



DIGITAL TRANSFORMATION IN HEALTH CARE CAN BE FIXED

By Ania Labno, Matthew Huddle, Tom Retelewski, Victoria Borland, and Josh Kellar

THE PROMISE OF THE digital revolution has loomed large over the US health care industry for more than a decade. Apps, websites, patient portals, and myriad other tools have all been hailed as *the* game changer in the way that payers, providers, and patients interact. Each advance was supposed to finally tame the chaos of an unbelievably complex ecosystem, to the delight of everyone involved. In 2010, the President’s Council of Advisors on Science and Technology said, “Americans [will] soon enjoy the benefits of electronic health records.” *Harvard Business Review* predicted, “Innovations in telemedicine will accelerate in poor countries where access and cost are critical issues. Such innovations can transform health delivery in rich countries.”

Ten years later, very little of that promise has come to fruition. Millions of Americans have a half-dozen unused health management apps on their smartphones and a fitness wearable collecting dust in a drawer. Meanwhile, they still call their doctor’s offices for appointments, fill out paper ques-

tionnaires, fax records, write checks. Back in 2006, *Harvard Business Review* first asked, “[W]hy is innovation so unsuccessful in health care?” Now one can reasonably ask, Why hasn’t anything changed?

This question gains urgency in light of COVID-19. Greater demands have been placed on still-emerging technologies such as telemedicine, asynchronous visits, and artificial intelligence-informed triage programs. These innovations are facing increased use, new operational demands, and more scrutiny of their user friendliness and accessibility, particularly for older, less tech-savvy consumers. New rules from the Office of the National Coordinator for Health Information Technology and the Centers for Medicare & Medicaid Services have added a federal push to the demand for technologically driven transparency in, and patient access to, electronic health records. The rules would make interoperability more feasible while also raising potential security risks for health systems. These concerns put pressure on design and technology infrastructure, and the clinical im-

plications of falling short are more dire than ever. Meanwhile, consumers are more ready than ever to embrace digital solutions—provided they actually work.

The industry money is there, to be sure: digital startups are highly valued by investors, and Silicon Valley has produced a glut of health care unicorns. (Oscar Health is valued at \$3.2 billion, Babylon Health at \$2 billion, One Medical, \$2 billion, Devoted Health, \$1.8 billion, and Phreesia, \$970 million.) Eager to support their members and patients, payers and providers alike have partnered with an array of vendors to create a ragged collection of solutions, but these have mainly served to scatter badly needed functionality across health systems and platforms.

The fragmentation frustrates consumers and undermines investments. Patients must log in to one app to manage their weight, another to track their chronic condition, another to pay their bills, and yet another to book an appointment for a child. The more individual products they need in order to take control of their health care, the less likely they are to utilize any of them. Why would they, when they can still pick up the phone, call the doctor's office, and have all that work done for them?

Moving Digital Health Care Forward

One large regional hospital system that was trying to transform its technology—and its care—spent more than a year working with BCG to confront the shortcomings. After establishing a mandate to put a groundbreak-

ing product into the hands of patients within a year, and after consulting with experts and consumers to identify potential roadblocks, the system's CEO mobilized the organization in support of his ambitious vision.

The result is a product unlike anything previously available, which in early pilots is generating ample enthusiasm with patients. Along the way, we identified five major reasons that the promise of the digital health care revolution remains unfulfilled. (See Exhibit 1.) Here are the problems we found and the strategies we used to overcome them.

Most digital initiatives do not focus on consumer needs. In the past, digital health care initiatives typically looked to providers for guidance on content. These experts were thought to know what their patients needed and to have the ability to drive adoption. But most consumer health care technologies have failed to bear out this assumption.

Consumers today take an unprecedented degree of ownership over health care decisions, and the rising costs of care (combined with more high-deductible health plans) mean that they act on it. Consumers want convenient, high-quality, and affordable care—goals that digital solutions such as online booking and telemedicine support. They also want solutions that analog health care cannot deliver, including tools that they can use wherever they are, that help them care for themselves or their loved ones at home, and that help them deal with the health care system.

EXHIBIT 1 | The Main Challenges in Creating Digital Solutions in Health Care

Many digital initiatives start without a clear understanding of consumer needs	Value of digital solutions is not well understood, estimated, or measured	Lack of clinician buy-in and operational challenges stall or diminish the value of the digital solution	Prevalence of closed IT systems deployed on antiquated infrastructure combined with scarcity of cost-effective integrators	The digital world moves fast and is focused on continuous improvement, while provider and payer organizations are often conservative
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Source: BCG analysis.

