EXECUTIVE BRIEFING

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Tech Giants Race to Fix Health Care

What Apple, Google, and Amazon's visions mean for medical affairs

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Executive summary

Technology keeps creeping further and further into our lives. It's changing everything—especially how we connect. For health care, that means transformational opportunities to predict, measure, and communicate the value of medicine.

Trend-setting technology innovators will create opportunities for medical affairs leaders to do their jobs better: understand customers, generate meaningful evidence, and communicate value to key stakeholders. Apple will facilitate direct connections with patients to generate real-time, patient-reported outcomes and expedite care management. Google will enable use of nontraditional sources of health data to predict and demonstrate meaningful real-world clinical effectiveness. Amazon will provide insight into how large employers will influence product adoption and utilization. The company will also disrupt the health care supply chain in major ways—changing which stakeholders medical affairs might prioritize.

Read on to learn how investments from tech giants today might shape the future health care landscape. Our observations will help you plan for opportunities and challenges your medical affairs organization will face in the next five years.

Visions for the **future of health care**

APPLE

Five ways Apple is transforming health care

- Let patients connect their iPhones directly to their providers' EHRs
- Help providers monitor their patients' health in new ways
- Help researchers recruit hundreds of thousands of study participants—in a snap
- Allow users to monitor their health via Apple devices (and convince health insurers to foot the bill)
- Pioneer a wellness-based approach to employee health care

GOOGLE

Six ways Google will move into health care in the next five years

- Store your health care data
- Crunch all that data
- Diagnose diseases better than human doctors
- Build "smart" health products, with or without industry partners
- Sell Internet of Things (IoT) devices for your home—and nursing homes
- Cut the burden of clinical documentation

AMAZON

What "Amazon health care" could look like in five years

- Employer aggregator
- Next-generation retail pharmacy
- Global health care logistics specialist
- Consumer-focused technologies
- Primary care operator

Five ways

Apple is transforming health care

In a recent interview with Jim Cramer on "Mad Money," Apple CEO Tim Cook asked what people in the future will think Apple's greatest contribution was to mankind?

His answer: **It will be about health.**

Apple's ambitions are bold, but they're not just talk.

In the past year, Apple has hired dozens of doctors to expand its digital health products, grown its employee health and wellness clinics, and rolled out a long-anticipated Apple Watch equipped with an electrocardiogram (ECG).

Perhaps because of the wide breadth of Apple's ambitions, it can be tough to pin down exactly what Apple wants to do in the health care space. To help, we've distilled all the confusing, and sometimes contradictory, reporting into the five concrete ways the company is seeking to transform the health care industry.

What Apple has done in health care so far

Apple's biggest venture into health care so far is its Health app, which it launched in 2014 and now comes preinstalled on every iPhone. The app includes features such as activity tracking, sleep monitoring, and mindfulness support.

But those built-in features are only the starting point. Apple has also created three "kits" that help developers build health-related apps for the iPhone and Apple Watch:

- **HealthKit:** Allows developers to feed information to and from the app, and provides a framework for connecting new apps
- **ResearchKit:** Helps developers create apps for medical research or clinical trials
- **CareKit:** Lets developers create apps to manage patient care and connect patients with providers

So what's next? Given Apple's notorious penchant for secrecy, it's hard to say for sure. But here's what analysts and experts say are five likely aspects for Apple's ambitions in health care.

1 Apple wants to let patients connect their iPhones directly to their providers' EHRs.

In January 2018, Apple rolled out a feature in its Health app that allows users to download, store, and share parts of their medical records. In turn, participating providers can send lab test results, medication regimens, and other data directly to a patient's iPhone. More than 300 health care organizations have already come on board, including Cedars-Sinai, Geisinger Health System, Dignity Health, and Johns Hopkins Medicine. At the same time, Apple announced it was teaming up with several EHR vendors—including athenahealth, Cerner, and Epic—to help users view their personal health records on iPhones.

