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Virtual health

Engaging operational, clinical, and technology levers

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Executive summary

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As healthcare costs continue to grow and consumer expectations rise, health systems will need to change the way they deliver care. Virtual health — the use of new and emerging digital and communications technologies to provide care and education to patients remotely — has the potential to transform the healthcare industry. Although the concept of virtual medicine has existed for decades, the U.S. healthcare industry has failed to make a large-scale transition to virtual health thus far. The challenges have been substantial, including physicians' traditional reliance on physical examinations, current care delivery operations, technical barriers, and the lack of consistent reimbursement models from government and commercial payors.

However, as markets shift toward risk-based reimbursement models and drive increased retail behavior by consumers, health systems will need to embrace virtual health. Successful virtual health strategies will help them achieve four important business objectives: better outcomes, improved access and patient experience, reduced costs, and revenue growth. They can also improve retention among both patients and clinicians.

Adopting virtual health is not easy. Health systems will have to make significant investments in technology and overhaul their fundamental operating models. Our research and experience with clients has identified a three-step transformational approach: establishing clear strategic alignment, identifying virtual service offerings, and developing core capabilities with a robust execution road map.

Virtual health: The future is finally here

The February 1925 cover of *Science and Invention* magazine looks like a science fiction drawing by Norman Rockwell. An avuncular physician, assisted by a nurse, sits in front of an oblong television screen. The physician manipulates a spindly wood-and-brass contraption while the TV monitor shows a similar machine poking at his patient.

Today, the nearly 100-year-old idea of virtual health is finally becoming a reality. Advances in technology and connectivity have created many new digital approaches to healthcare, including virtual kiosks, virtual visits, and remote monitoring. (*For a breakdown of the main categories of virtual health, see "Virtual health in the real world," page 8*.) Though the specific applications of virtual health can vary, the foundational elements remain the same: greater information flow across digital channels, and care that goes beyond the traditional settings of physicians' offices and hospitals to wherever the patient happens to be.

In addition to enhancing the patient experience through improved access to providers, more convenient treatment arrangements, and greater responsiveness from facilities (such as tele-nurses who are available around the clock), virtual health also offers several financial and operational benefits. It can add a new revenue stream for physician groups and hospitals in the traditional fee-for-service universe. In the emerging value-based care model, virtual health can be an essential tool to improve outcomes, increase utilization, and lower the cost of care.

For example, Avera's eCare program offers telemedicine services across seven states, including e-consultation, e-ICU, and e-emergency services. Collectively, these services have eliminated 1.8 million miles of patient travel, prevented more than 14,000 serious safety events, and saved 1,102 lives.[1] These programs benefit rural patients and providers by speeding up the delivery of care at the place where the patient resides and help offset the lack of specialists in remote and rural areas. Similarly, Centura Health's At Home program has been

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effective in reducing readmission rates by 62 percent for Medicare beneficiaries with chronic conditions.[2] This program uses remote monitoring technology to track patient indicators, including vital signs, weight, and behavioral health measures.

Other virtual health services enable remote diagnosis and tracking. CellScope, a technology startup, is developing an otoscope that can attach to a smartphone and send images of the ear to a physician to aid in the diagnosis of ear infections. Glooko offers a glucose self-management device compatible with several glucometers that can attach to a mobile device and relay blood sugar levels to the patient and provider. Though these are all emerging technologies, the early results are persuasive. A recent study by Mayo Clinic found that a mobile app for cardiac rehab patients after a stent procedure reduced emergency room visits and hospital readmissions by 40 percent.[3]

Virtual health provides the tools for transformation

Health systems are facing unprecedented pressure to transform as risks shift downstream from health insurers to health systems and consumers and the market moves toward a retail paradigm in which patients make more of their own healthcare purchasing decisions. In this new health economy, many health systems see virtual health as a strategic capability enabling them to improve care, offer differentiated services, and reduce the cost of care.

Returns on virtual care increase as markets evolve to risk-based models. By extending the reach of care providers, virtual health lowers costs and provides the necessary tools to focus on preventive health management as well as chronic disease management, a core aspect of population health. The impact can be substantial — for example, tele-nurses can monitor 60 to 70 patients a day, while home health nurses can visit only five to seven patients daily. Virtual health can also help health systems track the status of their high-risk patients continuously and execute timely interventions — a vital tool for population management.