Most health care systems don't design digital tools to meet these demands. Nor do they train their development teams to understand and act on the functional and emotional needs of consumers.

To overcome this blind spot, our client health care system applied a human-centered design approach. Human-centered design is agile and iterative, seeking consumer feedback early in the design and development process and returning for more insight throughout the product's growth cycle. Following this strategy ensures a friendlier product that is better equipped to meet true consumer needs. It also translates into cost savings: patients are given a chance to react to a series of prototypes, and the concept and execution can be tweaked before an expensive software development effort brings the product to life.

Our client sourced feedback from a broad cross-section of its patient population—the chronically ill, caregivers with young children or aging parents, cost-sensitive, tech-savvy young people, and more. It was thus able to tailor its technology not just to a consumer perspective, but to the specific perspectives of actual users. This led to a number of critical insights, such as that the health data the product provides would need to be “translated” from its form in patients' electronic health records. (Consumers don't want to just view their health information; they want to understand it.) Putting these insights into practice enabled the health system to develop a product that consumers appear ready to embrace.

The value of digital solutions is difficult to measure. Tying consumer needs to business objectives in a tangible way is crucial when seeking financial and operational buy-in across an organization. It's easy to determine the value of a product when its return on investment is measured solely in dollars. Consumer digital health care tools tend to deliver a different type of value—longer-term retention of patients within a health system, for example, or higher engagement, better outcomes over time, and more flexibility in the way care is deliv-

ered. The industry can have a hard time assessing value, even though these benefits can lead to lower costs, higher revenues, or both.

Given long lead times and unclear pathways to demonstrable success, it's hard to secure investments in ambitious health technology products. Instead, businesses tend to develop point solutions, each one addressing a perceived consumer complaint separately. These products may save on development costs in the short term, and their value may be easier to quantify. But they undermine a comprehensive approach to meeting customer needs, and patients can become overwhelmed by an unsatisfying, disconnected product ecosystem that they are likely to abandon.

While it may often seem difficult to pin down the value of a multifaceted technology, it is not impossible. The health system we worked with began by identifying strategic objectives (such as increased patient satisfaction and engagement) and then quantified the value of fulfilling these objectives (by estimating, for example, how much revenue could be added through higher patient retention). Finally, it introduced tangible ways of tracking progress against those metrics.

The health system's design and consumer insights teams launched research to track the product's projected Net Promoter Score as it evolved over the development cycle. A survey conducted during the pilot program urged users to provide unfiltered feedback. Analytical capabilities were embedded within the product itself, enabling the organization to answer such questions as: Do patients rate providers more highly after a telehealth or an in-person visit? How many people begin booking an appointment online but don't follow through? In the future, these capabilities can be mined and expanded to answer even more complex questions, such as whether high engagement with the product correlates with better long-term health outcomes. All of these metrics, if invested in properly, can prove the value of a groundbreaking health care technology.

Clinicians (and patients) are skeptical of solutions that affect their workflow. Many digital health care innovations, especially those designed by hospitals and health systems, have a significant impact on care delivery workflows. Clinical workers may be asked to enter data into a new system, or even into two systems rather than one. Doctors—already threatened by burnout before the pandemic—are loath to learn how to use another piece of software that could take away face time with patients and cause yet more administrative work to pile up. In one instance, apps that allow online booking require clinics to standardize their appointment types and data entry, forcing clinicians—including busy specialists—to relinquish control over at least some portion of their schedule. It’s not surprising that these innovations—aimed primarily at helping consumers—experience pushback.

There are less concrete challenges as well. Doctors are often rightly concerned that even the best tools will not be fully compliant with the Health Insurance Portability and Accountability Act and protect patient data as well as their existing systems do. Payers worry that technologies will evolve too quickly and they won’t be able to communicate the cost-saving benefits of the product to their customers. Even patients sometimes resist changes to the medical system workflow. After logging into several different applications using separate user names and passwords in order to transmit information to a doctor’s office, filling out a form on a clipboard might not seem so bad after all.

Our health system’s CEO understood that rethinking the technological approach to focus more on customer needs would affect the entire organization, including its providers, and would therefore require a strong mandate from system leadership. He funded the project as a CEO initiative and committed himself to leading the charge, becoming the project’s public face to the management team and the rest of the organization. At the operational level, he established work groups for each potential pain point, such as clinical operations, legal and

compliance issues, and communications. These groups met frequently to discuss problems and delegate ownership of solutions. Issues identified for escalation were passed on to an executive steering committee for resolution.