Apple isn't the first company to try to bring health records to mobile devices. Google, Microsoft, and others have tried and failed—at least for now. But Apple has unique advantages. Its Health app is already installed on the phones of 140 million Americans. And it has a strong reputation with consumers for safeguarding the privacy of its users' sensitive data. This commitment is perhaps best summed up in its recent billboard at the CES show in Las Vegas: "What happens on your iPhone stays on your iPhone."

Apple's most important advantage may be its high-profile status as America's leader in consumer technology, which has health systems beating down its door to partner up.

2 Apple wants to help providers monitor their patients' health in new ways.

Soon after Apple released HealthKit, it announced that partners including Duke University School of Medicine and Stanford University Hospital already were using the technology to help chronically ill patients remotely track and manage their symptoms. Those high-profile partnerships soon led to high-profile endorsements. Ricky Bloomfeld, the director of mobile technology strategy at Duke's hospital, said the platform "worked as seamlessly as we'd hoped."

Apple's future ambitions may be much grander. Its CareKit offers providers tools to connect with patients throughout the care pathway. This could potentially support population health interventions aimed at promoting large-scale behavioral changes, such as improving medication adherence and diet.

3 Apple wants to help researchers recruit hundreds of thousands of study participants—in a snap.

Because so many Apple customers already use the Health app, the company can recruit patients for medical studies rapidly and at a large scale. This dramatically lowers costs for providers, pharmaceutical companies, and medical device manufacturers.

One of the first examples is the Apple Heart Study, currently being conducted in partnership with Stanford Medicine. The study, which recruited more than 400,000 participants via their iPhones, compares Apple Watch's ability to detect atrial fibrillation against standard detection methods. As Alan Yeung, medical director for Stanford Cardiovascular Health, explained: "To get 10,000 people enrolled in a medical study normally, it would take a year and 50 medical centers around the country."

Duke University Health, meanwhile, recently completed a study using iPhone's facial recognition technology to screen young children for autism and other neurodevelopmental disorders. The app was downloaded more than 10,000 times, and usable data was collected on 88% of the videos that parents uploaded.

But Apple's not partnering with just providers for clinical research. In January, the company announced a multiyear partnership with Johnson & Johnson (J&J). They are running a randomized control trial testing if the combination of the Apple Watch's ECG function with J&J's patient engagement app can detect and diagnose atrial fibrillation in patients over 65 earlier than standard methods. Apple has also partnered with Zimmer Biomet and GlaxoSmithKline to create apps and launch clinical studies to track symptoms and outcomes throughout a patient's care journey. By working with Apple, life science firms could not only improve patient recruitment, but also gain access to extensive health and behavior data. Coupled with other clinical and cost information, these new sources of evidence may help firms accelerate diagnoses, enable more precise treatment planning, and support manufacturers' claims of differentiable value.

Interestingly, it's not yet clear how—or if—Apple will earn money from recruiting study participants. As Tim Cook told *Fortune*: "We put out ResearchKit and made it a source so that people could run enormous-sized studies... Honestly, we don't make any money on that. But it was something that we thought would be good for society, and so we did it."

4 Apple wants more users to monitor their health via Apple devices (and is convincing health insurers to foot the bill).

The iPhone and Apple Watch are already sophisticated medical tools, offering features ranging from ECGs to fall detection. As such, these tools can help providers enlist their patients in monitoring and improving their health.

Toward that end, Apple has aggressively pitched its consumer technologies to industry stakeholders. Apple is reportedly in talks with at least three Medicare Advantage plans about providing subsidized Apple Watches to the plans' patients in hopes of detecting atrial fibrillation early. It also signed deals with Aetna and UnitedHealthcare to provide discounted watches to health plan beneficiaries who walk at least 10,000 steps a day.[1]

These partnerships are a win-win for Apple. The company sells its products to the plans—and it gains consumers among an older, generally less affluent population that hasn't yet started using Apple Watches in large numbers.

