Deliver Value-Based Care

With eHealth Services

Prepared by:
Greg Bauer
The Icahn School of Medicine at Mount Sinai
Master of Science in Health Care Delivery Leadership Program
**Executive Summary**

The emergence of value-based healthcare in the U.S. requires new approaches for physicians and their organizations in serving their patients. Traditional medical practices have centered on physicians detecting and responding to their patients’ needs, but with new payment models and technologies, practitioners will increasingly be required to anticipate and prevent health issues from developing. Transitions of care and service coordination among providers and specialists need to be more seamless as patients are educated in their health issues and better connected to their medical information. A key enabler of this change will be how well patients are engaged and empowered in collaborating with their care teams, and several eHealth disciplines catalyze this process. In fact, there’s an eHealth imperative to impact outcomes and patient experiences while lowering costs.

The Triple Aim objectives assembled by The Institute for Healthcare Improvement (IHI) are more achievable when eHealth tools and services are integrated with clinical care. The mobile revolution and improvements in data management practices now make improved care coordination possible throughout a patient’s journey. Telehealth services facilitate connected care and inform physicians with data that flows into a patient portal, which improves monitoring of risks and more proactive treatment by the physician’s team. The growing use of social media fosters community development that allows patients to share their experiences with others, further empowering a new-found consumerism in healthcare delivery. Finally, eHealth tools enable greater customization of care for large populations as we stratify patient groups. Clinical data scientists and informaticists partner with physicians to establish and operationalize programs that identify new best practices and drive behavior change—especially for those patients with chronic conditions and comorbidities that make their care more expensive; eHealth disciplines are the lifeblood of a system that engages patients in new ways to help them and their physicians adhere to practices that support value-based care in the U.S.
The eHealth Opportunity

The migration from fee-for-service to value-based healthcare in the U.S. is transforming the way patients receive and pay for their care. These changes are driven in part by the long-term rise in total national health expenditures in the U.S., which now stand at $3.2 trillion, 18% of our Gross Domestic Product (1), and proportionately 50% larger than any other industrialized country. Annual health premiums for family coverage between 2006 and 2016 rose 58% (2), according to the *Kaiser/HRET Survey of Employer Sponsored Health Benefits*.

The *Institute for Health Improvement* (IHI) has issued its *Triple Aim* objectives, centered on improving outcomes and the patient experience while simultaneously lowering costs of care. The emerging disciplines of population health management require innovative thinking and approaches that ensure those with the financial risk can find new ways of managing their exposure to unwieldy costs while being asked to cover more people. Redundancies and inefficiencies must be streamlined and new, better ways of engaging patients are required. Never has there been a more important time than the present for healthcare leaders to consider new means for addressing the twin burdens of improving quality of care while lowering costs.

Dr. Stephen Shaya, Medical Director of J&B Medical, located in Wixom, Michigan, addressed colleagues at a health conference in Oxford, England in 2014. He spoke about the impact of Big Data on clinical care and specifically about the use of telemedicine to improve the quality of care. He pointed out that, historically, physicians and healthcare providers have operated on the basis of detecting and responding (3) to patient needs, but key patient data often resides in isolated locations, and response times may lag against the need for immediate care. A patient’s health issue may grow in size or become more complex, making treatment more expensive while undermining the quality of care. Dr. Shaya argued that reducing long-term costs while improving outcomes requires a new angle centered on Anticipation and Prevention (3).
Success in the changing model of healthcare will require solutions that are patient-centered: streamlining clinical gaps, fostering greater patient engagement and empowering patients with access to their data, so they can make proactive, better decisions regarding their health, and physicians can offer better guidance in the spirit of a partnership centered on the patient’s health. As if to underscore this approach, a presenter at the HIMSS Conference in August, 2014 stated: "Prepared, engaged patients are the fundamental precursor to high-quality care, lower costs and better health." Thus, understanding ways to engage patients by enrolling them in their health issues is an important first step when introducing new eHealth services.

"Prepared, engaged patients are the fundamental precursor to high-quality care, lower costs and better health."