The rise of retail healthcare makes consumer engagement increasingly important for health systems. Many are forming partnerships with retailers or developing their own virtual care sites (kiosks, retail clinics) to give consumers convenient access to services. For example, Kaiser Permanente and Target have opened store-based locations in California offering urgent care (strep throat tests, vaccines) and primary care services including pediatrics, family planning, and chronic illness management. Telemedicine consultations with Kaiser physicians can be ordered by the clinic nurse when necessary. New entrants such as Teladoc are also disrupting the market and bringing care directly to consumers for select outpatient services.

At the same time, the regulatory climate is becoming more hospitable to virtual health. The Centers for Medicare and Medicaid Services (CMS) is promoting the use of virtual health services. CMS has published a list of 24 services and associated codes that will be reimbursed for

Many health systems see virtual health as a strategic capability.

providers at "distant sites" such as physicians' offices, health clinics, and skilled nursing facilities.

As a result, virtual health is poised for rapid growth in the next few years. By 2018, the global market for telemedicine devices and services is projected to grow to US$4.5 billion and the U.S. market is expected to grow to $1.9 billion.[4]

Virtual health in the real world

Technologies that enable virtual health fall into three broad categories:

Health and wellness tools for education and prevention

- Software applications running on a user's PC, tablet, or smartphone that may pair with a wearable or ingestible device to help individuals actively manage their health and wellness (e.g., Nike+ FuelBand, Garmin Vivofit, Glooko, Mio Link)

- Directly managed interactively by the consumer

Virtual visits with providers for prevention, diagnosis, and treatment

- Synchronous e-consultations in which the patient and provider are communicating in real time from different locations

- Asynchronous, Web-based e-visits over the Internet or on a smartphone

- Asynchronous "store and forward" technologies, either patient-to-provider or provider-to-provider, that enable sharing of clinical information in areas such as imaging, pathology, dermatology, and ophthalmology

Remote monitoring for diagnosis, treatment, and disease management

- Offers the most transformative change in care delivery, and the greatest potential value

- Allows a patient's biometric levels and other information to be monitored remotely, with adverse changes triggering in-person interventions

- Includes wireless self-test devices and ingestible sensors that can track drug adherence

- Has significant potential in tracking heart rate and blood pressure information for patients with chronic pulmonary and cardiovascular disease, reducing hospitalizations, bed days, and ER visits

Key challenges

Health systems that adopt virtual health models need to overcome several key challenges:

Licensing: Allowing providers to practice out-of-state through telemedicine is controversial. In 2014, the Federation of State Medical Boards (FSMB) issued a model policy guideline recommending that physicians who provide telemedicine services be licensed in the state where their remote patients are located. Currently, most states have a licensure policy that makes the practice of telemedicine across state lines difficult. In addition, some states also require a patient–physician relationship to be established in person before telemedicine services can be provided. Though FSMB is moving toward creating a system that will streamline the acquisition of multistate licenses, providers will still need to have robust processes that manage licensure and credentialing on an ongoing basis.

Provider adoption: Even as virtual care becomes increasingly acceptable to patients, especially younger and tech-savvy ones, many physicians and caregivers remain hesitant about treating patients through consumer-grade devices. They can be skeptical of the results generated by such technology and concerned about malpractice lawsuits arising from remote visits. Persuading reluctant physicians to trust data from remote monitoring devices and treat patients without direct physical examinations will require robust training programs and well-designed incentives. Lack of provider acceptance can stop virtual medicine in its tracks — as in Texas, where the medical board has voted to restrict telemedicine services except in cases where the patient is already inside a hospital or clinic, attended by another clinician.

Monetization: Although the regulatory landscape is changing, with CMS and commercial payors reimbursing for some virtual health services, it's still not clear that all aspects of virtual health will be reimbursed under current payment models. (As of early 2015, 23 states have passed regulations with varying levels of mandates for private insurance reimbursement for virtual health services.)[5] Health systems

Lack of provider acceptance can stop virtual medicine in its tracks.

will need to carefully consider reimbursement factors in a fee-for-service model, as well as the impact on quality and cost in a value-based care model. Reimbursement is only one factor; when adopting virtual health, health organizations will also need to evaluate their service lines across factors including strategic impact, volume, and investment/cost savings to determine which are the best fit for virtual services. For example, in hospitals where dermatology is not a core service line and a visiting dermatologist does rounds once a week, virtual consultations can increase the potential reimbursement for this specialty. Yet there is a very real risk of cannibalizing revenue from existing service lines. For instance, virtual visits will replace the higher-paying in-person visits, creating challenges in determining the right incentives for physicians to adopt virtual health applications.