As the iPhone and Apple Watch become increasingly sophisticated, Apple's partnerships could grow even bigger. The company has already provided Apple Watches for studies examining the device's ability to monitor migraines, blood pressure, and adherence to psychiatric care—and even to act as a virtual therapist for arm recovery in stroke patients. And Apple has filed patents suggesting that future versions of its devices might let users measure their blood pressure, body fat, and heart rate simply by pressing a finger on the screen.

1) Advisory Board is a subsidiary of UnitedHealth Group, the parent company of UnitedHealthcare. All Advisory Board research, expert perspectives, and recommendations remain independent.

5 Apple wants to pioneer a wellness-based approach to employee health care.

Last year, Apple took its first big step into the direct provision of health care by launching its own primary care group, AC Wellness, for Apple employees. The company currently has clinics only in Santa Clara County, California, but it's aggressively ramping up. Recent hires include Sambul Desai, formerly chief of Stanford's Center for Digital Health, and M. Osman Ahktar, former COO of Fairview Health.

Apple isn't alone in venturing into employee health care. The much-ballyhooed Amazon-Berkshire Hathaway-JPMorganChase venture, Haven, may also be exploring primary care offerings. Apple's venture is, in fact, so similar that Cramer, CNBC's "Mad Money" host, recently joked that Apple should join the famous partnership itself.

But Apple may be unique in its emphasis on overall wellness. According to CNBC, many of the doctors that the company has hired have a background in alternative care management or wellness. They've also hired dozens of nutritionists and at least a half dozen non-physician "care navigators," who can direct patients to the most appropriate care setting.

If Apple's approach is successful, it may inspire other large companies to adopt a clinic-based wellness approach. Plus, the clinics could provide Apple with an excellent venue to test, pilot, and iterate on its own pre-market health care products.

Our recommendations

Prepare to connect directly with patients.

Direct connections to consumer data will catalyze patient-centric evidence generation.

Apple is one of the leaders (if not *the* leader) in consumer technology, and its reputation for innovation is unparalleled. Its health ambitions center on applying deep consumer expertise to diverse challenges. Apple's expanding capabilities will help medical affairs leaders change how studies are designed, patients are recruited for trials, and data is collected.

Millions of people use iPhones and Apple Watches every day. And the company's openness to industry partnership signals great opportunities for life sciences. Apple solutions will continue to empower patients to track their outcomes, monitor their treatment, and connect more directly to health care providers. Life sciences firms will systematically partner with Apple to engage patients across the product lifecycle: in clinical development, pre- and post-launch evidence generation, and "beyond-the-pill" education and adherence initiatives.

CMS continues to broaden coverage for remote monitoring, and the FDA is now willing to consider wearable device data in regulatory submissions. Because of these factors, it's time for medical affairs leaders to turn "patient-centric" treatment monitoring and evidence generation into reality.

Questions
to take back to your team

- If Apple (or other companies) can facilitate large-scale clinical trials, how will your strategies change? What will be the new "gold standard" in study design?
- What are your top concerns about the clinical accuracy and reliability of studies that use data from wearable devices? How can Apple-enabled solutions address these concerns?
- What patient outcomes, beyond safety and efficacy, will a company like Apple prioritize if it moves into providing care directly for its employees? (Possible examples: quality of life, patient experience, adherence support.)

Six ways

Google will move into health care

in the next five years

Do you think you understand the full scope of Google's ambitions in health care?

Think again. The tech giant's health efforts—through its own projects and those of its parent company, Alphabet—are so far-reaching and ambitious that almost no one can keep track of them all.

Google's array of health care programming is vast.

There's Google Brain, focused on deep learning; Google Fit, dedicated to wearables; and Nest, a home automation brand. Then there are the independent teams within Alphabet, such as anti-aging company Calico, life-sciences research arm Verily, and data-storage platform Google Cloud—all of which have aspirations in health care.

And that's not all. GV, Alphabet's venture capital arm formerly called Google Ventures, has backed nearly 60 health-related companies—including big names such as 23andMe, Oscar Health, and Doctor on Demand. Alphabet has filed hundreds of patents related to health care—186 just between 2013 and 2017. And various Google and Alphabet teams are working on partnerships with major providers such as Stanford Medicine, Cleveland Clinic, and Mayo Clinic.

