The Future of Digital Health

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BCG | BCG X

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The Future of Digital Health

The health care market has focused in recent months on how to navigate a post-COVID-19 world. During the pandemic, digital health options led to great opportunities for physicians to reach patients through telemedicine and remote monitoring, and paved the way for new approaches to providing better care. Unsurprisingly, investments flowed into digital health care as the pandemic spread. They began to slow in the second half of 2022, however, as investors' focus gradually shifted from exciting new ideas to demonstrated outcomes and evidence, with startups being asked to show value and a business model out of the gate. Even as the flow of investment into startups decelerated, several nontraditional players made significant moves into the health care market in 2022 (as we anticipated), partnering with traditional players in an effort to create new channels and markets and to advance the new hybrid health care environment.

As we enter 2023, many trends in digital health that the pandemic inspired and spurred on continue to gain traction, but other developments are beginning to play a role as well. In this latest edition of "The Future of Digital Health," experts across BCG and BCG X—BCG's new tech build and design unit—delve into what will define the space in the year ahead.

Home-based health care will keep gaining momentum after strong growth in 2022, due in part to the aging baby boomer population and to powerful technological advances—especially as the industry moves toward more "patient-led" delivery. We also expect alternative care models and new entrants in the health care space to emerge (watch for Microsoft and Apple), while retailers such as CVS, Walgreens, and Walmart further develop their health care strategies.

The women's health arena will continue to attract attention, investment, and innovation in 2023. We see exciting trends in fertility options, community-based care, and support for the underserved, among others. Femtech products and solutions (technology that specifically addresses women's health needs) will grow at a rapid pace, and femtech businesses will compete to develop hybrid, one-stop shops.

Tech advances in general will unlock many new opportunities in digital health. Virtual reality will offer new approaches for treating mental health conditions, and the health care industry will embrace more use cases for digital twins in clinical trials, hospital operations, and disease modeling. We see a push for smarter clinical development, and organizations are already testing ChatGPT, the generative AI technology, in developing therapeutic ideas, analyzing medical data, and identifying patterns. We also expect more tech-related advances to focus on reducing consumers' required out-of-pocket spending for health care.

Meanwhile, digital tools will improve health equity over the coming year by helping to bridge care gaps, expand access, enable more personalized treatment, and eliminate geographic barriers. Mental health services, in particular, will benefit, with more options becoming available to those seeking care. Still, the industry must contend with a cloud of economic uncertainty—and even though health care is typically resilient in this type of climate, we can expect some important shifts, including the following.

- The focus of digital-health investments will move from top-line growth to profitability, following the number of big bets made in recent years.

- Pharma IT will become more attractive to healthtech companies, given the current need for more comprehensive and industry-specific digital solutions.

- Strategic investments and M&A in the healthtech arena will increase even as financial investors pull back somewhat.

We are extremely excited about the ongoing evolution of digital health and—given the following developments and trends highlighted by our global team of experts—expect 2023 to be a transformative year.

Organizations are already testing ChatGPT in developing therapeutic ideas, analyzing medical data, and identifying patterns.

> **" A plethora of companies are trying to change the way women are supported, are treated, and take care of themselves.**

Ashkan Afkhami
Managing Director and Partner

- **Progress and momentum in the women's health space will continue as they have in recent years.** A plethora of companies are trying to change the way women are supported, are treated, and take care of themselves. We are especially excited to see positive trends in fertility options (such as those offered by Ovia Health and Progyny), community-based care (Cayabacre), support for underserved populations (Sesh Groups), care advocacy (Maven), alternative birth options (Oula Health), and mental health services that are uniquely designed for women (Caraway Health). In addition, both large companies and startups will make strong pushes for women's health equity in different countries around the world in order to provide better experiences and options. We look forward to additional attention, investment, and innovation in the women's health space in 2023.