Technology: Health systems will have to integrate patient-reported data — from wearable and ingestible devices — into electronic medical records. This means harmonizing a deluge of structured and unstructured data into standard formats. Virtual health technologies will also require health systems to significantly upgrade their IT infrastructure, especially to support new channels including video streaming and mobile platforms. For physician practices with robust infrastructure, the technology upgrades needed to provide services such as virtual visits could cost as little as $10,000 to $15,000; however, for large health systems spread across a diverse geography, the cost of implementing technology for tele-consultations could exceed $5 million. Overall, virtual health will replace labor-intensive processes with technology-intensive ones, substituting "high-tech" for "high-touch" — with nontrivial implications for capital budgeting, capacity planning, and even labor relations. Health systems will need clear business priorities supported by an execution road map to roll out foundational and differentiated virtual health technologies.

Security and privacy: Privacy is a significant risk area. In the last decade, health systems have made great strides in securing patient data residing in their IT systems, but virtual health expands the exchange of patient data beyond the walls of the health system, with data traveling through unsecured consumer-grade wireless networks. Such an arrangement poses confidentiality risks and greater potential liability for hospitals and physicians. Health systems will need an enterprise-wide program to assess and improve information security at all levels (including data, applications, and integration, among others). Consumers will accept nothing less: In a 2014 survey by PwC's Health Research Institute, 73 percent of respondents said data security was more important for them than convenience when it comes to dealing with doctors' notes and diagnoses.

Virtual health technologies will require health systems to significantly upgrade their IT infrastructure.

A three-step approach

To develop a successful virtual health initiative, we suggest a structured, three-step approach:

Step 1: Define strategic alignment

The first step in the process is to understand how virtual health fits into the health system's overall strategy and its market dynamics.

In fee-for-service markets, health systems should evaluate potential investments based on the reimbursement potential of virtual care services that drive direct revenue growth or expand market share. For example, expanding geographically through virtual services such as e-consultations requires less investment than building a new satellite facility.

In markets that are evolving to value-based care models (e.g., accountable care organizations, bundles, population health), providers consider more than direct revenues in assessing the potential returns on investment in virtual care. Their calculus includes factors that improve outcomes and reduce cost of care, such as improved utilization management, access expansion, and preventive and chronic disease management. Consumers in such markets will also typically expect a superior patient experience. For example, virtual visits in a high-traffic emergency room can be an effective way to direct nonemergency care to a more cost-efficient channel, freeing up ER capacity for emergency cases. Convenient virtual visits and targeted remote-monitoring capabilities become vital tools that improve outcomes and provide better patient engagement.

Understanding a health system's strategic alignment and prevalent market conditions is critical to identifying the right set of virtual health capabilities that the health system needs to develop.

Virtual visits and targeted remote-monitoring capabilities become vital tools that improve outcomes.

Step 2: Identify service offerings

The next step is to determine which services in the health system's portfolio offer the largest potential gains from virtual health, and what the optimal solution might be for each. The choice of service offerings will depend largely on monetization potential, through either increased revenue or decreased cost.

The most promising virtual health services in the current fee-for-service environment are primary care virtual visits that receive direct reimbursement — with higher numbers of health insurers willing to pay for virtual care services that are typically handled by urgent care or retail clinics. The choice of service lines also depends on the competitive environment. New entrants such as Teladoc are emerging in primary and urgent care services (colds, strep throat tests, dermatology) focused on service lines requiring minimal infrastructure investments. This may require providers to explore direct-to-consumer payment models circumventing the need for insurance reimbursement.

In a value-based care environment, virtual health can be an integral part of an episodic care bundle, such as a congestive heart failure offering that requires home monitoring and enhanced care coordination following surgery, reducing costly hospital readmissions and ER visits. Virtual care services in such a scenario should be prioritized by the risk stratification of the population, with a focus on conditions that can benefit from virtual care tools for better cost, utilization, and care management.

