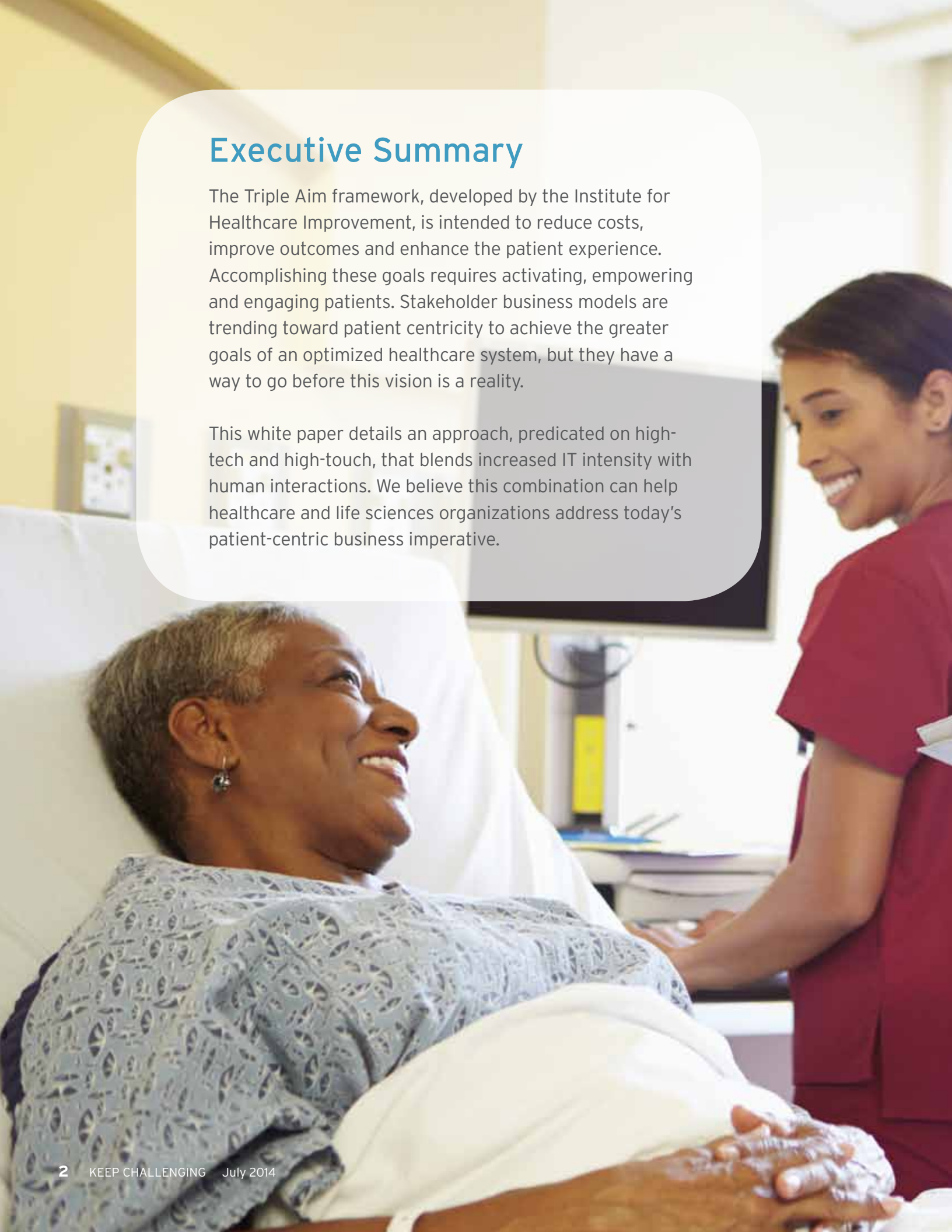


Turning the Vision of Connected Health into a Reality

To fulfill the goals of the healthcare industry's Triple Aim framework and the new patient-centric paradigm, stakeholders across the healthcare and life sciences sectors must combine high-tech with high-touch.



