Healthbox®

Redefining Care Delivery
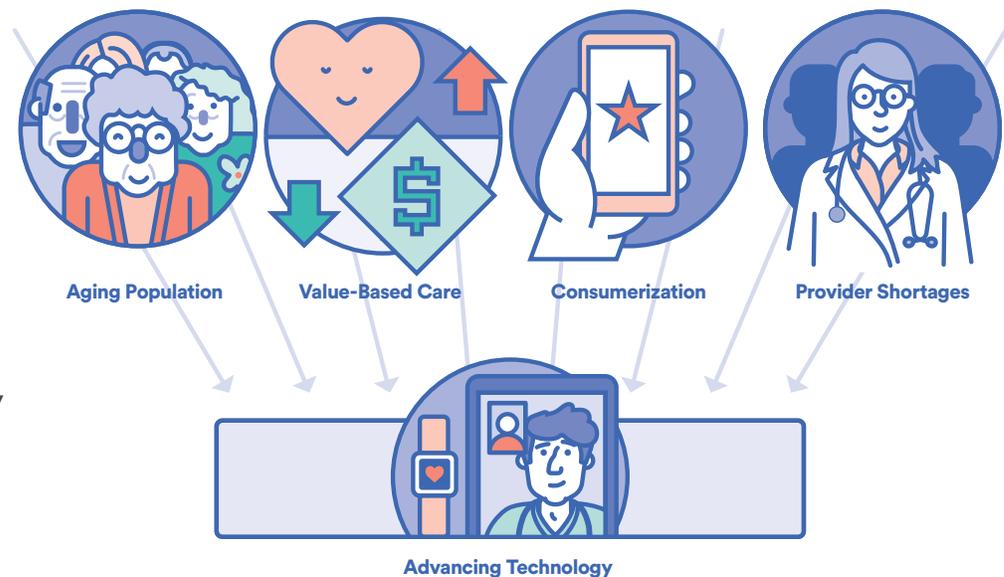
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Rebuilding Healthcare Delivery Models to Support Evolving Needs

In the past, the majority of care was provided in the home. In fact, "only the most destitute and friendless ended up in hospitals, which were often little more than almshouses."[1] However, as medical and technological advancements led to reduced length of stay and costs, and new care team roles emerged to reduce the burden of on-call doctors, the hospital became a more trusted, affordable setting in which to seek treatment.[2] Overtime, through acquisition and expansion, healthcare facilities grew bigger and bigger, becoming the central place for employment and care delivery to traditional inpatient (e.g. hospitals, SNFs, LTACs, etc.) and outpatient (e.g. ASCs, clinics, ambulatory imaging, etc.) settings. This centralized, brick & mortar model contributed to important developments such as medical peer review, evidence-based processes, and standardized protocols, and still remains the best location for the sickest patients with complex needs to receive immediate treatment. However, brick and mortar growth takes time, capital and a payment model that supports the investments.

Now, as other industries have experienced, digitization is disrupting the way traditional business models provide value, requiring them to redesign existing systems and infrastructure to keep up with the evolution of needs and capabilities. In healthcare, factors such as an aging population, the transition to value-based care, changes in consumer preferences, a decline in provider availability and satisfaction, and most influential, advancements in technology, are driving the need for more creative, efficient, and targeted solutions — ultimately driving the shift of care towards outpatient, home, and community health settings. Technology has made outpatient care health outcomes similar to or better than the inpatient setting while at the same time reducing cost and improving the consumer experience.[3] As the digital world continues to evolve, this transformation will lead not only to the (re)emergence of home healthcare, but also to the redefinition and expansion of virtual and community-based care. As the industry moves further away from fee-for-service, healthcare companies need to re-organize to deliver care both remotely via digital means and physically in the communities where their patients live, work, and play. This report explores the factors that have contributed to this sea change and provides examples of how successful organizations have adapted their strategy to meet the market forces.

Shifting Care Settings

Factors Driving the Redefinition of Care Delivery

Aging Population   Value-Based Care   Consumerization   Provider Shortages

Advancing Technology

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[1] Tishler PV, Wenc C, Loscalzo J: The Teaching Hospital, Brigham and Women's Hospital and the Evolution of Academic Medicine. New York, McGraw Hill, 2014. Chapter 5: Wenc C: "Patient-Centered Care and the History of the Brigham and Women's Hospital" p. 266-268.

