 million dollar ten-year TCO and an estimated 12% IRR.**

The EMR project encompasses a \$40 million dollar operating budget, a 10-year, \$237 million dollar TCO and an estimated 12% IRR.

3. Put a Strong Physician Governance Structure In Place.

Sentara leadership guided the development of physician-led coalitions that were instrumental in the organization’s initial exploration of the EMR. These groups led initial design and software customization and were influential in the implementation process. A formally recognized physician governance model was developed and engaged demonstrating Sentara’s commitment to physician involvement in the process. This unique physician governance structure gave the physician community confidence that their interests were being represented by their peers. The model’s granularity ensured that it reached multiple levels ranging from a narrow, local medical staff/practice level to a broader, regional and system level.

Physician Governance



Sentara’s physician governance structured includes:

- *Local Hospital IT Committees:* These committees guide, advocate and ensure customization to the local environment. These committees were made up of a mix of skeptics and early adopters and were usually chaired by a physician who was also a Project Advisory Group (PAG) member and/or eCare Medical Director.
- *Project Advisory Group (PAG):* The PAG is the key physician development and governance committee for eCare. Initially PAG members played a critical role in vendor selection, as well as designing workflows and content development, and developing policy recommendations. Their role has evolved over time from one of implementation to optimization. This multidisciplinary group is comprised of community leaders from key specialties. These “open-minded skeptics” meet twice a month for 2 – 4 hours to provide input in the software design and customization. Sentara leadership realized the need to compensate the PAG members in recognition of their significant time commitment to the project – a key to the projects overall success.
- *eCare Medical Directors:* These day-to-day project leaders work in collaboration with the Senior Medical Officer and local medical staff and report to the VPMA.
- *Individual Practice Management Teams (not shown)* – These teams guide, advocate and customize to the local environment.

- *Community Collaborative*: Community-level collaboration between owned and independent practices.
- *Medical Staff Officers Council (MSOC)*: This council is made up of the formal leadership of hospital medical staff.
- *eCare Executive Design Committee (EDC)*: These operational leaders have responsibility for decision making at the senior executive level.
- *Physician Leadership Council (PLC) (a proposed, but not currently functioning committee)*: This council has oversight responsibility for the entire continuum of care.

4. Training & Support: Practice and Personalization.

No matter how much you plan and train, the processes are complex and there will be problems during implementation. In a recent *Wall Street Journal* article, David Collins of the Healthcare Information Management Systems Society (HIMSS) said that risks are sometimes not as a result of the systems themselves, but instead a result of how the systems are installed and the way the staff is trained [11].

Sentara recognized that end-user training and support, especially for physicians, was critical to overall implementation and adoption success, and developed a robust pre- and post-Go-Live physician training and support model, including:

- Traditional classroom training.
- Individualized system customization and personalized 1:1 training for each physician with their “eCare personal trainer”. Customization included, but was not limited to, creation of progress and procedural notes templates as well as order templates, patient reports and other useful summaries. Individual training was held before Go-Live to ensure mastery of the basics (i.e., log in, finding their patient list, opening a chart, etc.). These 1:1 sessions also allowed the physicians to develop relationships with the support personnel that would be on the floor with them during Go-Live.
- Designated on-site support staff, called eCorps. This group of highly trained super users could be deployed at-will and on-demand to help a physician at the bedside.
- Creation of a virtual “playground” environment that allowed physicians to practice when convenient.
- A Physician Support Desk that included a dedicated phone line staffed by Sentara IT staff proficient in Epic applications that were able to remotely assist physicians through remote access to the physician’s desktop.
- Utilized a physician “Buddy System” that allowed newly trained physicians the opportunity to “shadow” an experienced Super User physician.

5. Communicate, Communicate, and Then Communicate Again.

George Washington said, “I cannot tell a lie.” This too was true of Sentara’s implementation communications. Sentara leadership knew that the implementation of an EMR would not be without difficulties and, as a recognized leader in Quality and Safety, maintained its strict policy of telling, “The Good, the Bad and the Ugly”

at all times. Realistic expectations were set and implementation leaders used all appropriate venues to communicate with their end-users.

6. Approach Implementation as a Change Management Initiative vs. a Traditional IT Project.

Sentara approached their eCare implementation with a classic change management approach instead of the traditional IT project management approach to implementations. By adopting a change management approach and allowing physicians “meaningful involvement” from the beginning, Sentara physician leaders partnered with the implementation team to lead the project from the beginning until the end. Sentara’s change management approach was based on John Kotter’s 8 step change management model described in his highly regarded books, *Leading Change* (1996) and the follow-up, *The Heart of Change* (2002) [14, 15]. Sentara used the 8 steps that Kotter defined and customized them to their own environment.

