Integrating digital health tools to help improve the whole consumer experience

Digital health integration can both advance health care and address consumers’ needs before, within, and beyond health system walls.

A report from the Deloitte Center for Health Solutions and the Scottsdale Institute
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Executive summary

For health systems, combining digital technologies with the human touch can help improve the health and well-being of their consumers, and establish successful, enduring relationships with them. Traditionally, this requires finding the right balance of technology and human inputs to address consumers’ care needs within health system walls. But digital health technologies can also be integrated to help prevent diseases, determine if consumers’ well-being needs are being met before they need care, and address their needs once they’ve been discharged.

To better understand how health systems are integrating digital health tools across various stages of consumers’ health and care journey, the Deloitte Center for Health Solutions once again collaborated with the Scottsdale Institute. We surveyed 30 US-based health system leaders with a range of technology, digital, customer experience, and clinical expertise, and interviewed five health system executives from November 2022 to February 2023. Our findings offer insight into where health systems are on this journey and what more may be needed to address unmet needs and enhance consumer experiences. We found that:

- **Health systems are increasingly adopting digital technologies to better meet consumers’ health and well-being needs.** Three in four health system leaders surveyed said their organizations are rethinking business models by shifting away from a treatment-based approach to focus on maintaining consumers’ health and well-being. And even though nine in 10 leaders surveyed said digital technologies are enabling this shift, they acknowledged that there’s much more work to be done. Most of the surveyed and interviewed executives said their organizations are “midway” on the path to utilizing digital technologies to address consumers’ health- and care-related needs. None of the leaders we surveyed said their organization is “close to the ideal digital state.”

- **Health systems’ digital offerings may not be adequately meeting consumers’ needs outside of their facilities.** Currently, health systems seem to be doing a good job of meeting consumers’ access and care needs “within the
walls,” but may be falling short in meeting consumers’ preventive care and well-being needs “before the walls,” and their continued care needs “beyond the walls.” The health system leaders we interviewed and surveyed discussed how digital technologies are providing solutions to some of consumers’ access challenges (e.g., digital triage, online scheduling) and care delivery issues (e.g., virtual/in-person balance). They also said the integration of digital technologies such as fitness trackers and wearables to address prevention and well-being needs is low, but a growing area of focus. Many of the leaders discussed their progress with using digital tools for care continuity—including care plan adherence, virtual options, and clinician messaging—but said that adoption remains low currently.

• **Health systems consider realigning business models, managing workforce, and improving workflows—the keys to better integrating digital technologies that meet consumer needs.** Like many industries, the COVID-19 pandemic pushed health care to advance its technology capabilities. According to both surveyed and interviewed leaders, business and financial viability (reimbursement), fragmented ownership of digital initiatives, changing workflows, and talent challenges (not enough and skilled workforce) are important areas to address beyond technology capabilities.

Deloitte’s Future of Health™ vision presents a fundamental shift to **health** from **care** in the coming decades. If our research is a barometer of this industrywide change to care delivery, health systems seem to be playing an important role in this shift, and digital technologies are likely helping them act. While digital technologies are important, these transformation efforts may be unlikely to succeed without coherent business models, operationalization strategies, and ecosystem partnerships. Health systems that focus on establishing a business and financial case for integrating digital tools into care models, hire and upskill the right talent, redesign workflows, and work together with industry participants—including peers, payers, digital health startups, and life sciences organizations—may have a better chance of advancing the consumer experience.
Digital technologies are important enablers as health systems expand offerings across consumers’ health needs

To redefine their business models based on emerging consumer engagement trends and rapid scientific and technological advances, health systems seem to be seeking a fresh approach to building consumer relationships. One answer may be to provide a mix of digital technologies and human interventions not just “within the walls” (access and care in facilities), but also “before the walls” (prevention and well-being needs), and “beyond the walls” (continued care needs). We define this approach as a “digitally enabled, always-on care and well-being experience (figure 1).”