[2] https://health.usnews.com/health-news/hospital-of-tomorrow/articles/2014/07/15/hospital-of-yesterday-the-biggest-changes-in-health-care

[3] https://www.bcbs com/the-health-of-america/reports/how-consumers-are-saving-shift-outpatient-care

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What is Driving the Shift to Nontraditional Care Settings?

As digital ecosystems have matured to enable efficient, quality, affordable care, and inpatient clinical care continues to be more expensive and less convenient, it is clear that technology is a central driver forcing the healthcare industry to reconstruct the status quo. However, there are several other forces contributing to the transformation of care delivery. The four main drivers attributable to the reemergence of home health and nonclinical care delivery, with advancements in technology serving as the main lever making the shift possible are:
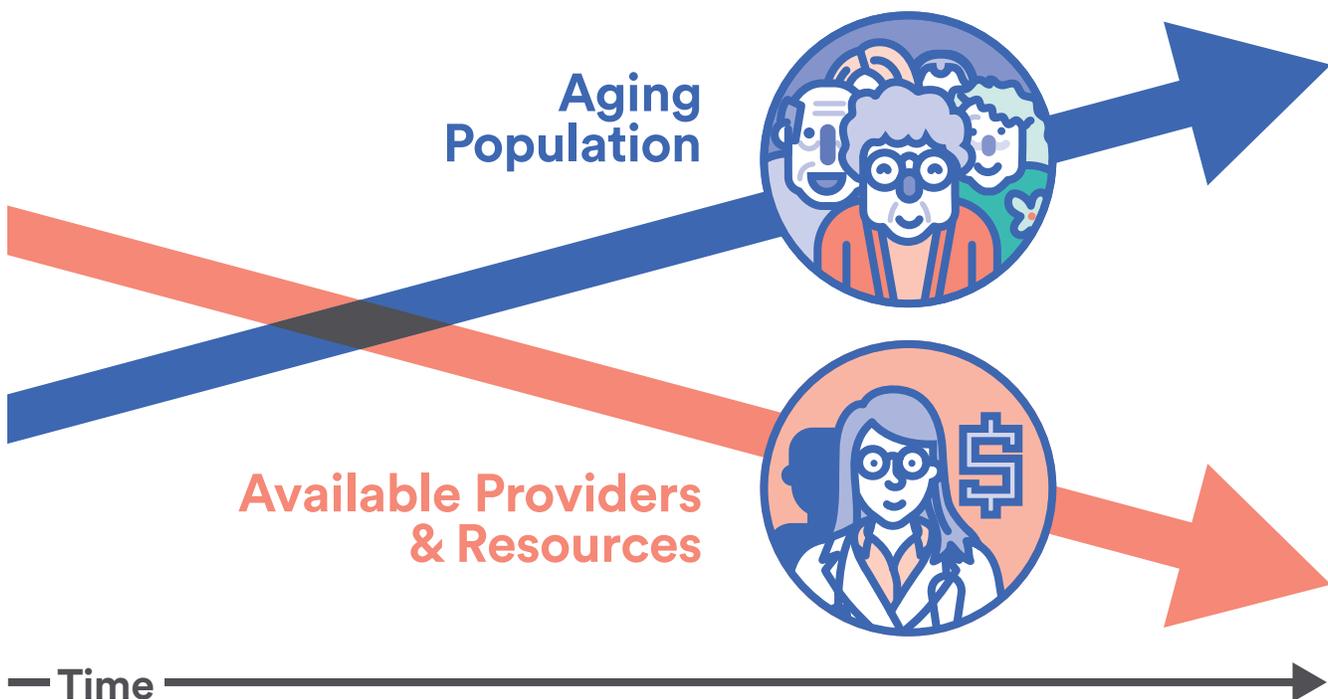
1. **Aging population**
2. **The transition to value-based care**
3. **The consumerization of healthcare**
4. **Provider shortages**
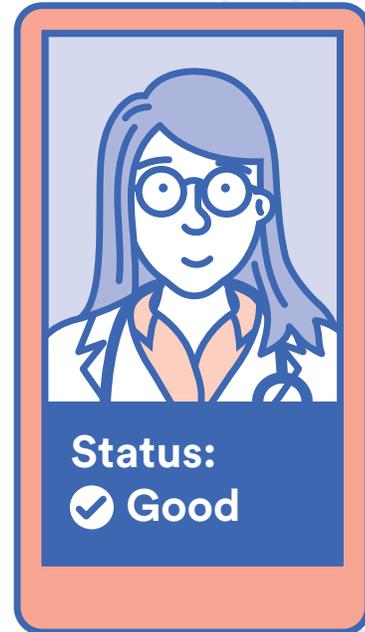
Factor #1: The Silver Tsunami