1. Establish a sense of urgency. Examine the organization’s market and competitive realities; discuss crises, potential crises, and/or major opportunities.
2. Form a powerful guiding coalition. Assemble a group, including physician leaders, with enough power to lead the change effort; encourage teamwork throughout.
3. Create a vision. Created by a multi-disciplinary team, the vision helps direct the organization’s change effort; develop specific strategies to achieve the vision.
4. Communicate the vision. After a vision has been created and agreed upon, use every vehicle possible to communicate the vision and strategies to achieve that vision.
5. Empower others to act. Get rid of obstacles to change. Change systems or structures that undermine the vision. Encourage risk taking and new ideas, activities and actions.
6. Create short-term wins. Plan for visible performance improvements and recognize and reward those employees involved in the improvements.
7. Consolidate improvements. Use increased credibility to change policies and systems that don’t fit the vision. Hire and promote employees who can implement the vision. Reinvigorate with new projects, themes, and change agents.
8. Institutionalize what works. Articulate connections between the new behaviors and corporate success. Develop means to ensure leadership development and succession.

eCare Results To-Date

What Gets Measured, Gets Improved

A “Balanced Scorecard” was kept during each Go-Live that included a mix of daily, monthly and annual metrics and a mix of finance, process, and clinical metrics:

- Daily: 20 business, throughput and clinical metrics. Daily meetings were held with the project and hospital leadership to review metric progression.
- Monthly: 9 return on investment (ROI) dashboard metrics and 55 hospital metrics.

- Annual: 81 process redesign metrics and business case metrics.

For each implementation site, Sentara set business case benefits and expectations by category and then measured against them using a proprietary, internally-developed benefits calculator, to see if the expected benefits were achieved. The results would be used to direct or redirect optimization efforts. Sentara Leigh Hospital (Sentara Hospital 1) was the first hospital to Go-Live. For Hospital 1, **benefits of \$1.6 M were achieved in fiscal year 2008!**

For Hospital 1, **benefits of \$1.6M were achieved in fiscal year 2008.**

To-date, four sites have been successfully implemented and the results are already apparent. Specific results can be seen in three key areas: computerized physician order management (CPOM), document management and first medication administration.

Computerized Physician Order Management (CPOM) Achievement and Sustainability

Possibly the most significant result has been Sentara's CPOM rates. Nationally, average CPOM ranges from 25 – 50%. Sentara Hospital 1, with an emergency department (ED), was implemented using a two-phase implementation process: clinical documentation and results review were implemented initially followed by CPOM implementation. **Post-implementation Hospital 1 is maintaining an unprecedented near 90% CPOM.** For Hospital 2 and 3, both with EDs, Sentara adopted a "Big Bang", or "rip the Band-Aid off" implementation process. This approach allows the physicians to use the full system on Day 1 and allowed regular users to rapidly learn the system and thus sustain very high rates of CPOM. CPOM at Go-Live was 80% and maintaining greater than 85%.

Nationally CPOM post-EMR implementation ranges from 25 – 50%.

Post-implementation **Hospital 1 is maintaining an unprecedented near 90% CPOM.**

Improved Document Management Results

Document management, specifically direct data entry into the EMR by physicians, was a key measure of the eCare economic benefits. Specific performance improvements include:

- Scanning volume declined 38%
- On-time performance of 98% (index within 30 minutes)
- Pharmacy order scanning reduction of 94% (500 orders/day vs. 30 orders/day)
- Same day scanning and indexing end procedure images

Improved First Dose Medication Administration

The improved first dose medication administration metric measured the time elapsed from physician order to medication administration. Post- implementation, Sentara has experienced an **average 97.33 minute reduction in time elapsed from order to medication administration.**

Reduction in Transcription and Supply Expenses for Medical Group

As of the second quarter 2008, the Sentara Medical Group has seen **transcription expenses reduced by \$120,000 and supply expenses reduced by 50%**. The following all tracked successfully against the business case developed pre-Go-Live:

- Reimbursement improvements
- Storage cost reduction
- Medical records labor reduction
- Malpractice claims and premiums reduction

Because of the various reporting and tracking mechanisms within eCare, Sentara Medical Group is well-positioned to further improve patient care and take full advantage of PQRI and ePrescribing, both of which offer additional future revenue opportunities.

Conclusion

The U.S. healthcare system faces significant obstacles for wide-spread EMR adoption, and thus subsequent realization of the EMR's full benefits. However, with the recent government funding and policy incentives, the path to EMR implementation is becoming easier to navigate. Sentara Healthcare's visionary approach was not dictated by the federal government; rather, it was a shared partnership with its community of physicians. Ultimately, success depends upon those physicians that are committed to transforming care through the adoption of this technology.

About The Authors

David Levin, MD is the Senior Medical Director for Information Systems at Sentara Healthcare, a non-profit integrated delivery system. He has worked in diverse areas including quality improvement, patient safety, hospital operations, credentialing and disease management. Dr. Levin is the lead physician for Sentara eCare, a 10-year project to create a regional health information organization. He is the founder of award winning disease management programs for sickle cell disease and high-risk pregnancy. He is the executive sponsor for Sentara’s Palliative Care program that has been recognized with a Citation of Honor by the American Hospital Association. Sentara has been acknowledged by *Modern Healthcare* magazine as a top ten non-profit IDS. Sentara has also been recognized as one of Americas “Most Wired” healthcare systems for its advanced IT systems.