KEEP CHALLENGING™

A photograph of an elderly woman with short grey hair, wearing a blue patterned hospital gown, lying in a hospital bed. She is smiling and looking towards a healthcare worker on the right. The healthcare worker is a woman with dark hair, wearing a red scrub top, who is also smiling. The background shows a typical hospital room with a computer monitor and medical equipment.

Executive Summary

The Triple Aim framework, developed by the Institute for Healthcare Improvement, is intended to reduce costs, improve outcomes and enhance the patient experience. Accomplishing these goals requires activating, empowering and engaging patients. Stakeholder business models are trending toward patient centrality to achieve the greater goals of an optimized healthcare system, but they have a way to go before this vision is a reality.

This white paper details an approach, predicated on high-tech and high-touch, that blends increased IT intensity with human interactions. We believe this combination can help healthcare and life sciences organizations address today's patient-centric business imperative.



Detailing Healthcare's Triple Aim

In 2013, the U.S. spent roughly \$2.9 trillion on healthcare – approximately 18% of the country's gross domestic product (GDP).¹ The higher per-capita health expenditures aren't necessarily indicative of an overall positive health status of the U.S. population. Even today, 133 million Americans – nearly one in two adults – live with at least one chronic illness. Chronic disease accounts for more than 75% of U.S. healthcare costs.²

When the Obama administration came to power, it faced the gargantuan task of revamping the nation's healthcare system. Through the Affordable Care Act (ACA),³ healthcare's Triple Aim concept was introduced, with the objectives of reducing healthcare costs, increasing patient engagement and improving health outcomes. To optimize the system's performance, the ACA mandated a total redesign of the way healthcare is organized, managed, paid for, delivered and consumed (see Figure 1).

From the ACA's perspective, reducing healthcare costs means preventing hospital readmissions, reducing incidents of medication non-adherence and moving from episodic care to a wellness-based approach. This has resulted in a right-shifting of care from hospitals to remote nursing homes, emergency response care centers and home settings.

Moreover, the act sought to optimize employers' investments in workplace-based disease prevention and health promotion programs.⁴ Companies spend \$2 billion annually on wellness programs alone.⁵ Improving healthcare outcomes means optimizing care delivery, enabling transparency of information and interaction between various stakeholders, incentivizing the drive for quality, paying for performance over paying for service and adopting an integrated approach to care. Enhanced patient experience also means increasing health literacy, improving