Figure 1
A digitally enabled, always-on care and well-being experience
Reimagining consumers’ potential health journeys before and beyond the walls

Before the walls | Traditional areas of focus | Beyond the walls
---|---|---
Health and well-being | Access | Care
Before consumers become patients (e.g., tracker and wearable integration, wellness campaigns) | As consumers seek care (e.g., triage, scheduling, registration) | During patient care (e.g., check-in, multimodal care delivery)

Patient care after discharge (e.g., hospital at home, on-demand virtual health, post-acute care delivery, wearables)

Source: Deloitte and Scottsdale Institute analysis of expert interviews.
As one interviewee said, “Today, there’s a gap between all the stuff consumers do to keep healthy and achieve wellness, and all the stuff that they do for health care. And usually, these two areas don’t interact or come together to create a full picture.” A digitally enabled, always-on care and well-being approach has the potential to close this gap and help health systems create an integrated view of consumers’ health by connecting consumers’ health and wellness information with their care and treatment journey. This could be an opportunity for health systems to maintain people’s health, connect with them more effectively, provide better care, and increase revenue at the same time.

For consumers, this may mean not only having the right tools and services to access timely, appropriate care, but also having more integrated care experiences and achieving better outcomes. For example, health systems could send consumers reminders and incentives to aid preventive care, and doctors could leverage wearables to continuously track key health indicators for patients’ follow-up care. By fostering continuous frictionless consumer interactions and providing more convenient and tailored services, this approach could help health care organizations build stronger consumer relationships.

“**We’re definitely thinking across all four areas—prevention, health, and well-being; access and navigation; care; and continued care—as we think about the future of care delivery.**”

— Tricia Edris, chief innovation and partnership officer, Advent Health Central Florida

**RESEARCH METHODOLOGY**

The Deloitte Center for Health Solutions collaborated with the Scottsdale Institute to understand if and how health systems are providing their consumers with a “digitally enabled, always-on care and well-being experience.” We define this as a cohesive digital strategy across consumers’ needs, both “within the walls” (access and care delivery in the facilities) as well as “before and beyond the walls” (prevention, well-being, and continued care needs). We conducted two-pronged research, engaging with large- and mid-sized health system members of the Scottsdale Institute between November 2022 and February 2023 that included:

- A survey of 30 digital, patient experience, technology, clinical, and strategy leaders of US-based health systems
- Interviews with five patient experience, technology, and informatics executives of US-based health systems
Our research shows that some health systems are aiming to move offerings beyond treatment, and digital technologies seem to be the key enablers for this reimagined approach. Three in four (77%) surveyed executives said they are actively reimagining their consumers’ health journeys, shifting away from treatment toward achieving or maintaining their health and well-being. A larger fraction (87%) of respondents agreed that digital technologies are a crucial enabler for this shift. Attracting and retaining patients (73%), evolving consumer preferences (37%), and improved revenue/margin (30%) were reported to be the top driving forces that are pushing organizations toward this reimagined approach.

Nearly two-thirds (63%) of surveyed executives believe their organizations are midway on the path of utilizing digital technologies across consumers’ health- and care-related needs (figure 2). Only a few survey respondents (17%) claim to be further along on the journey, and none claim to be close to the ideal state. More than half of the surveyed executives (53%) envision that they’ll need more than three years to achieve an ideal digital state.

“A part of access that’s been really successful for us at Baptist is an online triage tool that tells patients where to seek care in our system based on their symptoms, whether it’s an e-visit, ER, urgent care, or physician’s office. It’s real-time in the sense that if you access it at 2 a.m., it won’t list an office visit as an option for care. Ninety percent of people find the condition they’re looking for. It’s surprising how much downstream impact it’s had on the health system.”