COVID-19 exacerbated the challenges but also illustrated how critical it is to address them. The unified front and open communication fostered by the work groups allowed large numbers of decision makers to uncover problems and discuss solutions quickly. With input from clinical and executive leadership, new ideas and proposals, such as remote AI-informed triage and virtual visits via telemedicine, were brought to the table and addressed right away. This streamlined process allowed the health system to meet immediate patient needs and illustrate the value of these tools to front-line physicians.

Most health care IT and electronic record systems are antiquated, making integration challenging. In addition to being outdated, most legacy systems are disconnected from each other and not governed by universal standards. Although private and governmental initiatives are driving incremental change, developing a product that works across hospital systems—or even within a single one—can feel impossible when the average system utilizes multiple electronic medical records in its central and affiliated practices. Retrieving data from these systems via their rigid, often proprietary, APIs in order to make decisions about patient care, personalize an experience, or just show someone a test result can be extremely complex. This limits integration opportunities and drives up the cost and time involved in product development.

In addition, security concerns have slowed the health care industry’s adoption of cloud solutions, preventing health systems and others from reaping the benefits of elastic and cost-efficient infrastructure support. Cloud solutions can be just as secure as on-premise infrastructure, but they do require different security measures. Modernization of infrastructure takes time and requires resources. Despite the demonstra-

ble value, it tends to be delayed in favor of other initiatives with clearer short-term advantages and fewer perceived risks.

The solution lies in teaming with the right feature and integration vendors. The health care system we worked with understood immediately that a good team of vendors could help manage—or at least avoid amplifying—the chaos of multiple health record and API data sources. It recruited two primary types of vendors for the project. Point solution vendors provided plug-and-play tools, such as an external triage tool, to enhance the user experience of the product. Integration vendors brought their experience to bear on navigating the firehose of available data. The health system required that any candidate vendor feel comfortable working within the existing technology framework to provide a seamless, integrated user experience, and that all vendor contributions to the final product were contained under a unified umbrella of user identity management and security.

The slow pace of health care innovation is at odds with tech sector ideology. A tech industry mantra is “fail fast, fail often, fail

forward.” Risk taking is the norm. But health care payers and providers tend to be conservative, and the pace of technology adoption is slow. Newly developed treatments take an average of 17 years to be accepted by clinical personnel, even when they clearly outperform old options. Health care organizations often prefer to stick with the tried-and-true rather than seek improvement if it means they may face a lapse in patient care or other issues in the patient experience.

This attitude runs counter to the spirit of agile development methodologies, which seek to push out a minimum viable product as quickly as possible so that iteration and improvement can take over. When payers and providers develop software, they often end up behind the curve, minimizing their own return on investment and creating disappointing experiences for consumers, whose experiences with e-commerce and social media have led them to expect a modern, personalized, and improving experience.

Progress in this area will require health care leaders to step outside their comfort zone and trust their technology experts

EXHIBIT 2 | How to Make This Wave of Digital Advances Matter for Patients



Use human-centered design to understand consumer needs and design products specifically for them



Design strategy that links consumer needs and proposed digital solutions to business objectives and measurable outcomes



Ensure senior-level support for change management and set up a dedicated team for operational change



Build robust technology platforms by teaming with the right point-solution vendors and integration vendors



Move fast in an agile and nimble way

Source: BCG analysis.

and partners to guide them through productive risk taking. Careful planning and the implementation of robust procedural safety nets will allow health systems to embrace agile methodologies without putting patient safety or organizational values at risk.

At our client system, executive leadership saw the value in setting up both the organization and its technology in ways that allow for fast learning (and failing) in the building of digital products. To that end, they put in place a robust learning apparatus, including analytics, user research, surveys, and A/B testing, as well as a pilot approach in which real patients tested new products before they were released. This was a totally new way of working. Initially skeptical organizational stakeholders were won over when they witnessed the rapidity of product deployment to patients, the value of the feedback from human-centered design, and the speed with which products could be adapted based on that feedback.

The Promise of Consumer Digital Health Care, Fulfilled

For any health care organization, the challenges outlined above are daunting. Overcoming them requires mobilizing a broad set of resources and working across organizational silos that often have differing incentives, priorities, and ways of working. This challenge is largely why the promise of digital health has not yet been fully realized.

New digital technologies can improve outcomes, reduce costs, improve the patient and provider experience, and deliver real value. (See Exhibit 2.) We believe that with the right strategic thinking, health care systems can finally deliver to consumers the integrated and seamless experience that they have come to expect from other industries—and that they richly deserve.

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