- **Alternative care models and new entrants will appear.** Companies such as CVS, Walgreens, and Walmart will build on their existing infrastructure to provide community-based health services and explore channels for providing near-real-time care through innovative new technologies and services. Other companies, such as Amazon (following its recent acquisition of One Medical), will leverage their strategic assets to move into holistic health care, including work that focuses on sleep, activity, and nutrition.

- **The need for outcome-based solutions backed by real-world evidence and studies will pose a stronger barrier to entry into digital health.** Over the past decade, we have seen various organizations—such as Omada, Proteus Digital Health, WellDoc, Akili Interactive, and Pear Therapeutics—take digital solutions to market, with mixed outcomes. As a result, although CPT/ICD (procedural and diagnostic) codes are available for remote patient monitoring and other clinical services, manufacturers within the pharmaceutical and medical-device sectors, along with payers and providers, will require more evidence before they adopt or reimburse such digital health solutions.

> **Digital tools will advance health equity by supporting companies, payers, and providers who want to reach underserved populations.**

Johanna Benesty
Managing Director and Partner

- **Digital tools will advance health equity** by supporting companies, payers, and providers who want to reach underserved populations. Examples include tools that enable better decisions, permit the measurement of impact, allow more personalized treatment pathways, correct biases in data collection, or alleviate geographic barriers through the use of hybrid care models that provide access to specialized services.

- **Digital technology will help improve clinical care** by enabling data-driven analysis and giving health care practitioners tools that support continuous learning, best-practice sharing, and operational research based on real-world evidence. For example, networks of intensive care units (ICUs) may use federated learning—a machine-learning technique that multiple entities can use to build a common model without sharing their data—to identify best practices in patient management and create a score for each ICU on the basis of its compliance with those practices and its alerts for high-risk cases.

> " Full-stack solutions increasingly rely on an ecosystem architecture powered by a community of partner companies.

Nate Beyor
Managing Director and Partner

- **Experienced builders of digital products and solutions are beginning to recognize that compliance influences products.** For example, regulations often limit investments in new products, yet compliance teams frequently take a spectrum of stances when interpretating these regulations. For instance, how can a pharmaceutical company support telehealth? Not at all? At arm's length? Or by setting up some sort of virtual clinic? Answering this question, and others like it, will directly affect patients' product and user experiences. Thoughtful builders will therefore address these questions head-on early in their innovation cycle.

- **Technology partnerships are no longer optional.** Full-stack solutions, composed of linked platforms across layers of the technology stack, increasingly rely on an ecosystem architecture powered by a community of partner companies. Within such an ecosystem, layers have different owners and work together through technology interfaces. Strong platform layers will have robust connections through well-defined APIs and software development kits (SDKs), with business models to accompany them that allow the complete solution to scale by aligning incentives to all parties.

- **Pharma IT will become more attractive as a customer target for healthtech companies.** With health provider budgets tight—and with IT even tighter within them—growth-stage digital-health companies need a path toward revenue and profitability that will bridge inevitably longer funding cycles. Although pharma spends big on technology, it often does so in disjointed ways across the value chain (discovery, development, manufacturing and supply chain, commercial), with solutions that are either built from the ground up or repurposed from other industries. As a result, over the coming months, more comprehensive and industry-specific digital solutions will grow and compete for pharma IT dollars.

> **" Individuals' lives outside of the health care system significantly affect their ability to understand, prioritize, and act on medical recommendations.**

Satty Chandrashekhar
Managing Director and Partner

- **Smarter clinical development will be a key focus over the coming year.** More than 20,000 new drug candidates are currently under development. The statistical likelihood is that more than 30% of those entering Phase II will not progress and that approximately 60% of those reaching Phase III will fail. Given that bringing a drug to life takes around ten years and $2 billion, the case for improving the probability of success seems straightforward. Meanwhile, a range of existing capabilities, from machine learning of trial data to natural language processing of clinical notes, can create new efficiencies, although there is a critical supply gap in the talent needed to enable them at scale. In a number of areas across the clinical life cycle, organizations can realize material benefits when these capabilities are present. Key opportunities include improved trial speed, cost, and quality. Relevant areas include study strategy (selecting appropriate countries and sites), protocol definition (choosing the best trial-design criteria and endpoints), patient recruitment (finding and onboarding patients), and pharmacovigilance (understanding who might fail a screening and how a study is likely to perform).