First, and carrying a far-reaching impact, the global population growth of people 65 and over is unprecedented. By 2050, one in six people in the world will be over age 65 (16%)[4]; In the U.S., the number of Americans in this aging demographic is estimated to more than double by 2060, reaching approximately one fourth of the population. The predicted doctor deficit, coupled with the fact that older adults are now living longer than any generation before threaten the traditional model of inpatient healthcare delivery. These issues combined with the fact that people are living with increasing rates of chronic illness, disability, and loss of mental function requires the U.S. health ecosystem to shift its mindset, practices, and payment models that dictate where, when, and how care is delivered.[5] Aging Americans are not only sicker than their counterparts living in other developed countries, but they are also more likely to have problems obtaining care due to costs.[6] The tendency for baby boomers to live at home rather than in group or nursing facilities puts further emphasis on care in the home, and consequently, can be burdensome to family or friend caregivers who offer their support. Additionally, the loss of vision, hearing, and ease of mobility compounded by existing comorbidities make access to and from a medical care facility increasingly difficult. Aware of the urgent need to address these issues, many health systems are investing in car share services, smart health home devices, and telemedicine services for their patients to make these challenges easier to coordinate.

Effects of an Aging Population on Available Resources

Aging Population

Available Providers & Resources

Time

[4] https://www.un.org/en/sections/issues-depth/ageing/
[5] https://www.forbes.com/sites/williamhaseltine/2018/04/02/aging-populations-will-challenge-healthcare-systems-all-over-the-world/#7e3450a32cc3
[6] https://www.commonwealthfund.org/publications/journal-article/2017/nov/older-americans-were-sicker-and-faced-more-financial-barriers

Financial issues tied to the growing aging population further contribute to a rise in outpatient and home healthcare. In 2010, Social Security and Medicare each accounted for approximately 3% of the GDP. By 2050, both numbers are projected to double, with Medicare and Social Security together accounting for 12% of the GDP. Relative to the number of soon-to-be retirees, there is a lack of workers to counterbalance the pull from these funds. In fact, this ratio dropped from 14 working-age adults per retiree in the early 2000s to just four in 2014.[7] Both the financial and disease burden that result from an aging population has put pressure on the healthcare system to improve outcomes while reducing costs in the outpatient and home healthcare setting. Increasing emphasis will be placed on building infrastructure that supports healthy aging in cities and communities, with more reliance on connected devices that deliver care at home, additional support for community/home health workers and caregivers, and a focus on addressing loneliness.

Factor #2: Transition to Value-Based Care

Currently, the U.S. healthcare system remains a mostly fee-for-service (FFS) world; however, the industry is steadily transitioning to a value-based system. Payors have begun reimbursing healthcare expenses based on outcomes rather than quantity of services provided, assessing health systems on measures such as quality, cost, advancing care information, and improvement activities. Managing the economics of FFS and value-based care simultaneously is akin to trying to row two canoes at the same time: it's nearly impossible and creates misaligned incentives that inhibit health systems from achieving the quadruple aim. As U.S. Department of Health and Human Services (HHS) policy proposals continue to support the shift toward value-based reimbursement and reimbursing the social determinants of health[8], organizations are more incentivized to transition and reimagine the way quality care is delivered while simultaneously reducing costs and improving the patient experience-- a task that may be more readily achieved with a focus on community health and wellness. Mounting evidence shows that identifying and addressing the underlying root causes of poor health outcomes or behaviors such as neighborhood violence, not knowing how to use an inhaler, lack of access to fresh food, and unstable housing can significantly improve individual and population health and reduce hospital admissions and readmissions. Health systems have begun partnering with community organizations and employing community health or social workers to bring the issues patient populations face to the table and to serve as trusted groups that work directly with patients to address their health needs in community-based settings.