— Brett Oliver, MD, chief medical informatics officer, Baptist Health, Louisville
FIGURE 2

Health systems’ digital journey to provide consumers with continuous, frictionless health experiences

The scale of ideal “digitally enabled, always-on care and well-being” state

Q: Imagine an ideal “digitally enabled, always-on care and well-being” state where your organization is providing a unified and omnichannel experience for your consumers’ well-being, access, care, and continued care needs. How close are you to this ideal state?

<table>
<thead>
<tr>
<th>Closer</th>
<th>Farther</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>7%</td>
</tr>
<tr>
<td>17%</td>
<td>13%</td>
</tr>
<tr>
<td>63%</td>
<td>7%</td>
</tr>
<tr>
<td>5, 4</td>
<td>2, 1</td>
</tr>
<tr>
<td>Very close to ideal digital state</td>
<td>Midway to ideal digital state</td>
</tr>
</tbody>
</table>

Timeline to achieve an ideal state

Q: How long might it take for your organization’s consumers to experience an ideal “digitally enabled, always-on care and well-being” state?

<table>
<thead>
<tr>
<th>Less than a year</th>
<th>1–3 years</th>
<th>3–5 years</th>
<th>More than 5 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>3%</td>
<td>37%</td>
<td>43%</td>
</tr>
<tr>
<td>Don’t know/not sure</td>
<td>Consumers already experiencing ideal state</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Total respondents = 30.
Source: 2022 Health Systems Digital Transformation Survey conducted by Deloitte and Scottsdale Institute.
Health systems’ current digital offerings may not match all consumer needs equally

SURVEYED AND INTERVIEWED health system executives agreed that the adoption of digital technologies isn’t evenly distributed across all consumer needs. Digital adoption was reported to be stronger for access and care (within the walls), as making a business case for digital investments may be easier due to it being a traditional area of health system offerings (figure 3). Adoption of digital technologies in newer areas of prevention, well-being, and continued care (before and beyond the walls), though low today, is an area of focus for the coming years, according to the interviewees.
Integrating digital health tools to help improve the whole consumer experience

FIGURE 3
How digital integration aligns with consumers’ health needs
Mean adoption rate of digital technologies for consumer health needs.
Q: On a scale of 1–5 (5 being the highest), how optimal is your organization's adoption of digital technologies for your consumers' health needs?

- Current adoption
- Optimal adoption
- No adoption

<table>
<thead>
<tr>
<th>Access</th>
<th>Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid to high (within the walls)</td>
<td></td>
</tr>
<tr>
<td>Family/caregiver assistance</td>
<td>3.1</td>
</tr>
<tr>
<td>Scheduling (e.g., appointments)</td>
<td>3.3</td>
</tr>
<tr>
<td>Registration (e.g., check-in forms)</td>
<td>3.0</td>
</tr>
<tr>
<td>Financial transparency</td>
<td>3.5</td>
</tr>
<tr>
<td>Mid to high (within the walls)</td>
<td></td>
</tr>
<tr>
<td>Check-in (e.g., kiosks, virtual)</td>
<td>3.5</td>
</tr>
<tr>
<td>Care coordination (e.g., referrals)</td>
<td>3.1</td>
</tr>
<tr>
<td>Care delivery (e.g., in-person, virtual, multimodal)</td>
<td>3.7</td>
</tr>
</tbody>
</table>

Low (before the walls)
Health and well-being

Low (beyond the walls)
Continued care and well-being

Notes: Total respondents = 30; results show mean.
Source: 2022 Health Systems Digital Transformation Survey conducted by Deloitte and Scottsdale Institute.
Digital adoption within the walls

Some health systems have made significant progress on integrating digital tools and technologies during care delivery in the past few years. Consumer adoption of virtual health may have fallen from the peak witnessed during the pandemic but is still much higher for several therapy areas compared to the prepandemic period. Currently, health systems are working to strike the right balance of virtual and in-person health modalities to meet consumers’ convenience and access needs, according to our interviewees.