Healthcare's Triple Aim

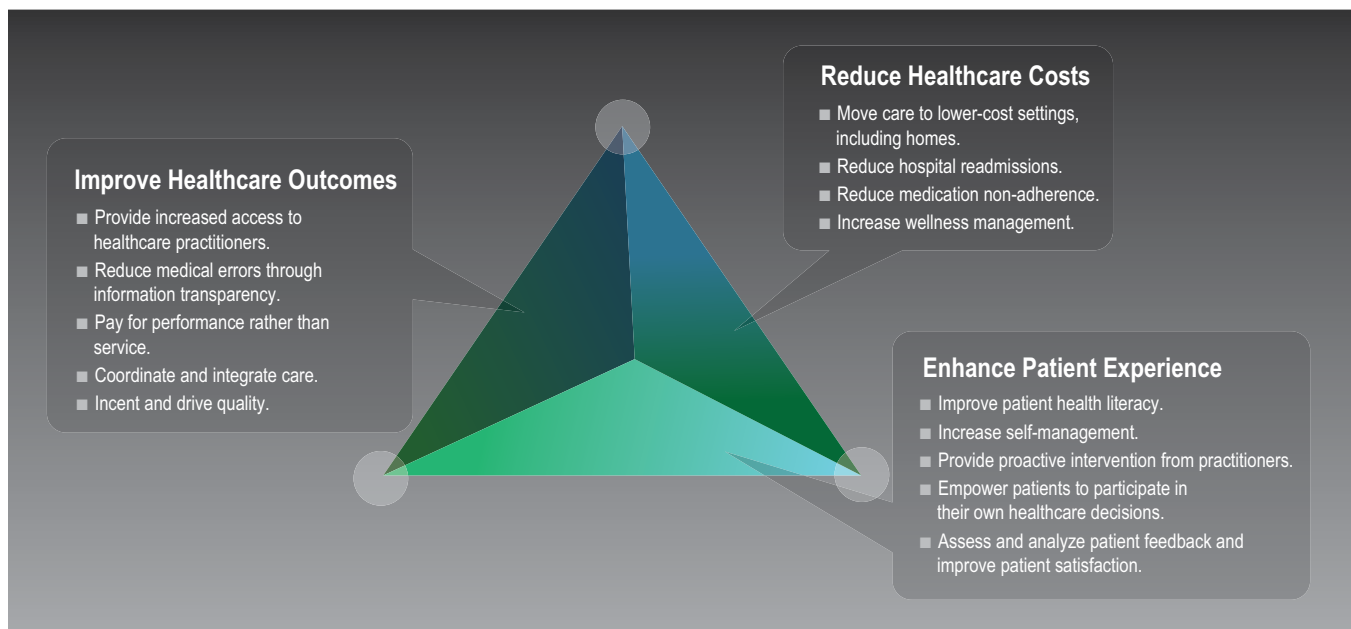


Figure 1

In the new patient-centric model, three key trends have emerged: a shift of financial risk to patients, the growth of self-care and the proliferation of self-health devices and tools.⁷ Patients increasingly want to participate in their own care alternatives and share in decision-making. For example, in a Kaiser Permanente study covering nearly 35,000 patients with chronic health conditions, individuals who used e-mail to communicate with their doctors saw a statistically significant improvement in various health measures.⁸ Telemedicine and the m-health market are converging to enable ordinary people to assume more responsibility for their own health.⁹

The new model puts a greater emphasis on leveraging technology (such as wearable devices) to engage patients in the management of their own healthcare spending by encouraging the pursuit of healthier choices and lifestyles that can help contain long-term medical costs.¹⁰ According to ABI Research, the market for wearable devices that meet demand for real-time data, including personal health information, will soar to \$160 million by 2017 from \$30 million in 2012.¹¹

Addressing the New Consumer

Human empowerment is a critical driver in the new patient-centric model. Approximately 69% of total healthcare costs are heavily influenced by consumer behavior.¹² Thus, getting patients to change their behavior – in terms of making healthier choices and seeking and receiving appropriate preventive and primary care to manage their health conditions – is critical to changing the wellness equation. Changing behavior requires addressing patient mindsets at different psychological stages in the disease journey, from diagnosis to care, and contains several key components: patient activation, patient engagement, patient motivation and patient retention.

- **Patient activation refers to patients' ability and willingness to proactively manage their health and healthcare.**¹³ Patients are increasingly using self-tracking devices to manage their activity levels, such as Fitbit and Jawbone. The data generated from such devices, which forms what we call an individual's Code Halo™,¹⁴ is combined with other technologies, such as social media, gamification and predictive analytics, to generate drill-down user insights.¹⁵ Positive changes in patient activation can lead to positive self-management behavior changes in patients with chronic conditions¹⁵
- **Patient engagement is a broader concept that combines patient activation with interventions designed to increase activation and promote positive patient behavior.** It means understanding the behaviors that need to be changed, setting achievable goals and ensuring follow-through. Patient engagement impacts the overall patient experience and care outcomes.
- **Patient motivation acts as a catalyst to enable patients to be continually engaged in their self-management efforts throughout an episode of care and not just when they are sick.** It explains why some patients become effective self-managers who follow their treatment plans and are able to achieve health outcomes. Extrinsic factors (such as rewards, social recognition, etc.) and intrinsic factors (like personal experience) are instrumental in motivating patients to participate in their own care.
- **Patient retention refers to helping patients maintain positive behavior changes throughout their life.** It means setting achievable goals, helping patients cope with setbacks and providing them with real-time decision support tools.

