These Walls Can Talk

Mid-future pessimistic scenario

When affordable smart home ecosystems first hit the market, the appeal was clear: For a reasonable price, you can equip most devices and systems in your home to anticipate and accommodate your preferences, and carry out your wishes in response to voice commands. But after households grew to rely on these smart home technologies, they noticed their average yearly medical expenses began to rise. As with much modern tech, if you're not paying much in dollars, you’re probably paying in data. What had been marketed as domestic convenience turned out to be a 24-hour monitoring system. Data about every family member’s movements was captured and sold to insurers and care providers, who used it to justify penalties and rate hikes. A cigarette on the porch after the kids are in bed? Your deductible just went up, as did your monthly life insurance payment. Lifting the couch to vacuum underneath? You just voided your prescription for pain meds to treat last year’s back injury. Order a side of cheesy fries with your dinner delivery? Coverage of conditions related to obesity and heart disease now comes at a premium. The whole setup brings new meaning to the question, “Is there a doctor in the house?”
KEY INSIGHT

Health is the state of wellness—it’s the opposite of sickness. Companies are beginning to add chief health officers to the C-suite, to direct strategy for employee wellness and consumer health. Previously, CHOs (as well as chief medical officers) were limited to pharmaceutical companies, hospitals, medical systems, and insurance companies.

EXAMPLES

In January, Delta Air Lines hired its first chief health officer, Dr. Henry Ting. He joined Delta from Mayo Clinic and will now focus on health and well-being, safety, data strategies, and health-related partnerships for the airline. Colleges and universities are adding CHOs to their executive cabinets to develop policies and strategies that promote health and wellness to students, faculty, and staff—in the past two years, Bowling Green State University and the University of Michigan have hired CHOs. The position is also included in the org charts of IBM, Apple, Amazon, and Google.

DISRUPTIVE IMPACT

COVID-19 accelerated the visibility of CHOs. Royal Caribbean Group and Viking River Cruises hired their first CHOs last year, which makes sense: The cruise industry struggled to maintain health and safety in the wake of the virus. Beyond the pandemic, CHOs are looking holistically at employee and customer wellness. If people are healthy and safe, then they’re more productive—and as consumers, potentially willing to spend more on products and services.

EMERGING PLAYERS

- Association of State and Territorial Health Officials
- Johns Hopkins Center for Health Security
- Johns Hopkins Bloomberg School of Public Health
- Amazon Halo
Concierge care services have gone high tech. Medical providers are upgrading their membership models, which combine medical care with tech-first wellness, personal data, and luxury hospitality. For example, Forward is a preventive health care membership that relies on advanced technologies to diagnose and treat patients. Visits include biometric body scanning, a blood panel, genetic analysis, skin screening, and a mental health assessment. Patients then download an app, which is continuously connected to wearables, medical devices, and medical records aggregated from previous caregivers. The Lanby, a medical and wellness club, is slated to open in New York City in fall 2021. For $3,500 annually, members get a baseline assessment with a full physical and labs, a personal care plan, and monthly checkups, using telemedicine. These clubs could administer certain exams and treatments in an ultra-modern medi-spa ambience rather than that of a clinic.

Concierge medical practices first opened in the U.S. in the 1990s, and doctors commanded annual fees of $10,000–$50,000 (and sometimes more) for 24/7 access to care. Fees were out of reach for most, and this model incentivized slow, personalized, ongoing care rather than the fast, efficient visits only during times of need, which insurers prefer. A concierge doctor could therefore maintain his existing salary by managing far fewer patients. This next generation of concierge care relies on home diagnostics, self-monitoring, and telemedicine, and that will allow providers to scale back up again to service a large patient base and further threaten the traditional business model for health care.

Emerging Players
- The Lanby
- Forward
- Tia
- Higi
- mPort
Remote Patient Monitoring

KEY INSIGHT
Last year was a sudden dress rehearsal for widespread remote patient monitoring (RPM). Due to COVID-19 lockdowns, the market for RPM technologies flourished, while hospitals and health systems launched new ways of collecting data and billing patients.

EXAMPLES
The Cardea SOLO ECG System is a wearable heart monitor that sends data back to a monitoring center. Electrocardiogram data is analyzed and reports are generated within minutes to expedite a diagnosis and treatment if necessary. The Zio patch from iRhythm Technologies is a complete ambulatory cardiac monitoring solution.

DISRUPTIVE IMPACT
RPM uses digital technologies, the internet, and the cloud to collect medical data from patients in one area and transmit it for assessment by providers working somewhere else. Lots of data—heart rate, electrocardiograms, blood pressure, blood oxygen levels, kidney function, and more—can be mined and used to manage cases off-site. RPM can keep older people out of nursing homes and reduce the number of in-person visits to clinics and hospitals. As the number of chronic health conditions rises, RPM will gain a stronger foothold in health care.