Another issue that patients and caregivers may face is knowing how to access and navigate care. Digital tools have helped our interviewees’ organizations address some of the most common chronic patient challenges around triage, scheduling, check-in registrations, and financial transparency. However, the interviewees acknowledged that the tools themselves can’t solve consumers’ access issues. Instead, they said, integrating digital health tools into the workflows, gaining buy-in from clinicians, and increasing the staff’s knowledge of the tools are far more important than simply having the tools.

Digital health tools can be more effective when health system leaders design offerings around consumer feedback. As one interviewee noted, “we started with self-scheduling options in our app. However, we realized patients were unhappy when physicians would cancel or change the appointment time with little notice. This happened because physicians, especially specialists who also work in other hospitals, had wavering schedules. Hence, we are now changing our approach, and doing it by piloting self-scheduling in a few primary care and specialty care areas. So far, this phased approach has succeeded.”

“We’re building new freestanding ED/urgent care clinics with a partner organization, which conducts geographical service-area analyses to identify locations with gaps in emergent and urgent care. The objective is to bring care closer to our patient communities while also eliminating the patient burden of having to decide, ‘Should I go to the hospital or urgent care?’ In our traditional urgent care settings, we’ve begun piloting new workflows, in the event of longer wait times, to offer patients the choice to enter a dedicated exam room that has been set up to connect with a virtual Baptist provider via a video visit thereby minimizing the patients’ overall wait to access care.”

— Tricia Julian, chief information officer, Baptist Health, Louisville
Digital adoption before and beyond the walls

The health system leaders we surveyed indicated that their organizations are focused on prevention and well-being, but the adoption and ability of digital technologies to improve consumer well-being has been spotty. The Deloitte 2022 Survey of US Health Care Consumers showed that consumers are more comfortable sharing health stats generated by wearables than they were a few years prior. However, our interviewees talked about how difficult it is to use this data unless it is well-integrated into their electronic health records (EHRs) and dedicated team members or analytical tools are used to interpret it. The interviewees also emphasized the risk of clinicians being overburdened if unfiltered data that is unnecessary for clinical purposes is sent their way directly.

Some interviewees noted an uptick in using digital technologies to complete health assessments remotely as a successful use case of integrating digital health tools to address consumers’ well-being needs. These assessments are helping health systems shift to a prevention-and-early-diagnosis model by detecting anomalies at a much earlier stage. That said, one executive noted that unless there’s a dedicated follow-up response to a consumer completing an on-line health assessment, it becomes a wasted effort.

Another focus area for many health systems seems to be addressing consumers’ needs beyond the walls. Taking advantage of the proliferation of digital technologies and advances in medical science, several health systems have set up digital “at-home” offerings in the last few years that allow them to take care of patients within the comfort of their homes. These offerings are working well, especially for some disease areas including chronic care, cardiac care, and mental health, according to the interviewees. Many of them discussed how health systems are partnering with digital health vendors on behavioral nudges, remote monitoring, clinician communications, and better internet solutions.

Many of these programs are still on a pilot basis and face operational and cost challenges, according to interviewees. One interviewee compared setting up hospital-at-home programs to setting up a wedding in a field because of the enormous logistical effort involved and the chance that “rain” (external factors such as inconsistent caregiver behavior, regulatory challenges) could mess up the planning. However, there was a consensus that these beyond-the-walls and hospital-at-home offerings are here to stay (and will further advance), so interviewees’ organizations are focused on standardizing processes and scaling efforts to address the future financial and business viability of these offerings.
Health systems should consider investing in business alignment, workforce, and processes to meet consumer needs before and beyond the walls

As discussed in the prior section, most organizations represented in the research are currently halfway along their journey of using digital technologies to fully capture consumer value before, within, and beyond the walls. There was a consensus among the survey respondents to accelerate this journey and most agreed that will require developing capabilities beyond tech strategy and infrastructure (figure 4). The areas of greatest need, according to the respondents, include aligning business operations, upskilling and hiring the right talent, and improving processes, change management, and workflows.