Burgeoning technologies, such as social media, mobility, game mechanics, analytics and the Internet of Things (IoT), have helped drive incremental change in patient behavior. Currently, both patients with chronic diseases and healthy patients are turning to the Internet to seek health information. Patients with chronic diseases

are more apt to access user-generated health content found on blog posts, hospital reviews, doctor reviews and podcasts. Examining the population as a whole, 51% of U.S. adults living with chronic disease have looked online for health information, such as insights about a specific disease, a certain medical procedure, health insurance or information on a prescription or over-the-counter drug.¹³

Moreover, one in three cell phone owners (31%) have used their phone to find health information. Smartphones also enable the use of mobile software applications to help people track or manage their health. Some 19% of smartphone owners have at least one health app on their phone, with exercise, diet and weight apps being the most popular types.¹⁴ The number of patients monitored over mobile networks is estimated to hit three million by 2016, and some 142 million health apps will be downloaded in 2016.²⁰ By 2025, the scope of mobile Internet technologies will reach \$15.5 trillion for chronic disease management, resulting in a 10% to 20% reduction in the cost burden of treating chronic disease across the U.S. healthcare system.²¹

The IoT is already here, with pill-shaped micro-cameras traversing the human digestive tract and sending back thousands of images to pinpoint sources of illness.

Advances in wireless networking technology and greater standardization of communication protocols are creating IoT platforms in which devices, sensors and actuators are able to communicate with each other and with other machines, objects, environments and infrastructures. The IoT is already here, with pill-shaped micro-cameras traversing the human digestive tract and sending back thousands of images to pinpoint sources of illness. Another example is sensors placed on patients that can remotely monitor vital signs and continuously alert practitioners to early-warning signs of conditions that would otherwise lead to unplanned hospitalizations and expensive emergency care.²²

By 2025, 50 million nurses will leverage IoT for inpatient monitoring.¹⁶ Across healthcare applications, IoT technology is expected to have an economic impact of between \$1.1 trillion and \$2.5 trillion by 2025.¹⁶

As noted, all of these technologies can help drive incremental changes in patient behavior. What is lacking is a truly unified approach that not only initiates behavioral change but also helps sustain these changes on a long-term basis.

Our Point of View on Connected Health

Patient Journey and Moments of Truth

For any disease, a patient progresses through different stages: diagnosis, treatment and care (see Figure 3, next page). Typically, the progression involves the patient experiencing symptoms and visiting a primary care provider to obtain a diagnosis. The patient is then prescribed medication or another form of treatment based on physician recommendations. The care stage involves incorporating behavioral changes to decrease the severity of symptoms and maintain a healthy life.

As patients progress through their disease journey, they experience different emotional states at each stage. These emotional states were codified by Elisabeth Kübler-Ross as denial, anger, bargaining, depression and acceptance. Additionally,

patients typically want to share their experiences with other people and receive feedback on how they are progressing. Common moments of truth include the diagnosis, a feeling of dependence on care providers, growing confidence as they learn more about how to handle the disease and the beginning of their desire to compare their symptoms, treatment and progress with others similar to them (see Figure 4, next page).

Additional moments of truth occur in the patient's interaction with healthcare ecosystem stakeholders. Patients must interact with their care provider to schedule appointments, discuss progress and set treatment and care goals, as well as with payers to understand the right health plan, co-pay options, etc. Patient also need to engage with pharmaceuticals companies to understand drug and safety information and patient assistance programs, as well as with pharmacies for prescription initiation and refills. If all of these interactions are seamless, patients can focus on their care rather than being caught in a web of process interaction challenges.