Patient Engagement

How well patients are engaged in their own care and educated about their health issues often impacts the quality of outcomes and the commensurate costs of care. Yet, physicians and other providers have been challenged in finding ways to engage their patients consistently:

- Only 1 in 5 patients are satisfied with their care provider’s communications (4)
- 71% of patients are interested in using digital communications with their providers (4).
- 50% of patient appointment no-shows are the result of ineffective engagement (4).

The costs of ineffective engagement are significant, but remediable: for instance, simple mobile text reminders sent to patients for pending appointments will reduce no-shows 25-30% (4)--that’s a substantial increase in revenues for any practice group or hospital.
Many aspects of patient engagement which improve compliance and drive behavior change are akin to those in consumer marketing where brands connect with their customers to foster retention and loyalty. The applications of tools that engage patients offer a paradigm seen in brand marketing that determines loyalty in consumer engagement.

Many brands over the decades have used engagement strategies to grow their businesses and hold leadership positions in virtually every consumer sector. Social media and mobile channels have fostered new opportunities for brands to connect with their customers, and these new channels have spurred innovations in personalizing the customer experience. As value-based care grows in prominence, those who understand how to educate and enroll patients in their health issues will lead the transition in the coming years. Innovative new ways now exist for health care teams to facilitate and deepen connections with their patients using these tools....and incentives in The Affordable Care Act provide the financial framework for this to happen.

NEJM Catalyst held an event Hardwiring Patient Engagement to Deliver Better Results at Kaiser Permanente on April 13, 2017. Stacey Chang, MS at The University of Texas, explored the topic with these comments: “Patient engagement is about understanding human motivation more deeply, and then channeling it so we can encourage and enable patients to act in beneficial ways...An important aspect of designing care for better patient engagement: knowing the patient’s motivations is crucial for understanding how they align with a health system’s priorities. When you understand both, you can design a solution that benefits both.” So Chang identifies a good engagement strategy that’s borrowed from business-to-consumer (B2C) marketing practices (5):

1. Reinforce the motivations of the customer.
2. Grant control over parts of the process to the customer.
3. Embed engagement in the natural flow of the customer experience.
4. Align the system’s financial incentives with the customer’s motivations.

5. Make sure the strategy is self-learning: data you generate helps define the next iteration better.

eHealth Disciplines
Against the need for identifying ways to engage patients, a host of new services and technologies, collectively known as eHealth disciplines, have emerged. Practitioners now are able to coordinate clinical care with mobile, online and other telemedicine tools that produce new data, which helps them anticipate patient needs and deliver improved outcomes, without interrupting existing clinical data and work flows that underpin current care management. Figure 1 illustrates a few of the components that define and support eHealth endeavors.

Figure 1. The Tools and Disciplines of eHealth
Physician care teams use online and mobile tools that keep patients enrolled and empowered in their health. Mobile services improve engagement by reaching patients where, when and how they wish to be contacted. Patients can use these tools to send and receive more timely communications with their doctors. As a permission-based engagement channel, mobile texting and other app-based services foster richer patient connections with their physicians to support proactive treatments by generating data that informs care teams, so they can make smarter decisions and help their patients experience better outcomes.

*Mobile services improve engagement by reaching patients where, when and how they wish to be reached.*

*Business Insider's Tech Insider* ([http://clk2.it/uaiPf3](http://clk2.it/uaiPf3)) site offered important guidance for healthcare providers that grouped mobile trends under several headings: Ubiquity, Apps, Personalization, Data & Analytics, Electronic Health Records, Quality Content, and better screen design—all focused on integrating these elements for patient care where disconnects otherwise can occur (6).