Realigning the business model

Care and access offerings that integrate digital tools are the most important business priorities, according to survey respondents and interviewees. The long-term financial viability of digital health tools in terms of budget and return on investment (ROI) remains a key challenge according to 53% of respondents (figure 5). At the present time—high inflation, economic uncertainty, and stretched budget dollars—digital ROI has become a key performance indicator, according to the interviewees. Without the appropriate measures in place, health systems are less likely to invest in digital tools and more likely to make ad hoc budget decisions, according to one interviewee.

The governance and ownership of digital initiatives are also major priorities, according to the respondents. Our survey results show a variety of roles, including chief information officers, chief medical information officers, chief experience officers, and chief innovation/ transformation executives, have been charged with establishing consumer-centered digital health initiatives at different organizations. As one interviewee noted, “Ownership of digital initiatives is another challenge leaders are grappling with. Strategy, clinical, digital, tech—all departments have collective interest, but there’s also fragmented ownership and decision-making.” Organizations may need to break the siloes and define ownership across roles and functions to try to successfully integrate digital offerings throughout the consumer health journey and help achieve a better consumer experience.

Integrating digital health tools to help improve the whole consumer experience
FIGURE 4

Health systems’ digital health priorities across three main capability areas

Q: On a scale of 1–5 (5 being mature), where does your organization stand today on the following capabilities for achieving an ideal “digitally enabled, always-on care and well-being” state for your consumers?

<table>
<thead>
<tr>
<th>High priority</th>
<th>Business</th>
</tr>
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</table>

Strategy and governance
Ability to clearly define a formal, comprehensive, digitally enabled care delivery vision that engages and aligns leadership through enterprise governance structures with clear decision rights

Business model
Existence of structures and processes that enable digital health’s financial viability, regulatory compliance, organizational advancement, and asset efficiency

Customer experience and engagement
Foundation that offers a differentiated care and well-being experience, supported by education and marketing of a clear value proposition to promote members’ utilization of services, feedback, retention, and improved outcomes

<table>
<thead>
<tr>
<th>High-to-medium priority</th>
<th>Operations</th>
</tr>
</thead>
</table>

Care model design
Ability to create flow integrating digital and in-person services into a seamless delivery process with coordinated care across services and settings

Workforce readiness and engagement
Ability to prepare and support clinical and nonclinical workforce to utilize digitally enabled offerings with a focus on improving quality, patient experience, and cost effectiveness

Operations and workflow integration
Ability to adjust operating model and staffing to integrate digital workflows and policies into traditional operations while promoting care quality, safety, and clinical outcomes

<table>
<thead>
<tr>
<th>Medium-to-low priority</th>
<th>Technology</th>
</tr>
</thead>
</table>

Technology infrastructure and interoperability
Existence of secure, integrated systems, processes, and technology infrastructure aligned to support current and future digitally enabled care offerings

Cognitive and analytics
Ability to leverage innovative data science techniques and artificial intelligence to generate meaningful insights on digital engagement and outcomes to inform clinical and operational decision-making

Note: Total respondents = 30.
Source: 2022 Health Systems Digital Transformation Survey and expert interviews conducted by Deloitte and Scottsdale Institute.
Shoring up talent and operations

Integrating technology into existing workflows has been a major challenge, according to our interviewees. One interviewee noted how adopting a fresh approach to workflows, and overhauling many from scratch, may be the only option for digital initiatives to succeed. The leader described how their health system successfully implemented digital health assessments to capture patients in select disease areas before the walls. In this example, consumers were able to get frequent, on-demand assessments through a digital device, and the results were integrated into their EHR app—and available for viewing—within hours.

However, because the next step on the workflow wasn’t defined, consumers didn’t know what to do with the results until they were explained at their next physician appointment. The same results would also occasionally arrive in the mail a week later due to inconsistent workflow redesign. Such lack of follow-through can undermine progress to date on prevention and wellness initiatives. The health system has since resolved that workflow design flaw.