CASE STUDY:
Montefiore Invests in Housing & Care Teams for At-risk Patients

Montefiore Health System, a New York-based academic medical center that has a focus on improving population health by serving community needs, consists of six hospitals and just over 2,000 beds. After conducting a data analysis in high Emergency Department (ED) utilizers and populations who had high rates of readmission, Montefiore observed that homelessness was a key indicator for high ED utilization and readmissions and thus decided to invest in providing housing for their housing insecure population. Montefiore's patient housing costs $140 a night per bed, which is cheaper than an overnight hospital stay. As part of the investment, Montefiore hired social workers and devised an alert system that detects patients at risk of homelessness in real time so the care team can educate and discharge patients appropriately. The program resulted in nearly 1,000 alerts per year, with most of the patients suffering from multiple chronic conditions. Montefiore says the investment in housing has significantly cut down the number of ED visits and unnecessary readmissions, leading to a minimum 300% ROI each year since the program began.

[7] https://assets.prb.org/pdf16/aging-us-population-bulletin.pdf
[8] https://www.modernhealthcare.com/payment/cms-launch-new-direct-contracting-pay-models-2020

Factor #3: Consumerization of Healthcare

Consumer expectations for customized, convenient, and quality care has forced the industry to place an increasing focus on consumer engagement and empowerment, with an emphasis on virtual care and digital health tools. Other highly complex and regulated industries, such as the airline industry, have mastered creating personalized, transparent, affordable, accessible solutions, and people are demanding the same level of service from healthcare as well. Consumers have more power than ever in choosing where, when, and how to receive their care. As a result of STAR ratings, public reporting requirements, and the increasing role of social media, patients are able to rate their physicians and read the reviews others have posted about them prior to their visit. Patients, as consumers, are also more educated than ever, and are further incentivized to research care options given the cost burden has increasingly been placed on the patient.[9] The internet has opened up a realm of possibilities for patients to research best practices for their own care, explore different options for their insurance, and compare various nearby clinics before choosing the one that fits their needs. U.S. policies geared at liberating data to drive value and price transparency will further inform and empower consumers to manage their own care from the setting most convenient for their needs. For example, the ONC and CMS proposed rules on interoperability and patient access mandate the use and adoption of APIs to "make patient data more useful and transferable through open, secure, standardized, and machine-readable formats while reducing restrictive burdens on healthcare providers."[10] Most recently, HHS proposed price transparency laws mandating pharmaceutical companies post their prices in TV ads and hospitals to publicly post standard charge information in easy-to-read formats to inform patient-decision making.[11]

> **Exploring SDOH: Healthbox Root Causes of Health Report**
>
> Health systems have started to think more broadly about their responsibility to the community and treating other factors that contribute to health. These treatments can and increasingly take place outside the four walls of a hospital. The **Healthbox Root Causes of Health Report** provides strategies for addressing key issues in healthcare by tackling them at their roots, or the social determinants of health.
>
> **View Report**

The consumer focus is not limited to the provider and payor realm. In 2018 alone, over 325,000 health-oriented applications were available to consumers, with $8.1B invested in digital health funding. Consumers have more access than ever to remote monitoring devices, behavioral health solutions, and telemedicine services that allow them to remain more independent from the health system in its traditional form. With 1 in 5 Americans reportedly using voice assistants, many nontraditional consumer-focused companies have entered the healthcare realm.

Recent activity from Comcast, whose mission is to provide people "services that connect them to what's important in their lives" further highlights the movement of nontraditional consumer-focused technology companies into the healthcare realm to capitalize on the 'consumerization of healthcare' trend. The company announced the launch of an in-home health device, targeting at-risk populations including seniors, to monitor health remotely using ambient sensors and voice-enabled technology, adding to the mix of competition between other in-home device players such as Apple, Google, and Amazon.