- **Applying data science to better understand social determinants of health (SDOH) will sustainably and equitably improve the health of at-risk populations.** Individuals' lives outside of the health care system significantly affect their ability to understand, prioritize, and act on medical recommendations. As a result, precision care interventions powered by SDOH—such as housing, transportation, and food security—can significantly influence a person's overall well-being. Most important, data science can help clarify the health drivers among SDOH, suggest patient interventions for care workers to undertake, or recommend healthier behaviors for individuals to adopt. To make this actionable, providers and health systems need access to extensive SDOH data and capabilities. These include customized insights by population segment, human-centric intervention designs informed by behavioral science, and AI platforms that channel interventions physically and digitally to the right patients at the right time in the right ways—learning and improving as they gather more data.

> ❝ Compared to the innovation potential in hardware, the untapped potential of software is enormous.

André Heeg
Managing Director and Partner

- **Health care will continue to move closer to the people, especially the older generation, given the demand.** The move will be powered by digitally enabled products and services, such as home testing, home monitoring, at-home care, telemedicine, e-prescriptions, and health checks that can be performed without doctors. This trend will include a subtrend involving patient-centric care models and offerings that generate patient engagement and, ultimately, the use of related services and products.

- **Medtech will move from hardware-wired to software-coded.** Traditionally strong medtech companies will further explore and expand their efforts to support their hardware with software products and services. Compared to the innovation potential in hardware, the untapped potential of software—especially the application of AI algorithms—is enormous. This includes software on both the provider side, such as in workflow management and decision-support tools, and the patient side, such as in preclinical administration and evaluation support and post-procedure report generation.

- **Science- and evidence-based facts will continue to compete with fake medical news.** We live in a time when misinformation, such as about the pandemic or about diet and nutrition, spreads very easily. Consequently, the need to establish sources of trustworthy, reliable, and accurate medical information is becoming increasingly acute. Many people try to gain an advantage or benefit by distributing false or misleading medical information and even by discrediting medical professionals. Managing that trend with readily available, truthful medical information will become more and more important.

> **" Telehealth and telemedicine cannot deliver well-rounded patient care in isolation.**

Ami Karnik

Director and Venture General Manager

- **Virtual care is certainly here to stay, but its future is rooted in how well it is paired with in-person care.** With the peak of COVID-19 mayhem behind us, it is becoming clearer that telehealth and telemedicine cannot deliver well-rounded patient care in isolation. The coming year will reveal which companies can deliver the right combination of virtual and in-person care in a way that optimizes patient convenience, reduces clinician burnout, enhances clinician-patient engagement, and improves health outcomes.

- **Home-based health care will receive a lot more attention in the coming year.** Driven by a growing geriatric population and improvements in technology, the balance between traditional in-person care and home-based care has been tilting toward the latter—a trend accelerated by the pandemic. With an expected annualized growth rate just shy of 8%, according to Grand View Research, home-based care is likely to continue picking up pace as more baby boomers need longer-term care for chronic conditions. In tandem, support services for caregivers will increase as the demands on them become more acute. These services could cover everything from hands-on medical support to ancillary and logistics services that ease caregivers' burden.

- **The year to come will see retailers deploying health care strategies with even greater force.** Spurred by the need for convenient COVID-19 testing sites, retailers have enthusiastically entered the health care space. Their near-term focus will be on expanding primary care and on increasing omnichannel capabilities to bring accessible, low-cost, and convenient care to patients. In addition, as competition in the space heats up, many retailers will opt to boost their personalized care offerings through data analytics and cloud computing capabilities. Meanwhile, consumer stickiness will become the key to longer-term success.