To optimize these moments of truth, key players in the ecosystem must leverage the rich sources of data and the latest technologies available today to focus on the five Cs: collect data, record events, connect stakeholders, compress time and create opportunities.

Our Hypothesis for Solving the Connected Health Challenge

To achieve the objectives of healthcare's Triple Aim, care providers and payers must leverage personal devices and sensors to increase self-management, apply gamification and analytics techniques to modify patient behavior, and provide health coaches with access to real-time information to enable proactive support and intervention. Leveraging this three-pronged approach can reduce healthcare costs, improve health outcomes and enhance patient experience (see Figure 5, next page).

A Typical Patient Journey in a Chronic Disease State

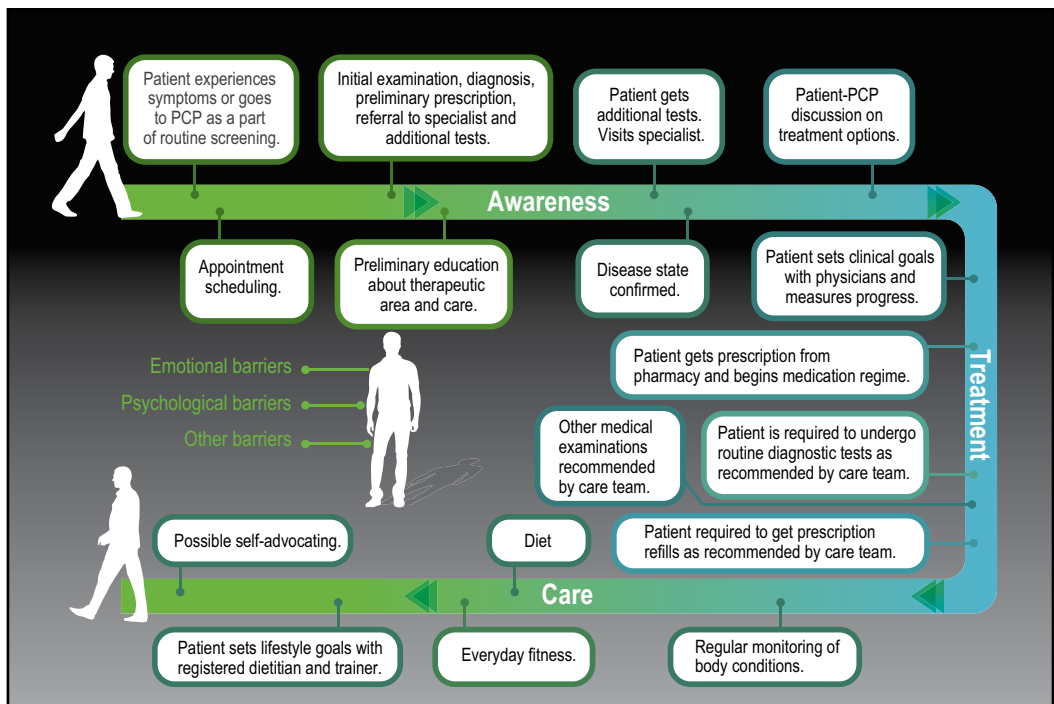


Figure 3

Moments of Truth in the Patient Journey

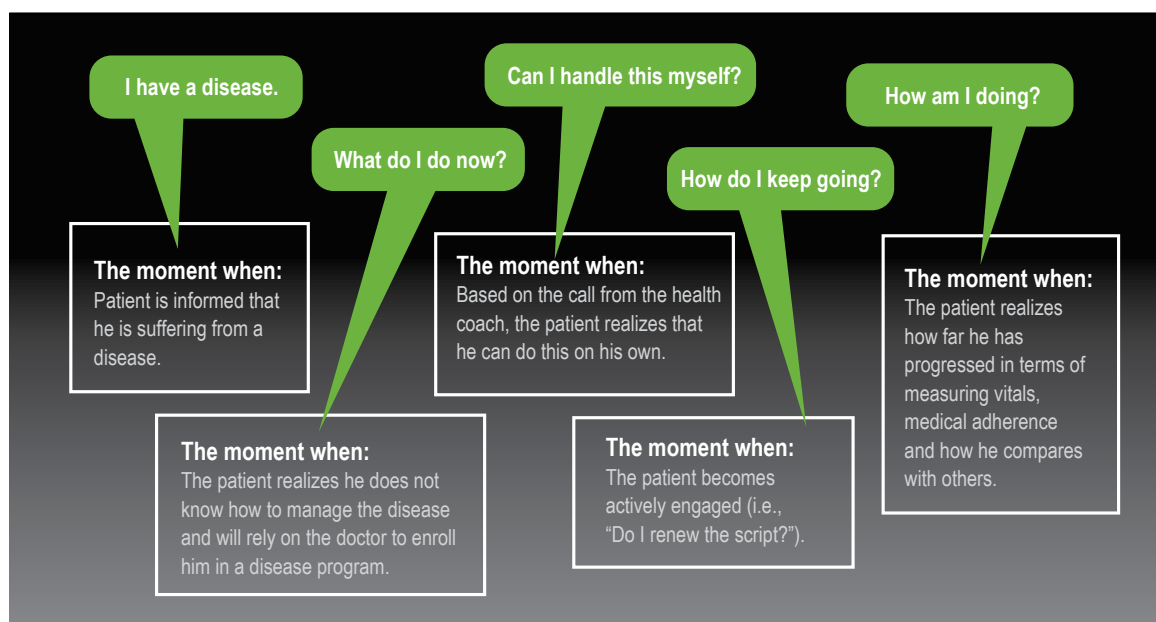


Figure 4

We carried out a pilot study to prove this hypothesis by providing a set of Cognizant associates with Fitbit devices to track their health and activity data. This data was interpreted and analyzed by health coaches to draw correlations and provide personalized health coaching. According to the mid-point user satisfaction report, 76% of the participants had lost weight during the initial three months – a strong good indicator of associates' improved health outcomes. (Editor's note: A future white paper will discuss this program in more detail, as well as the results achieved so far.)

Patients are being increasingly empowered with a host of "personal instruments" that aid in self-management, monitoring of vital signs and increased engagement. Personal health-related information, such as vital signs, genetics, psychographic profiles, health risk assessment questionnaires and social interaction data, is collected by sensors, devices and smartphones, and is then transmitted over secure wireless networks for health companies and other relevant stakeholders to evaluate health progress and any irregularities. With that data, stakeholders can engage with patients for better compliance, adherence and improved outcomes. If irregularities are detected, immediate healthcare intervention is possible to ensure timely aid and adherence with care goals.

Game elements and design concepts can be leveraged to increase patient activation and engagement across the continuum, from illness to wellness. Game mechanics such as points, badges, challenges, leaderboards, etc., can encourage positive behavior changes, change bad habits and motivate patients to maintain a healthy lifestyle. Patient activation measures (PAM) provide information on how motivated patients will be to address their healthcare needs.

Games are also used for activation stickiness – to ensure that patients continue to remain involved in their health management after the initial contact and engagement. Patient activation analytics measure the effectiveness of adherence programs in impacting patient compliance and persistency. Patient education, care adherence, vitals monitoring, diet and fitness management are all components that can be gamified.