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[9] https://www.healthsystemtracker.org/brief/increases-in-cost-sharing-payments-have-far-outpaced-wage-growth/#
[10] https://www.cms.gov/newsroom/fact-sheets/cms-advances-interoperability-patient-access-health-data-through-new-proposals
[11] https://www.whitehouse.gov/presidential-actions/executive-order-improving-price-quality-transparency-american-healthcare-put-patients-first/

CASE STUDY:
UnitedHealth Group Pilots Digital Health Tools to Control Glucose Levels

UnitedHealth Group conducted a pilot with the Children's Hospital of Minnesota to use digital health tools to control glucose levels.[12] The organization equipped 117 teenagers with Type 1 diabetes with Fitbits, disease education, and weekly emails from physicians to help them better control their blood glucose levels. Participants who received this intensive remote therapy (IRT) as part of the study successfully reduced their HbA1c levels by 0.34, compared to 0.05 in the control group.[13] The IRT cohort additionally reported higher quality of life with regards to their diabetes care, despite having to do more work to manage their care for the duration of the study. Patients with diabetes are only one of many who will significantly benefit from home healthcare. UnitedHealth Group is currently working with asthma patients as well, with the goal of expanding remote monitoring solutions to all patients, particularly those with access to technology on a daily basis.[14] Technology advancements and shifting payment models have made it possible for health systems to connect with patients in their daily lives and nudge them to engage in healthy behaviors via remote monitoring and digital tools. As these pilot programs continue to prove their efficacy, health systems will be able to further empower consumers by equipping them with the knowledge and tools they need and incorporate health into their everyday activities.

Factor #4: Challenges to the Available Workforce

Another factor driving the shift towards virtual and community care settings is the predicted provider workforce shortages worsening. The Association of American Medical Colleges (AMA) predicts the current shortfall of physicians to expand to 121,000 by 2032,[15] leading to a huge gap in primary care and specialist providers precisely when the U.S. aging population will need more care, especially in rural areas. This issue is exacerbated by the rise in provider dissatisfaction; more than 44% of U.S. physicians screened positive for depression, an alarmingly high rate compared to the 8.4% of the general population screening positive.[16] With a quarter of U.S. physicians expected to retire over the next decade, more than 40% experiencing one or more symptoms of burnout,[17] medical school applications dropping significantly,[18] and the aforementioned swell of the senior population, the future state of available providers is in a state of crisis. This perfect storm has likely contributed to the spike in the deployment and usage of virtual care services as well as in-home or wearable devices that empower consumers to better manage their care from home, outpatient or community-based settings.

CASE STUDY:
Mercy Virtual Builds Digital-Only Hospital to Combat Provider Shortages

With only 10% of physicians practicing in rural areas, Mercy launched its first digital-only hospital that specializes in delivering web, telehealth, and digital health services in 2015 to address access issues, particularly for their rural patient populations. Today, Mercy Virtual clinicians support and monitor over 10,000 patients daily via "virtual care pods" that consist of iPads, sensors, and telehealth systems that track health metrics such as medication adherence, biometric fluctuation, and post-procedural progress. Further, Mercy Virtual offers virtual home-visits and a nurse-on-call department that address more than 285,000 patient questions annually. Mercy's remote patient monitoring has reduced total intensive care patient days by 90,000 over the past few years, which translates to savings of $50 million according to the system.[19] Other virtual hospitals developed by organizations such as Intermountain Healthcare and LifeBridge show the growing trend of building virtual care systems as a way to reach more patients amidst impending provider shortages and an aging population to reduce access issues, travel time, and the utilization of unnecessary resources.

[12] https://onlinelibrary.wiley.com/doi/full/10.1111/pedi.12654
[13] https://newsroom.uhc.com/news-releases/manage-type-1-diabetes.html
[14] https://youtu.be/L3eI5CGchHQ
[15] https://fortune.com/2019/05/20/doctors-job-market-shortage/
[16] https://www.scientificamerican.com/article/most-depressed-adults-in-the-u-s-remain-untreated/

The Enabler: Advancements in Technology

While the factors described above are making the shift to outpatient, home, and community healthcare delivery necessary, advancing technology is the lever making it possible. As these trends converge, technology and innovation are beginning to play a larger role than ever in the healthcare field, particularly in collecting, analyzing, and leveraging patient data. The ability to aggregate information from a number of sources including the patient record, wearable devices, smartphone applications, digital therapeutics, and remote monitoring solutions gives physicians and health systems the ability to gauge the real-time status of their patients. This allows for early intervention and virtual care management, reducing the need for unnecessary inpatient visits and putting a greater emphasis on preventative and patient-empowered home healthcare.