> **In customer service, organizations will use generative AI to respond to patient inquiries, freeing health care companies to improve the patient experience.**

Daniel Martines
Managing Director

- **Health care organizations will adopt generative AI technologies** (the use of artificial intelligence algorithms to generate new data, such as images, text, or audio). As a result, we will see an emergence of generative AI use cases and experimentation across all health care sectors in 2023. Organizations are already testing ChatGPT, a generative AI technology, in developing therapeutic ideas to feed clinical trial pipelines, analyzing large amounts of medical data, and identifying patterns that may indicate new treatment options or potential health risks. In customer service, organizations will use generative AI to respond to patient inquiries, freeing health care companies to improve the patient experience and reduce the workload on human customer-service representatives. In addition, they can use generative AI in clinical trials to help find the most suitable patients for the trial and to create patient-specific treatment plans.

- **Patient analytics will inform many different areas,** from diagnostics and therapies to the optimization of medical supply chains on the basis of patient density or therapeutic trends. In tandem, patient-related analytical models will become more and more sophisticated through the use of AI and external information such as demographics, social-media data, and social determinants. Patient-data platforms—including anonymized integration of electronic-health record platforms—will emerge, as will domain-specific data science teams to capture value.

- **Patient data will be integrated into the health care supply chain and employed across use cases.** Pharmacies will monitor drug-therapy adherence and personalize patient communications. Clinical-trial project teams will optimize country selection and site activation. And pharma companies will optimize drug distribution. Meanwhile, patient-data compliance will continue to evolve, and organizations will need to implement automated controls to ingest, manage, and use the data. In addition, companies will need to strengthen their enterprise data-management function to unlock patient-analytics use cases.

> " Patients who have difficulty accessing mental health care in person will have more options for connecting with telehealth providers.

Lauren Neal
Principal, Data Science

- **As AI and machine learning (ML) continue to make rapid progress, the number of AI- and ML-enabled medical devices being developed and approved for use by the FDA and other regulatory bodies will increase.** Use cases for these devices will expand from radiology into other areas, including oncology and cardiology. At the same time, more devices will incorporate learning algorithms, fostering the evolution of device software over time, and regulatory agencies will need to adopt new surveillance processes for evaluating device performance.

- **The health care use cases for digital twins will grow,** including clinical trials, hospital operations, and disease modeling. In the case of clinical trials, researchers will use digital twins to reduce the number of patients in placebo groups and increase study diversity, thereby lowering recruitment costs and accelerating time to approval. Scientists will also use digital twins to predict how individual patients will respond to treatment through the use of deep phenotyping, which compiles health records, genomic data, and other data sources.

- **Telemedicine will be used to bridge gaps in care,** expanding access and increasing care delivery to underserved communities. More specifically, telemedicine will extend mental health services and improve adherence to medication and therapy by removing barriers to engagement. Patients who have difficulty accessing mental health care in person will have more options for connecting with telehealth providers, leading to higher-quality care and fewer hospitalizations. Combining telemedicine with remote patient monitoring will allow providers to manage chronic conditions and reduce costs.

> **Winning will mean not only having a great product-market fit, but also making wise choices about how to work with healthtech ecosystem partners.**

Julius Neiser
Managing Director and Partner

- **In digital health, competition will shift from player-versus-player to ecosystem-versus-ecosystem.** Winning will mean not only having a great product-market fit, but also making wise choices about how to work with healthtech ecosystem partners. Such partners include data ecosystems, infrastructure and cloud ecosystems, and device ecosystems, as well as networks of providers, payers, and health systems.

- **The focus of digital-health investments will fundamentally change from top-line growth to profitability.** Digital-health solutions have proliferated, with investors making big bets to capture a share of the booming healthtech sector. In the coming year, many of these solutions will fail if they have not sufficiently reduced business-model risks and demonstrated a path to profitability. On the flip side, investors will double down on solutions that satisfy these requirements, as health care in general—and healthtech in particular—is recession resistant.