Mobile texting has successfully supported episodic care for several years: logistics for appointment reminders, patient surveys, medication management programs and procedure preparations (e.g. colonoscopies, surgeries) are examples where texting has improved patient compliance; Dialog Health, a mobile engagement firm located in Nashville, TN, corroborates with findings of *Medical Practice Insider* that cancellations are reduced by more than 20% (7) with mobile texting. Other applications include asynchronous communications between a patient and physician’s office, where the use of mobile has greatly improved efficiencies and reminder phone calls to the home that go unanswered are no longer necessary.
Increasingly, chronic care and behavior change are target areas where mobile texts and apps supplement the physician by improving the frequency of touch points with care providers. The Text4Baby campaign, with ongoing reminders that support an expectant mother’s care, often reduces risks within the pregnancy, forestalling pre-term deliveries that may result in unwanted NICU days. An area that’s shown great promise is tobacco cessation, where programs now incorporate text messages, with patients opting-in to receive contextually tailored messages over a four-month period (www.smokefree.gov). Mobile texting is particularly effective when it’s part of an integrated program, where coaches hold ongoing connections with their patients. “Text chats,” provide real-time engagement that addresses the immediate needs of the patient. The UK-based medical journal, The Lancet, has reported on the effectiveness of mobile texting in helping patients quit, and the results show that mobile campaigns have been highly effective in sustaining higher quit rates. “Smoking cessation support delivered via mobile phone text messaging doubles quit rates at six months.....On the basis of these results the txt2stop intervention should be considered as an addition to existing smoking cessation services.”

The entry, logging, monitoring and retrieval of patient data is streamlined with mobile channels and, for instance, when patients suffer from chronic pain, the resulting intelligence expedites care to let a patient feel heard. Second, the interactions do not add burden for the physician who is already time limited. Instead, the tools enable an entirely new level of proactive care that supports more timely, adaptive responses to changes in symptoms, and with less expense. Patients also have greater access to their data, facilitating the behavior adjustments they need to make. This opportunity for education will result in shifting patients’ behavior in their health issues.

Telemedicine offers HIPAA compliant video consultations used in home care that capture and retrieve changes in a patient’s clinical status, elevating the quality of care by facilitating physician to
patient interactions outside the confines of traditional delivery within the medical facility. Vendors work with clinicians to define the medical necessities, apparatus and services required to deliver these services more cost effectively. As an example, CMS launched a program called Chronic Care Management (CCM) for Medicare seniors, specifically patients with multiple comorbidities who need ongoing monitoring and are at risk for unwanted ED admissions. An early stage firm in New York City, Vytalize Health, offers a team of physicians and nurse practitioners who make house calls supplemented with remote visits where patients interface via a mobile tablet. CMS pays Vytalize fees on a PPM (per patient per month) basis. The objective is to drive patient engagement via education and ongoing connection with their provider—where they often previously did not have one.

_Fierce Healthcare_ reported on July 17, 2017 that “more than half of all respondents surveyed by the Health Industry Distributors Association (HIDA) said they learned about telehealth through their physician, making them twice as likely to use a service offered by a doctor rather than a telemedicine service. The survey results echoed prior research indicating patients value the convenience of telehealth visits, even when receiving bad news. HIDA survey respondents that used telehealth services within the last year generally did so out of convenience and lower costs. Increasingly, independent physicians are using telemedicine apps and services to conduct virtual visits when they lack the infrastructure for an in-house program. Hospital executives have also said they plan to invest in telehealth technology despite the persistent reimbursement challenges, citing the need to maintain a competitive advantage and expand their market reach.”

More than half of patients surveyed by HIDA indicated they were “very satisfied” with a telehealth visit in the last year; 54% said the experience was better than a traditional office visit.
Emerging wearables technology offers new channels for patient data capture, though their clinical utility will remain confined to recreational health use until they can truly interoperate with online portals and their data can be formatted to work with existing EHRs and health information exchanges. Yet, as health consumerism grows, wearables remind patients of their own health needs, and that may be seen by some observers as progress.

eHealth services also support population health initiatives, designed to provide customized care for a patient but with technology that can scale to serve many. A holistic approach that brings technology, digital expertise and clinical experience now empowers physicians and their care teams to:

- Communicate more effectively with their patient populations.
- Shape engagement strategies that drive targeted behavioral change where needed.
- Reduce unnecessary healthcare expenses and inefficiencies in care management practices.
- Improve the results of chronic condition and disease management programs.