In the future, technology solutions such as electronic medical tattoos, stick-on sensors, implantable chip IDs, and patches that measure respiratory rates, blood pressure, blood sugar, and contain patient medical records will become the status quo. Transmitting results through bluetooth or ultrasonic waves, these advancements will continue to support the shift to outpatient care by allowing patients to manage their health from inside their communities, workplaces, and homes. Further, nontraditional "prescriptions" to healthy food purchases, bike sharing programs, or chronic disease management apps will reduce the need for inpatient visits. For example, Mayo Clinic prescribed heart failure patients an app that tracks blood pressure, activity, and other factors, which resulted in a 40% reduction in hospital readmissions related to cardiac issues.[20] While technological advancements are both exciting and often life saving, it's important to consider bias and the unequal distribution of transformational technology when developing and selecting technology solutions. Recent studies show that wearable heart rate tracking technology used in popular devices such as Fitbit or the Apple Watch could be less reliable and inaccurate for people with darker skin. As technology continues to evolve, so too will the methods of engaging with, treating, and monitoring patients remotely.

[17] https://www.modernhealthcare.com/article/20190222/NEWS/190229969/burnout-among-physicians-drops-but-depression-on-the-rise-ama-survey-finds
[18] https://www.theatlantic.com/health/archive/2018/05/the-burnout-crisis-in-health-care/559880/
[19] https://www.digitalcommerce360.com/2017/09/25/mercy-healths-300-million-investment-in-digital-healthcare-is-paying-off
[20] https://www.nationalgeographic.com/magazine/2019/01/12-innovations-technology-revolutionize-future-medicine/

Conclusion: Next Steps for Healthcare

With organizations like UnitedHealth and Montefiore leading by example, we expect to see more and more organizations refocus their spending towards wellness in the community and hospital care in the home in the near future. There is a significant amount of optimism amongst healthcare executives on the future direction of home health and the risk sharing and reduced cost models of care that will result from this shift. Vance Moore, President of Mercy Virtual, shared his confidence in the success of virtual care and value-based models at the third Deputy Secretary Innovation & Investment Summit meeting conducted in partnership with Healthbox to accelerate innovation within healthcare. Moore asserts that the value-based transition is well underway, and it's time to change mindsets, strategies, and methods of delivering care to move the industry forward, and most importantly, help patients. This belief is shared by Secretary Alex M. Azar who said he has identified the transition to value-based care as a top priority.

> " I am determined that… finally moving to a truly value-based healthcare system be one of the key achievements that we see in the next decade of American healthcare."
>
> **-ALEX M. AZAR,** Secretary, HHS Office of the Secretary

While the shift towards home and community health holds promising opportunities for patient outcomes, organizations must remain strategic and thoughtful about how to move from one model of care to another. The inpatient care setting will not be eliminated but reduced, and it is the responsibility of healthcare professionals during this transition period to maintain quality patient care management from beginning to end as well as strong communication between the patient and the health system. At Healthbox, we see the majority of this transformation being driven by the payors, both government and private. CMS is currently leading the charge in incentivizing healthcare organizations to move towards outpatient care, but as more payors explore the potential savings of outpatient care, home health, and remote monitoring, we will see an increase in payors exerting their market power to push the industry in this direction.

In order for healthcare organizations to stay on the leading edge of the field, they must stop trying to row both canoes simultaneously and instead embrace the reality that the majority of health outcomes are impacted by what happens outside of clinical walls, and that advancements in technology now enable care delivery to reach people in their schools, communities, jobs, playgrounds, and homes. By continuing to carefully collect and analyze patient health risk factors, outcomes, and cost data, we can anticipate how the healthcare ecosystem and needs of consumers is evolving and become better equipped to stay ahead of the curve.

About Healthbox

Healthbox, a HIMSS Innovation Company and healthcare advisory firm, provides innovation consulting and strategic investing services. We help drive innovation from the inside and out, empowering organizations to build internal innovation programs, assess the potential of employee-led projects, and look to the market to find solutions to implement or invest in. We are proud to work with healthcare leaders who share our passion for building, harnessing, and advancing solutions to empower the reinvention of healthcare.

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