EMERGING PLAYERS
- VitalConnect
- Ascom
- G Medical Innovations
- Gyant
- Huma
- Ejenta
- CardiMo
- Cardiac Insight
- Rhythm Technologies
- 100Plus
- Neteera

The Zio patch allows doctors to remotely monitor patients.
When it comes to digital transformation, health care has lagged behind most every major industry, including retail, banking, consumer packaged goods, and even government. Roughly 70% of U.S. hospitals still rely on fax machines to move patient records around. That makes the industry ripe for disruption—and attractive to startups and investors alike.

Examples
Investors poured $8.4 billion into global health funding in just the third quarter of 2020 alone—much of those dollars were aimed at helping health care providers cross the digital transom, according to research firm CB Insights. Mayo Clinic and Medically Home will provide hospital-level care to patients’ bedrooms, performing lab tests, infusions, and remote monitoring while processing all of the needed data for patient and hospital records, insurers, and government agencies. Epic, one of the largest U.S. medical records system providers, will make its data more accessible from business to business. Its partnership with Nuance Communications’ voice recognition software platform will allow doctors to send dictated notes to other medical specialists. It’s also experimenting with ride hailing company Lyft to bring patients to hospitals.

Disruptive Impact
There is a push for standardized, open data in health care, and the largest providers are starting to see the value of making their data interoperable. Dedicated cloud services, standardization of data, robust electronic medical records systems, encryption, and a host of medical-grade consumer devices are forcing the notoriously stodgy industry to evolve and adapt to the modern realities of technology. Medicine’s regulatory minefield has so far prevented investment outside of a narrow field of innovations. That’s all starting to change, in part because of the big technology companies endeavoring to disrupt the business.

Emerging Players
- General Catalyst
- Geisinger
- Epic
- Accenture
- Alibaba’s AliHealth
- Qualcomm
- Nokia
KEY INSIGHT

Patients are creating a trove of data that could contribute to their health care provider’s overall health assessment. Packaging all that data—and figuring out how to make use of it—is still a challenge.

EXAMPLES

From Google’s Fitbit, to Apple’s Watches and AirPods, to household smart scales, hundreds of devices can now collect and monitor patients’ health. We also generate data at the doctor’s office, and under federal law, that data must be filed and stored electronically. The problem is in aggregation. Because the data is structured differently, an intermediary is needed to make practical use of it. The result: a new market for businesses that can clean, structure, and package patient-generated health data. Software from companies like Validic allows doctors to collect this type of data and incorporate it into their medical records. This software uses mobile health APIs to access data from devices and apps and incorporate it with a patient’s electronic health record (EHR). GE Healthcare, Meditech, Allscripts, eClinicalWorks, and Cerner are all building products to make better use of our data.

DISRUPTIVE IMPACT

Safely moving, storing, and making use of this data will require encryption. But there is also value in taking a fuller view at the community, state, or even national level. Differential privacy measures will enable companies to anonymize a patient’s details while still making their data useful to scientific researchers.

EMERGING PLAYERS

- Validic
- Apple’s Health Records
- Amazon Transcribe Medical
- Salesforce
- Google Health
- Meditech
- Allscripts
- eClinicalWorks
- Cerner
Dictating patient notes is a core task in a clinical practice. But transcribing recordings is a tedious process that relies on excellent sound quality and a good understanding of medical terminology—not to mention one that requires confidentiality. Artificial intelligence promises faster transcriptions as well as real-time diagnostic analysis.

**Examples**

Amazon’s Transcribe Medical frees up doctors’ time by transcribing doctor-patient interactions directly into an electronic record. Amazon’s Comprehend Medical helps developers use unstructured medical text for diagnostic tools, while AWS’s software integrates into devices and apps using an API. Microsoft’s Project EmpowerMD partnered with Nuance Communications to listen to conversations between doctors and patients and automatically integrate information from the patient’s EHR in real-time. Built on Azure, it uses a rich set of machine learning algorithms to tackle natural language challenges and generate a medical summary. Meanwhile, Google plans to leverage its speech recognition for medical conversations.

**Disruptive Impact**

To meet compliance regulations, a strict protocol must be followed when a third party transcribes sensitive doctor-patient audio. But what if the transcription is performed in real time? Not only would it be easier and more cost-effective in building patient records, an additional layer of machine learning could help doctors learn more about their patients during each visit.

**Emerging Players**

- AWS’s Amazon Transcribe Medical and Amazon Comprehend Medical
- Nuance Communications
- Microsoft Azure’s Project EmpowerMD
- IBM Watson’s Speech to Text