And believe it or not, that's *still* not all. Did you know the company offers a spoon for people with movement disorders, or that it's working on a mosquito-fighting technology to prevent Zika?

It's a lot—more than could possibly be covered in a single report. So rather than offering a comprehensive, and overwhelming, list of Google's projects, let's take a step back and ask a bigger question: What's the endgame for all of these ambitious, but seemingly disconnected, health care ventures?

> We've highlighted six themes uniting Google's health care projects—and inherent within them, six visions for the future of "Google health care."

1 Google wants to store your health care data (lots and lots of data).

Perhaps the most natural fit for Google in health care is the storage and management of big data. They've invested heavily in making their data warehousing, machine learning, and even G Suite tools (Google Docs, Google Sheets, etc.) HIPAA-compliant.

Google Cloud's recent partnership with NIH on the STRIDES Initiative has made its storage, computing, and machine learning capabilities available to 2,500 research institutions across the country. And Google Cloud added former Cleveland Clinic CEO Toby Cosgrove as an advisor, suggesting that it has bigger aspirations to target providers.

But Google doesn't just want to store your data; it wants to make your data interoperable and accessible. In 2016, Google spent $625 million to acquire Apigee, which helps companies design application programming interfaces (APIs) to manage data. A number of hospitals and health systems are already using Apigee's platform, including Cleveland Clinic, Kaiser Permanente, and Rush University Medical Center, as well as other industry players such McKesson and Walgreens.

2 Google wants to help you crunch all that data too.

Google can do more than just store tons of data. They also have machine learning capabilities to analyze and gain insights from all that information.

One of Google's most intriguing products is BigQuery, a HIPAA-compliant, server-less data warehouse that enables providers to combine and analyze patient records with other massive data sets. For instance, the Colorado Center for Personalized Medicine at the University of Colorado has used BigQuery to construct a genomics database for nearly six million patients. Their project fuses genomics data from the center with EHR records from the University of Colorado system and external insurance claims, public health data, and environmental data to develop personalized therapies for patients.

Google is also working on new ways to crunch difficult-to-standardize patient information, such as X-rays and physician notes, via pilot partnerships with UC San Francisco, Stanford Medicine, and University of Chicago Medicine.

Finally, Google wants to use their data analytics to revamp clinical trials. Verily recently announced strategic partnerships with Novartis, Sanofi, Otsuka, and Pfizer that aim to make it easier for patients to enroll and participate in clinical trials. For instance, if someone searches ways to relieve asthma symptoms, they could receive targeted ads about asthma-related trials. Verily is exploring trial opportunities in cardiovascular disease, oncology, behavioral health, dermatology, and diabetes. They also want to simplify aggregation of clinical data from different sources, like EHRs and wearables.

3 "Dr. Google" may someday diagnose diseases better than human doctors.

Google also is building algorithms to diagnose various clinical conditions—sometimes more successfully than human doctors.

For instance, one Google-created algorithm was shown by Stanford researchers to diagnose skin cancer as well as a dermatologist, while another algorithm was as effective at diagnosing certain eye diseases as ophthalmologists. Yet another showed 99% accuracy at detecting breast cancer in lymph node biopsies.

Google has stressed that such tools are not intended to replace doctors' clinical decision-making. Instead, in the example of the lymph node biopsy algorithm, Google says it should "naturally complement pathologists' workflow." It's important to note that before any of these machine learning tools could be used more widely, they would have to undergo extensive testing, especially to ensure that developers can deconstruct the "black box" assumptions that drive the models' conclusions.

4 Google wants to build "smart" health products—with or without industry partners.

Google is exploring a range of consumer-focused health products—particularly through Verily, which has focused especially on the 30 million Americans with diabetes. One product, created in partnership with the medical device company Dexcom, is a small continuous glucose monitor that has been submitted to FDA for approval. Verily is also building a disposable glucose sensor that would be worn like a bandage for up to 14 days and would require no finger stick calibrations.