As more clinical and administrative data funnels into patient profiles, online portals house many tools used by physicians, healthcare providers, coaches and patients that inform better decision-making and help doctors anticipate their patients’ needs quickly, enabling proactive care. Patient profiles will soon also contain social factor information, which can greatly expand a care team’s qualitative understanding of their patients’ histories.

Once patients are engaged in targeted health initiatives, they can set specific goals and create their own wellness plans that let them record their progress toward their established goals. Dashboards allow coaches to enter key updates from their sessions with patients. Online physician directories are available for many care specialties, and patients can contact those who meet their geographic or specialty requirements. Social media tools also allow patients to rate their physicians, and quality scores are
available for those selecting specialists or general practitioners. Finally, online curricula educate patients and help them track their progress toward specific milestones.

**Leveraging eHealth Disciplines To Win**

On a high level, physicians use discovery processes to help them evaluate existing methods for treating patients; these entail fact-finding questions which identify clinical weaknesses and gaps in communication that may undermine treatment; linear and logistic regression can map co-variables to certain outcomes and help clinicians uncover better ways to deliver care for their patients. Of course, physicians cannot be available for each of their patients all the time, but an eHealth system using mobile, online and data management technologies will support clinical care and allow physicians to serve more patients, hopefully at a lower cost and with greater patient engagement that makes progress more sustainable.

Let’s look at the plight of patients suffering from chronic pain—nearly 100 million Americans do (9); they account for 10-15% of all hospital ED admissions (10). On a micro level, these patients suffer over extensively long stretches of time. They take too many tests (often unneeded), feel unheard and misunderstood. Their physicians don’t have enough time to ask all the questions about the nature of their pain. They use more medications, including opiates, than they should, and they repeatedly visit the ER when they feel they have nowhere else to go. The cost for this health care delivery is approximately $600 billion per year. Yet, the price tag for this process doesn’t improve patient care or satisfaction.

Figure 2 illustrates the current patient journey, which leads to nearly 24 weeks of broken communications, patient suffering longer than is necessary and expensive and often redundant tests and medications.
Figure 2. Current Roadmap of Physician-Patient Diagnosis and Treatment

Entering an eHealth solution would result in data stratification techniques to streamline these patients into manageable sub-groups with common characteristics, which can be isolated for closer examination that informs clinicians in establishing more varied causes and effects. Detailed mapping of existing chronic patient care reveals key gaps in communication and clinical care between appointments, regarding medication adherence and other non-pharmacological treatments available, especially for those patients with mental health challenges that may drive or exacerbate their reported pain. Further examination points to ineffective patient communication with their physicians, and this ultimately drives a cascade of unwanted outcomes. In evaluating current treatments for patients with chronic pain, we can see how digital tools can be applied to help providers anticipate changes in a patient’s condition or prevent the onset of exacerbated pain levels.

A team of pain specialists and researchers at the Mount Sinai Health System has developed a patient communication solution which can dramatically improve the management and treatment of patients with chronic pain. Its offering empowers patients by giving them mobile and online tools that help them monitor and communicate the dimensions of their pain in real time so their physicians can remain connected with them in the days and weeks following appointments. The solution transforms aggregate patient data into relevant medical information, so care teams have a more precise understanding of
their patients’ pain experiences. With this understanding they will provide more proactive and effective care to improve outcomes, increase patient satisfaction, and significantly lower the cost of care.

Mobile tracking virtually eliminates all communication gaps as ongoing monitoring data is entered by the patient. Eliminating these gaps provides several significant benefits in treating chronic pain sufferers. First, in medication management—dosage levels, side effects and patient adherence—physicians more readily see the impact of their clinical recommendations and adjust prescriptions in a timely manner, rather than waiting for patient feedback four-to-six weeks later.

Second, pain specialists can access the data in advance of their meetings with patients, so they are more informed about a patient’s circumstances and don’t waste valuable time asking questions that yield little meaningful information. Third, since the physician’s care team and the patient all access common data in the patient’s health record, a more efficient delivery of care is possible, where redundancies can be eliminated. Finally, the patient experience will be greatly improved in feeling heard and understood. As the physician connects with the patient’s pain more experientially, treatment paths may be more effective in remediating pain or discomfort.