- **Health care delivery will increasingly evolve from patient-centric to patient-led.** Patients are demanding to take charge of their own health, using disease management solutions to do so and finding new ways to connect to their care teams, such as through ever-more-advanced remote diagnostic, delivery, and monitoring solutions. This new wave of patient-led care will require great leaps in integrating people, services, software, and hardware.

> **Although consumers on Medicaid have historically been harder to engage, we expect to see a wave of innovation prompted by digital-tech and localization-focused new entrants.**
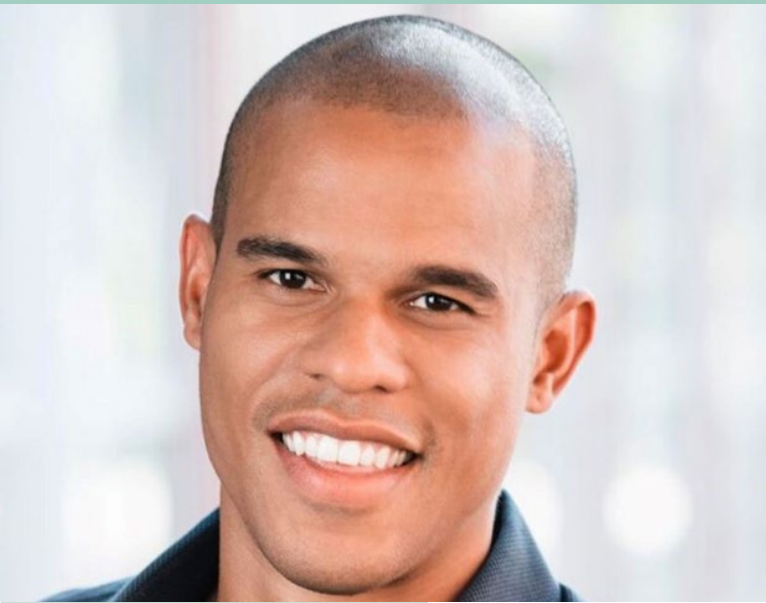
Etugo Nwokah
Managing Director and Partner

- **Medical- and prescription-cost transparency** will be a renewed focus for payers, providers, employers, governments, and consumers. The catalyst is the Center for Medicare and Medicaid Services' Transparency in Coverage Rule (CMS-9915-F), which went into effect on July 1, 2022. The dynamics involved—including the MLR credit, the financial mechanism that will allow payers to provide incentives to consumers to shop for health care services—are complex. On the prescription side, companies such as GoodRx, Mark Cuban Cost Plus Drug Company, and Amazon are using scale and operational efficiency to find pockets of drugs that they can source, administer, and deliver at low cost to consumers.

- **Ongoing advancement in technologies such as AI and ML, blockchain, and workflow automation will create more opportunities to address the out-of-pocket spending** that US consumers require must provide health care. Health care costs account for 10% to 20% of a typical US consumer's wallet—and 20% of total US GDP spending—and US employers are seeing unsus-

tainable growth in premiums (which were about $13,700 per employee in 2022). Consumers will increasingly use financial services such as "buy now, pay later" to finance their medical needs. And this trend may shape how industry players enter new markets and engage with existing ones.

- **Medicaid is the next frontier for health care innovation.** Over the past decade, Medicare has been the primary focus of innovation, much of it in the health care payer and services space. Medicaid and Medicare face similar cost pressures, especially within the macro environment, and this has implications at both state and federal levels. Although consumers on Medicaid have historically been harder to engage, we expect to see a wave of innovation prompted by digital-tech and localization-focused new entrants. Such innovation will touch on social determinants of health but also, more comprehensively, on individuals across topics such as nutrition, mental health, and sleep.