Verily also has its own answer to the Apple Watch, called the Study Watch. It isn't on sale to the public yet, but it's being used to study predictors of heart disease in a partnership with Stanford Medicine and Duke University called Project Baseline. Further, the FDA recently cleared the Study Watch's electrocardiogram feature, which could be a step toward wider sales.

And that's not all: Google has also teamed up with Fitbit to wade into the wearables market, aiming to unite patient-generated wearables data with patient EHRs.

5 Google wants to sell Internet of Things (IoT) devices for your home—and nursing homes.

Google's home automation subsidiary, Nest, is designing products with an emphasis on meeting the needs of older Americans. CNBC reports that the company has approached senior living facilities to pitch its products, recommending the use of its motion sensor to automatically turn on the lights when seniors get up in the middle of the night. More than a million Americans live in assisted living facilities, which means this could be a ripe market.

Google's home devices could also help consumers access the vast store of patient-facing health information available via Google's ubiquitous search engine. Since 2015, Google has partnered with Mayo Clinic and Harvard Medical School to provide disease, symptom, and treatment information for common conditions via web search. In the future, that information may be delivered via voice assistants or other home devices that could also track medication adherence, support disease management, or detect medical anomalies.

6 Google wants to cut your clinical documentation burden.

The health care industry is working hard to reduce demands on physicians, and Google wants to help. The company has developed a system that automatically transcribes conversations between physicians and patients. As of 2017, it had a roughly 20% error rate. Google is planning to soon launch a pilot study on this technology with Stanford Family Medicine.

The company is also building a model to auto-complete and detect errors in doctors' notes—in addition to other, more secretive, moves in this space. "We are on a path right now to building very powerful tools that require the practitioner to move from their traditional screen to some smartphone or some app," said former Executive Chairman of Alphabet Eric Schmidt at last year's HIMSS conference. He added, "We're much closer than you think we are."

So Google has big ambitions. But are they actually going anywhere?

Google has gained a reputation for investing in health care "moonshots," many of which have misfired. (Remember their tricorder project, which promised to use nanoparticles and magnets for early disease detection?) But the company's recent strategy appears more focused on incremental developments built through industry partnerships, which could prove to be more successful.

Still, succeeding in health care will require Google to fundamentally change its business model. Traditionally, Google has made most of its money by selling consumer data to advertisers—which could make patients hesitate before handing the tech giant their private health data.

Perhaps surprisingly, Google seems to be doing better than other tech companies at building patient trust. In a recent Rock Health survey, 60% of consumers who were willing to trust Big Tech with their data said they would be willing to share their data with Google, compared with 53% for Amazon and 49% for Apple. But since only 11% of respondents on the survey in general were willing to share their data with Big Tech, Google faces an uphill battle.

To succeed in any of the areas discussed above, Google will have to prove its value proposition in a competitive market in the face of constant competition from other big tech vendors. Still, the fact that the company is investing so heavily in so many simultaneous projects means the potential for success—at least in one of these main areas—is huge.

Our recommendations

Prepare to prove value with 'Google health care' data and AI.

An accessible health data ecosystem and intelligent analytics will demonstrate unmet needs and validate patient outcomes in real time.

Google's unparalleled ability to amass, structure, and mine data will help standardize the use of real-world data in health care. Moreover, the potential to integrate biometric monitoring and behavioral support with a connected and digitally controlled environment will revolutionize how individuals manage their health. Not only will Google data tell us more about patients, it will tell us about health care providers—their preferences, concerns, and digital influence.

We've seen tech giants begin to use web search histories to uncover patterns about diseases. In 2017, Microsoft scientists analyzed large samples of search engine queries to successfully identify internet users suffering from pancreatic cancer—before they received a diagnosis. Although Google's 2013 collaboration with the CDC failed to predict regional flu outbreaks based on Google search terms, the sheer data running through their servers signals opportunity for generating insights. Google receives more than one billion health questions each day.