The important piece of this solution is again an engaged patient, for without it, care teams neither have monitoring data nor a sense of how well prescriptions are working. The methodology developed by the Sinai team helps patients articulate and track their pain; these communications can be inserted into existing care coordination activities and connected with health records accessed by the patient, coaches or other members of the care team. The methodology is designed to cradle, or supplement, clinical care by providing a more precise and real time expression of a patient’s experience with pain. The Sinai team has identified the following payoffs from use of its service:

- Improved patient engagement and satisfaction, measured with HEDIS and CAHPS scores.
• Better outcomes and reduced ER admission rates, lowering the cost of care.
• Improved medication management practices and opioid use will lower medication costs.

Finally, by isolating pain from other secondary health issues, physicians can treat the underlying conditions more effectively, and this should further improve outcomes and patient satisfaction while reducing unnecessary costs. Figures 3 and 4 illustrate a potential user experience with the monitoring and communications solution.

Figure 3: What The Patient Sees

![Figure 3: What The Patient Sees](image)

Figure 4. The App User Interface

![Figure 4. The App User Interface](image)

The Sinai team will be embarking on a series of pilots in early 2018 to explore how patients will use the software and see specific areas where treatments can improve the patient experience along with producing better outcomes.
Summary

Healthcare delivery systems are under more pressure than ever to meet today’s challenges. With heightened focus on cost controls and value-based care, leading providers will find new ways to adapt proactive approaches that *anticipate and prevent* health issues from arising or enlarging. Patient engagement is central to this migration, as physicians cannot do this alone; they need timely capture and management of data from the patients that allows them to be proactive in their care coordination activities. Enormous strides will reduce inefficiencies and lower costs while empowered patients receive better care with improved outcomes. The promise of eHealth services in support of clinical care offers a compelling vision that puts “coordination” back into Care Coordination Programs; and the results will speak for themselves, as health systems, employers, health plans and other organizations who manage large populations experience lower costs with healthier outcomes.
References

#1: The Centers for Disease Control and Prevention; National Center for Health Statistics. 
https://www.cdc.gov/nchs/fastats/health-expenditures.htm

#2: Kaiser/HRET Survey of Employer-Sponsored Health Benefits, 1999-2016, Sept 14, 2016; The Henry J. Kaiser Family Foundation and the Health Research & Educational Trust (HRET); 

http://clk2.it/TBUqjh

#4: Medical Practice Insider, Business & Technology Intelligence for Physician Practices

#5: Chang, Stacey; NEJM Catalyst Event: Hardwiring Patient Engagement To Deliver Better Health, event held at Kaiser Permanente Southern California, April 13, 2017


#7: Dialog Health, Nashville, TN  www.dialoghealth.com

#8: Bennett, Derrick A; Emberson, Jonathan R; The Lancet, Volume 378, No. 9785, p6–7, 2 July 2011
Text messaging in smoking cessation: the txt2stop trial 
http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(11)60882-9/abstract


#10: Poulin,Patricia A; Nelli, Jennifer; Tremblay, Stephen; Small, Rebecca; Caluyong, Myka B.; Freeman, Jeffrey; Romanow, Heather; Stokes, Yehudis; Carpio, Tina; Carson, Amanda; Shergill, Yaadwinder; Stiell, Ian G.; Taljaard, Monica; Nathan, Howard; Smyth, Catherine E.; Chronic Pain in the Emergency Department: A Pilot Mixed-Methods Cross-Sectional Study Examining Patient Characteristics and Reasons for Presentations. Pain Research and Management, Volume 2016 (2016), Article ID 3092391. 
https://www.hindawi.com/journals/prm/2016/3092391/

Compton-Phillips, MD, Amy; NEJM Catalyst Insights: Report On Care Redesign, Care Design: What Data Can really Do For HealthCare 

Sweeney, Evan; Fierce Healthcare, July 17, 2017. Survey: More than half of patients prefer telehealth visits to in-person care. 
http://www.fiercehealthcare.com/mobile/survey-more-than-half-patients-prefer-telehealth-to-person-care