Cognizant's Hypothesis for Connected Health

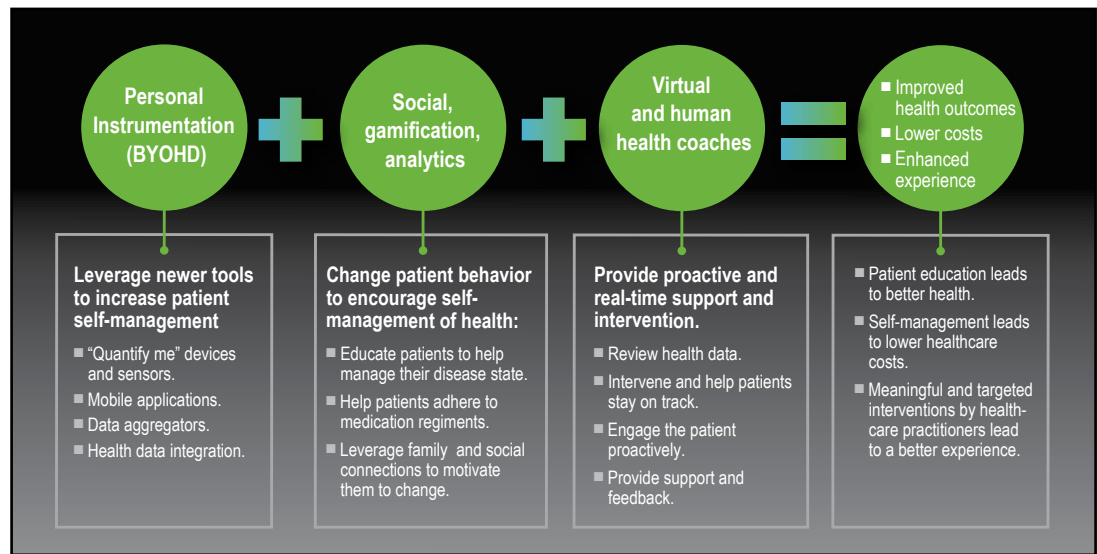


Figure 5

As patients progress in their disease journey, many can benefit from a “buddy” or “coach” who can ensure they understand, agree with and participate in the management of their chronic conditions. Health coaching enables patients to gain knowledge, skills, tools and confidence to become active participants in their care so they can reach their self-identified health goals. Coaches continuously monitor progress, work with the patient to set goals and track progress, review patient education data, adherence, vitals measurement, diet and fitness, and intervene proactively if the patient’s behavior is not trending positively. Coaches can also congratulate patients when milestones are met and leverage analytics to be more proactive about care. In all these ways, coaching enables a shift from a care-giving approach based on dictating instructions to one that facilitates the treatment.

For disease management, the three-pronged approach can be used to drive sustainable behavioral modifications in patients. Positive behavioral modification requires better education about the disease; measuring, monitoring and sharing of vitals; increased medication adherence; and living a healthy lifestyle.

Looking Ahead

Healthcare’s Triple Aim means reducing costs, improving outcomes and enhancing patient experience. Accomplishing these goals requires organizations across the healthcare continuum to place greater emphasis on activating, empowering and engaging patients. Stakeholder business models are trending toward patient centricity to achieve the greater goals of an optimized healthcare system.

We believe an integrated approach that combines components of science, technology and psychology can create a value proposition to more effectively address the new patient-centric paradigm. By looking at the patient journey and moments of truth, we believe care providers can better interpret and treat chronic diseases.

Based on our accumulated technology acumen and years of healthcare industry experience leveraging technologies like social media, gamification, analytics and personal instrumentation, we believe stakeholders across the industry must look holistically at care management. But technology alone will not help create better

healthcare outcomes. Human intervention via coaching buddies will encourage and empower patients to embrace self-improvement.

Together, all of these components help drive desired and sustainable behavioral changes, such as improving health literacy, adhering to medications and care plans, and incorporating lifestyle changes – all of which are crucial for chronic disease management.

However, treating the sick alone is only a first step in optimizing the healthcare system. Stakeholders need to evaluate wellness options to improve outcomes for healthy people amid ongoing healthcare policy changes. They also need to look at options that will bring about sustainable behavior changes in patients. Leveraging both high-tech and high-touch is one way to ensure healthier outcomes for all – patients, providers and payers.

Footnotes

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