As providers, payers, regulators, and life science firms are all working toward a shared consensus on the utility—and credibility—of RWE, medical affairs leaders can actively pilot studies for value end points needed three to five years from now.

Questions
to take back to your team

- What are two or three ways you can use web search data to learn about patients? What about health care providers? What other sources of Google data could give you insight on these customers?
- Emerging data will support clinical, medical, and commercial teams. Who should lead efforts to purchase and house this data? How should you prioritize accessing emerging data vs. finding smarter ways to leverage existing data (e.g., patient website, IITs, and traditional pre- and post-launch trials) with AI tools?
- What are two or three conditions addressed in your pipeline with outcomes that are difficult to measure today? How might biometric or other environmental indicators captured by wearables, Nest, Google Home, or other connected devices in the home and in clinical facilities help measure those end points?
- How will societal attitudes and regulations impact the role that data privacy and security has on our ability to access and use patient data under "Google health care"? How will regulations like HIPAA need to adapt to accommodate new "health" data?

What ‘Amazon health care’ could look like in five years

Amazon is in the news for health care, again.

The health care industry has been keeping a close eye on Amazon’s retail, technology, and logistics giant for some time now.

Amazon's scale and consumer base are unparalleled—and they're just starting on health care.

Over the past few years, the company has secured HIPAA compliance for Alexa-enabled devices, hired a slew of former health care leaders, acquired the direct-to-consumer pharmacy business PillPack, and moved forward with launching Haven, the high-profile venture to jointly manage the health of its employee population alongside JPMorgan Chase and Berkshire Hathaway. These moves have led many to speculate about how Amazon could disrupt the health care industry. And while these musings often come alongside a healthy dose of well-warranted skepticism, there's little doubt that Amazon is unique among the growing list of outside players eyeing the health care space.

Amazon's commitment to innovation and self-disruption have enabled it to gain a massive foothold around the world. It accounted for approximately half of all online sales in the United States in 2018 and has well over 100 million Prime members. Jeff Bezos, Amazon's CEO, has signaled he is willing to invest the time and money to go after the health care industry, despite its immense complexity. He commented that, "[h]ard as it might be, reducing health care's burden on the economy while improving outcomes for employees and their families would be worth the effort. Success is going to require talented experts, a beginner's mind, and a long-term orientation."

> So what would "Amazon health care" look like? We see at least five potential paths forward—and they're not mutually exclusive.

1 Employer aggregator

The quickest (and likely least disruptive) way Amazon could make its mark on health care is through its own employee population. The company has already started down this path through its joint venture with JPMorgan Chase and Berkshire Hathaway, now called Haven. The three companies manage health care spending for a combined 1.2 million employees. In the grand scheme of things, this venture involves a relatively limited number of lives spread over a number of markets, but it does give Amazon an innovation function of sorts—the company could potentially experiment with running its own health clinics for employees in the Seattle area, according to CNBC.

Moreover, the CEO of the venture—Atul Gawande, who began leading the effort in July 2019—is known as a disruptive thinker in the industry. To have national-level implications, however, Amazon's venture will need to secure more companies' involvement or find other ways to export successful models beyond the three founding members.

2 Next-generation retail pharmacy

Amazon's acquisition of PillPack, combined with its "Basic Care" line of over-the-counter products, could make it a formidable player in the retail pharmacy space. Amazon already has an established track record of competing on cost and convenience, and the organization's timely shipping processes could rival the convenience of a community pharmacy.

By acquiring PillPack, Amazon is positioned not only to compete for the high-cost, chronically ill patients that PillPack currently caters to, but also to make a major play for the growing number of self-pay pharmaceutical customers. While Amazon's growth in pharmaceuticals may have historically been limited by the company's inability to earn in-network status from major PBMs, insured patients are increasingly discovering that they can cut prescription prices by paying out-of-pocket. By making prescription prices readily available through its online marketplace, Amazon-PillPack could use its existing platforms to encourage patients to shop around based on price, potentially prompting more insured patients to pay out-of-pocket for their prescriptions.