Step 3: Identify required capabilities and develop a road map

Once a health system determines its strategy and service offerings for a virtual health initiative, the third step is to define the core set of virtual health capabilities that it will need to develop (*see Exhibit 1, next page*).

Foundational capabilities to support a virtual health strategy include a robust patient portal with access to health records and self-service capabilities across multiple channels: online, mobile, fixed line, and text messages. Health systems will also need to build the requisite IT backbone, including secure remote connectivity to medical- and consumer-grade devices, and interoperability capabilities to aggregate and share patient- and provider-generated data. Virtual health tools that do not adequately integrate data within electronic medical records are likely to suffer from poor physician adoption.

In a value-based care environment, virtual health can be an integral part of an episodic care bundle.

Exhibit 1

Understanding the integral capabilities of virtual health tools is key to creating a competitive advantage

Virtual health tools: Capabilities

Health and wellness tools	Virtual visits	Remote monitoring/ remote ICUs

Tool specific

– Symptom checker – Self-monitoring and -tracking	– Synchronous virtual visits – Asynchronous e-visits – Virtual kiosks	– Patient risk stratification – Interventional alerts – Real-time caregiver responses – Case management
	– Workflow redesign – Enhanced scheduling and revenue cycle – Provider licensure management	

Foundational

– Full-function patient portal with access to personal health records and self-service across channels

– Technology infrastructure backbone to support streaming media, videoconferencing, and image store and forward

– Remote device integration with real-time data sharing, reporting, and cross-device data correlation

– Interoperability and integration (workflow and data) among patients, caregivers, devices, and systems

– Data analytics and big data management

– Privacy and security

Source: Strategy& analysis

In addition to foundational capabilities, health systems will need to develop differentiating capabilities for the specific offerings they plan to deploy. For example, virtual visits and remote monitoring will require redesigning clinical workflows, enhanced scheduling capabilities, and provider licensure management, as well as updating the revenue cycle systems to handle reimbursements.

For each capability, the health system must decide whether to develop it internally, use a third-party vendor, or form a strategic partnership. Health organizations also face the choice of whether to source only the technology or both the technology and operational components to provide the services. (For example, Carena offers a fully outsourced online virtual-visit capability providing both the technology and the resources required to manage scheduling.) The decision to source technology alone — rather than technology and operations together — hinges on factors such as vendor capabilities, cost, and level of control (as in other industries); however, healthcare providers face additional regulatory, privacy, malpractice liability, and security risks when they share patient information with external partners.

Once the capabilities are defined, the final step is to create an execution road map that takes into account technology as well as the inevitable cultural challenges inherent in deploying these new capabilities. Successful adoption will require clearly communicating the business case to clinical and operational leaders, getting physicians involved in technology decisions, and implementing the appropriate incentives and training for virtual health tools and platforms.

Conclusion

Virtual health offers an opportunity to transform the healthcare industry, leading to greater revenue and reduced costs for health systems, and better outcomes and experiences for patients. Virtual health technology is only going to become more sophisticated — and the benefits more pervasive. Health systems that seize the initiative can give themselves a sizable advantage over their competition, and put a foundation in place today that will help them win over the long term.

Endnotes

[1] Edward T. Zawada Jr., Dana Buus, Don Kosiak, Pat Herr, and Michael Heisler, "Update on the Most Rural American Telemedicine Program — The Present and Future," *Telemedicine* (InTech, 2013).

[2] Andrew Broderick and Valerie Steinmetz, "Centura Health at Home: Home Telehealth as the Standard of Care," Commonwealth Fund, Jan. 2013.

[3] Jonah Comstock, "Mayo Clinic Study Finds App Reduces Cardiac Readmissions by 40 Percent," MobiHealthNews, Apr. 1, 2014.

[4] Bruce Japsen, "ObamaCare, Doctor Shortage to Spur $2 Billion Telehealth Market," *Forbes*, Dec. 22, 2013; "Global Telehealth Market Set to Expand Tenfold by 2018," IHS, Jan. 17, 2014.

[5] Latoya Thomas and Gary Capistrant, "State Telemedicine Gaps Analysis: Physician Practice Standards & Licensure," American Telemedicine Association, May 2015.

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