Health systems also should focus on workforce integration and upskilling. The US health care industry is facing an unprecedented staffing shortage. Our survey respondents identified workforce shortage as the second biggest challenge in digital health integration (figure 5). Separately, the interviewees discussed how their people still face challenges with upskilling on various digital tools and technologies and indicated that the gap is a major factor in nurse and clinician burnout.

There was a consensus among interviewees on the need to not only hire more skilled talent, but to reskill and upskill their existing workforce to use the digital tools effectively.

“We’re experimenting with ambient listening capability through a partner organization. It requires a lot of change in how physicians interact with patients. It’s incredible how it frees physicians from computer documentation and allows them to interact face to face with patients. We’ve built it out to 40 physicians. It uses a listening-device function on their cell phones. It has reduced documentation time by 15% to 30%. Sometimes an hour can be given back to a physician, which means a lot from a work/life balance. This AI-driven solution supports both in-person and video visits.”

— Shane Thielman, corporate SVP and CIO, Scripps Health
Future-proofing technology capabilities

In our survey, health system respondents cited technology as the most mature capability required for successful digital initiatives. The COVID-19 pandemic may have helped break conventional resistance within health systems and accelerate unprecedented technology adoption. One interviewee noted that, “Health care is ten years behind other industries on technology adoption. However, the pandemic helped reduce this gap. Today, we are well placed technologically.” All interviewees agreed that today’s consumers and providers are far more accepting of digital tools as enablers of health and care.

Many interviewees outlined a near-term focus on advanced analytics and artificial intelligence (AI). They discussed several pilots that use AI for access and care delivery, and also for prevention and well-being (e.g., use of computer vision applications to improve diagnostics during health assessments), and continued care (fall detection, patient movements, and advanced remote patient-monitoring). For now, most health system leaders reported that they are focused on establishing the feasibility of using AI to detect disease and to pave the way for wider adoption.

FIGURE 5
Top three barriers hindering organizations’ ability to reach an ideal digital state
Q: Which are the biggest barriers to your organization’s push toward an ideal “digitally enabled, always-on care and well-being” state for your consumers?

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget and return on investment</td>
<td>53%</td>
</tr>
<tr>
<td>Workforce staffing challenges and shortages</td>
<td>47%</td>
</tr>
<tr>
<td>Organizational silos/fragmented ownership</td>
<td>40%</td>
</tr>
</tbody>
</table>

Notes: Total respondents = 30; this is a multiselection survey question so percentages may not total 100. Source: 2022 Health Systems Digital Transformation Survey conducted by Deloitte and Scottsdale Institute.
“If I had to pick three tech capabilities that help achieve an ideal digital state for consumers they’d be:

1. Ubiquitous broadband and high-quality, affordable access; not just for health care, but digital access in general, which will positively impact the social determinants of health.

2. A cybersecure platform for data interoperability so devices and wearables could travel on a highly secure, standardized and highly nuanced platform and the EHR could access actionable information.

3. A better developed, autonomous layer/toolkit powered by AI that would do a lot of preprocessing and deliver standardization and uniformity. It’s all got to be equitable and accessible—digital redlining is very real.”

— Lee Schwamm, MD, chief digital advisor, Mass General Brigham
Digital health integration is one of the keys to the future of health

Deloitte’s Future of Health™ vision involves a fundamental shift to prioritizing health over care in the coming decades, led by empowered consumers, advanced science, and novel technologies. If our research findings are any indication, health systems seem to have sensed this shift, and are likely engaging digital health technologies to help enable them to not only survive but to thrive in this new era. While digital technologies can play an important role in this transformation, organizations may not be able to succeed without the help of coherent business-model and operationalization strategies enabled by a redesigned workforce and reimagined workflows. In addition, health systems that build ecosystem partnerships with industry participants—peers, payers, digital health startups, and life sciences organizations—will likely be better equipped to advance consumer experiences.
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Endnotes

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