> **Partnerships will enable healthtech products that previously struggled to gain distribution and scale to expand more aggressively.**

Sid Thekkepat
Managing Director and Partner

- **Strategic investments and M&A in healthtech will grow.** As financial investors pull back slightly, strategic investors will partner, invest in, and acquire companies. These partnerships will enable healthtech products that previously struggled to gain distribution and scale to expand more aggressively.

- **Drugs will increasingly be launched digitally rather than through a salesforce.** As pharmaceutical firms experiment with models, there will also be a significant shift to digital-first models when launching drugs.

- **Microsoft and Apple will make significant inroads into health care.** While Amazon and Google have made their moves, Microsoft and Apple have largely been in the background. This should change as the most trusted tech brands make bigger pushes into the field.

> **The coming year is likely to see an increase in femtechs striving to be one-stop shops for women's health.**

Alice Wilson
Lead Strategic Designer

- **Virtual reality will continue to showcase new approaches to treating mental health conditions.** Although the metaverse hype has begun to decrease, VR-based exposure therapy is still exhibiting positive results in improving patient outcomes—and now that BehaVR and OxfordVR, the leaders in this field, have joined forces, this trend is well positioned to continue. The more immersive interactions within the metaverse could support better access to care through virtual clinics, as Mind-Easy has done in Decentraland; offer ways to manage broader psychological disorders, such as body dysmorphism, autism, and depression; and provide spaces for mental well-being practices, such as those provided by Tripp, a digital wellness company.

- **Femtechs will race to offer comprehensive—and hybrid—care models.** The femtech market is predicted to grow to $103 billion by 2030, according to Precedence Research, meaning that a significant amount of white space remains. As a result, the coming year is likely to see an increase in femtechs striving to be one-stop shops for women's health, offering both virtual and in-person services. New York–based Maven Clinic, now valued at an estimated $1.35 billion, has shown that such efforts can succeed. And around the globe, numerous comprehensive hybrid care providers are waiting in the wings, including Plenna in Mexico, Kindred in the Philippines, and Almond in the US.

Players must relentlessly focus on the true problem they are solving for patients, consumers, care teams, or health care professionals.

Our experts clearly see a number of major themes on the health care horizon in 2023, including an ongoing shift to in-home diagnostics, more alternative-care models and new entrants, technology advances that improve treatment or reduce the share of patients' wallet expended on health care, and a greater emphasis on specific therapeutic areas such as women's health. We are excited to watch these themes as they emerge, evolve, and, in some cases, consolidate to create meaningful impact for patients, caregivers, and physicians.

For quite a while, players in the digital health space have been attempting to bridge the chasm between digital and in-person health care, most often by generating adoption, engagement through real-world evidence, and compelling business models. Although the chasm remains, it is narrowing steadily. Here are some ways for the digital health community to advance their collective journey:

- **Seize partnership opportunities.** Continue to observe larger shifts in the market with an eye toward how incumbents spend their time, money, and energy, while also looking for opportunities to partner or to create or join the respective ecosystems.

- **Demonstrate value.** Be more judicious than in the past about demonstrating value, showcasing clinically validated outcomes, and creating sustainable business models. A number of health care companies have closed their doors in recent months because they did not move quickly enough to generate appropriate evidence for their solution and a scalable reimbursement model. Many companies have interesting ideas, but investors want to know who is going to pay for them and how they will generate value for all stakeholders.

- **Think big but start small.** The overall market benefits from big thinking, disruption, and new models for providing care. Nevertheless, players must relentlessly focus on the true problem they are solving for patients, consumers, care teams, or health care professionals. They should run tests to establish a product fit with the intended user or users, and they should co-create where possible with that audience, with health systems, and with payers. Finally, they should choose the appropriate geographic focus, starting small and growing from there, rather than trying to boil the ocean in multiple markets.

At BCG and BCG X, we are committed to helping organizations enable innovation at scale and unlock new possibilities to reshape the health care ecosystem with digital tools, technologies, and solutions that empower patients, physicians, care teams, and others who work in the field of health. As we step into 2023, we look forward to collaborating with you to create the next generation of digital-health solutions.