Colin B. Korschak, MBA, FHIMSS, FACHE is a Managing Partner with DIVURGENT and leads the Advisory Services Practice. He is a highly accomplished executive with over 17 years of experience and recognized achievement in quality service delivery and project management. Mr. Korschak has extensive experience in healthcare operations, P&L management, account management, strategic planning and alliance management. His broad healthcare experience encompasses pharmaceutical, provider, payer, information technology and consulting. Mr. Korschak is a registered Pharmacist, possesses an MBA in health services administration, is board certified in healthcare management and is a Six Sigma Black Belt. He is an Adjunct Professor with Old Dominion University leading classes in their MBA program on Performance Improvement, Negotiation and Business Ethics.

About DIVURGENT

Founded by a team of consulting veterans, DIVURGENT is a national health care consulting firm focused solely on the business of hospitals and other healthcare providers. DIVURGENT provides advisory, interim management, revenue cycle management, project management, and modeling and simulation services to help improve patients' lives.

We are committed to:

Providing Thought Leadership

Providing Exceptional Value for our Services

Facilitating Knowledge Transfer

Ensuring Client Satisfaction



6119 Greenville Avenue
Suite 144
Dallas, TX 75206

4445 Corporation Lane
Suite 216
Virginia Beach, VA 23462

(877) 254-9794

info@DIVURGENT.com

www.DIVURGENT.com

About eCare Partners

eCare Patners looks to partner with other healthcare organizations and share its Epic project knowledge and assist them with their Epic projects and, ultimately, realize returns in operational efficiency and quality of patient care. The company brings its team of industry leaders to each engagement, each whom has direct experience in the provider environment. The eCare model is unique because it does not approach you as a third-party consultant like many service providers, but rather as a group of colleagues sharing its wealth of Epic project knowledge. We understand the challenges that hospitals and health systems face today with electronic medical records, including high project costs, managing priorities and schedules, and generating a clear return on investment. eCare Partners is an Epic-focused firm, that provides best practices and advisory services to healthcare organizations looking to implement and/or optimize Epic EMR products. The company resulted from the IT department at Sentara Health System, which has been very successful in the rollout of their Epic EMR. Sentara has received numerous awards for a variety of technology-related initiatives.

References

1. Dearing, J.W., *Evolution of diffusion and dissemination theory*. Journal of Public Health Management & Practice, 2008. 14(2): p. 99-108.
2. Goldman, D. *Medical Technology: Health Care's Double Edged Sword. Interview in Economic Research Initiative on the Uninsured*. 2007. Cited; Available from: http://www.umich.edu/~eriu/forthemedia/interviews_goldman.html.
3. Lee, J., et al., *The adoption gap: health information technology in small physician practices. Understanding office workflow can help realize the promise of technology*. Health Affairs (Project Hope), 2005. 24(5): p. 1364-1366.
4. Anderson, J.G., *Social, ethical and legal barriers to E-health*. International Journal of Medical Informatics, 2007. 76(5/6): p. 480-483.
5. Chaudhry, B., et al., *Systematic Review: Impact of Health Information Technology on Quality, Efficiency, and Costs of Medical Care*. Annals of Internal Medicine, 2006. 144(10): p. E12-W18.
6. Bernier, E., D. Detmer, and D. Simborg, *Will the Wave Finally Break? A Brief View of the Adoption of Electronic Medical Records in the United States*. Journal of the American Medical Informatics Association, 2005. 12(1): p. 4.
7. CMS. *Overview of Physician Quality Reporting Initiative*. 2008 [cited; Available from: <http://www.cms.hhs.gov/pqri/>].
8. Menachemi, N., et al., *The Relationship Between Local Hospital IT Capabilities and Physician EMR Adoption Journal of Medical Systems 2008*.
9. Taheri, P.A., et al., *Physician Impact on the Total Cost of Care*. ANNALS OF SURGERY, 2000. 231(3): p. 432-435.
10. AdvisoryBoard. *EMR risks may outweigh benefits*. 2008. Cited; Available from: <http://www.advisory.com/members/default.asp?contentid=74661&program=16&collectionid=887>
11. Goldstein, J. *Big challenges await health-records transition*. April 21, 2009. Wall Street Journal. Retrieved April 29, 2009, from: <http://online.wsj.com/article/SB124027664223937475.html>.
12. DesRoches, C., et. al. *Electronic health records in ambulatory care – a national survey of physicians*. New England Journal of Medicine. 359 (1): p. 50-60.
13. National Public Radio, Kaiser Family Foundation, Harvard School of Public Health. *The public and the health care delivery system – summary and chartpack*. April 2009. Retrieved May 21, 2009, from: <http://www.kff.org/kaiserpolls/upload/7887.pdf>.
14. Kotter, J. Leading Change. Harvard Business School Press, 1996.
15. Kotter J. and Cohen, D. The Heart of Change. Harvard Business School Press, 2002.