3 Global health care logistics specialist

Without question, Amazon's shipping network is one of the most robust in the country—and that positions the company to have a massive impact on the health care supply chain. A number of Advisory Board members have told us they've proactively reached out to Amazon for help in revamping their supply chain. Some hospitals have even begun to independently use Amazon Business to streamline their supply chains. One example is Summit Pacific Medical Center in Washington, which uses Amazon's ordering tools to address 90% of its supply chain needs.

At present, Amazon is not equipped to offer more highly specialized medical tools. But if the organization expands into these offerings, it could have a major impact on addressing the fragmentation issues that currently plague the health care supply chain, undercutting some of the cost inflation that distributors levy.

4 Consumer-focused technologies

Perhaps no aspect of Amazon's business model causes more concern, or more excitement, than the potential health care applications of its consumer-facing technology platform.

In the health care industry, where the customer experience is often confusing and fragmented, the ability to make interactions frictionless and seamless would go a long way. There are many ways Amazon could bring its brand of simplicity to health care—as a patient engagement platform, an EHR, a transparency tool, or even an insurance broker.

It should be noted that tech giants such as Microsoft and Google have made previous attempts to break into this space with limited success. Microsoft's HealthVault shut down in 2018, and Google Health shut down in 2012. But the growing popularity of wearable technology and Alexa's health-related capabilities suggest consumers today may be more willing to engage with new technological models—a factor that could give Amazon the edge where others have failed.

5 Primary care operator

Finally, there's the potential that Amazon could move into the care delivery space as a primary care operator. According to CNBC, Amazon has a pilot primary care clinic for a "select group of employees" and plans to expand access to more workers next year. The company has also been hiring primary care experts since last year, including Christine Henningsgaard, the former VP of operations at One Medical, and Martin Levine from Iora Health. According to Michael Yang, a health investor at Comcast Ventures, Amazon may be using employee clinics as a pilot before expanding the strategy beyond their employees.

Amazon already has several advantages that could give it a head start in the care delivery space, particularly the requisite online presence to get into telemedicine. Also, with its recent acquisition of Whole Foods, Amazon already has a platform for entering the brick-and-mortar clinic space.

Even the potential of Amazon's disruption is accelerating change

While none of these five visions is fully a reality today, the fact that Amazon is exploring so many aspects of the industry is reflective that the market is truly ripe for disruption, whether by Amazon or other outside players. Indeed, the mere prospect of Amazon moving into health care has already begun to catalyze action within the industry. Amazon is, without a doubt, one of the driving factors behind the current wave of mega-mergers into vertical integration.

Our recommendations

Prepare for patients' more centralized treatment journeys.

Integrated technology platforms will disintermediate middlemen across the health care value chain.

In each scenario described above, Amazon would successfully cut out a key stakeholder (and their costs) from the value chain: health plans, PBMs, retail pharmacies, or provider networks. Amazon could replicate their unprecedented user experience for online shopping and translate it to health care.

Patients currently have to work with health plans, PBMs, pharmacies, and other middlemen across the health care value chain. This is a often complex and frustrating process. Amazon seeks to directly empower patients to make choices on their individual definition of value.

In a world where patients would compare treatment options using available information (including price, route of administration, dosage, duration, and adverse events), medical leaders would still play vital roles. They'll need to identify the right patient-facing end points and capture them early in pre-launch studies. They'll also work alongside marketing to ensure accurate medical information exchange with patients in print, face-to-face, and online.

Questions
to take back to your team

- How will disintermediation within the health care supply chain provide you with new opportunities to directly interact with patients to inform their treatment options and choices?
- What are two or three ways your team can make clinical and scientific information readily accessible and digestible to patients online?
- Amazon plans to increasingly centralize information about treatment utilization, adherence patterns, and user experience. How can you capitalize on the availability of longitudinal outcomes data to provide clinical insight to your team?

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