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Let Thy Smartphone Be Thy Medicine? Google, Amazon Make Big Moves Into Healthcare

As Big Tech and major retail firms move into healthcare they bring promises of convenience and innovation they claim will benefit consumers — but the move also raises questions about the ever-growing power and influence of such firms and their real motivation for getting into healthcare.

By [Michael Nevradakis, Ph.D.](#)

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[Google](#) and [Amazon](#) in recent months made a series of moves to expand their presence in the healthcare sector via services such as [Google Health](#) and [Amazon Care](#).

In addition to introducing technological innovations designed to transform smartphones into personal health examination devices, the two tech behemoths also announced a new series of acquisitions and [hirings](#) to further expand their footprint in the realm of health services.

Meanwhile, Walmart, better known for its retail services, also [entered](#) the online healthcare services world, leveraging new technological innovations of its own.

As [Big Tech](#) and major retail firms move into the healthcare realm they bring promises of convenience and innovation they claim will benefit consumers.

But the moves also raise questions about the ever-growing power and influence of such firms and their real motivation for getting into healthcare.

These companies already collect massive amounts of personal consumer data — are they getting into healthcare so they can expand their access to personal health data?

Let thy smartphone be thy medicine — Google turning smartphones into medical devices

At a recent event — “[The Check Up](#)” — Google [outlined](#) a new future for healthcare, using technological innovations such as artificial intelligence (AI) and new partnerships with private firms to offer a wide new range of potential health services.

During the event, organized by Google, the tech giant announced progress in the realm of using AI and “deep learning” to tackle a variety of eye conditions — and explained the role [smartphone cameras](#) could play in detection and treatment.

[According](#) to Google:

“[Our recent research](#) tackles detecting diabetes-related diseases from photos of the exterior of the eye, using existing tabletop cameras in clinics.

“Given the [early promising results](#), we’re looking forward to clinical research with partners, including [EyePACS](#) and [Chang Gung Memorial Hospital](#), to investigate if photos from smartphone cameras can help detect diabetes and non-diabetes diseases from external eye photos as well.

“While this is in the early stages of research and development, our engineers and scientists envision a future where people, with the help of their doctors, can better understand and make decisions about health conditions from their own homes.”

This initiative comes on the heels of a related Google endeavor, known as Automated Retinal Disease Assessment ([ARDA](#)), which involves the use of AI.

ARDA “uses artificial intelligence to help healthcare workers detect diabetic retinopathy, with future possibilities of AI algorithms to assist clinicians in identifying other diseases,” [the company said](#).

[Google said](#) it is currently screening “350 patients daily, resulting in close to 100,000 patients screened to date.”

Google [plans](#) to expand this offering globally:

“Our solution is being used to detect diabetic retinopathy in India and Thailand, and we intend to expand in Europe as well. We are working with multiple partners to make

this solution available around the world, especially in the areas which have lower access to specialist care.”

At “The Check Up,” Google also [announced](#) another way to transform a smartphone into a personal health device — by turning [smartphones into stethoscopes](#) that can [detect](#) circulatory irregularities such as murmurs:

“Our feature that allows you to measure your heart rate and respiratory rate with your phone’s camera is now available on over 100 models of Android devices, as well as iOS devices ...

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healthcare — while complementing its mission “to organize the world’s information.”

Google said:

“We’re developing technology solutions to enable care teams to deliver better, faster and more connected care. We’re working on products and features to empower people to be healthier with the information, assistance, and connections they need to act on their health.

“And we’re exploring the use of artificial intelligence to assist in diagnosing cancer, predicting patient outcomes, preventing blindness and much more.”

Google Health offers a full suite of [services](#) targeting consumers, caregivers, researchers and “healthy communities.”

These services include:

- Fitbit smartwatches.
- [Google Fit](#), a mobile app which collaborates with the World Health Organization as part of the “Heart Points” activity goal.
- [DermAssist](#), an app described as “a guided skin search app from Google Health that helps you find personalized information about your skin concerns after a few questions and three quick photos.”
- [Nest Hub](#), which [uses](#) a “mini radar along with microphones, temperature sensors and light sensors to analyze your sleeping habits and offer suggestions on how to improve your shut-eye.”
- [Care Studio](#), which is described as “clinical software to unify healthcare data.” Recently, Google [expanded](#) this tool’s capabilities with the use of AI, to summarize and contextualize physicians’ clinical notes, and [integrated](#) Care Studio into the electronic health records platform used by Meditech, which provides software and services to healthcare providers.

- [Google Cloud](#) for healthcare and life sciences, which offers cloud computing services to healthcare providers.
- Genomics [research](#) and the development of DeepVariant, which is “[an open-source variant caller](#) that uses a deep neural network to call genetic variants from next-generation DNA sequencing data, significantly improves the accuracy in identifying variant locations, reducing the error rate by more than 50%.”



Growth through partnerships, acquisitions

Google is also expanding its healthcare partnerships.

For example, during “The Check Up,” the company announced a partnership with [Northwestern Medicine](#) to [develop](#) AI technology that would read prenatal ultrasounds.

Google [said](#):

“We are working on foundational, open-access [research studies](#) that validate the use of AI to help providers conduct ultrasounds and perform assessments.

“We’re excited to partner with Northwestern Medicine to further develop and test these models to be more generalizable across different levels of experience and technologies.”

Healthcare industry publication Becker’s Hospital Review [reported](#) Google “will target low- and middle-income countries with a shortage of healthcare professionals trained to read imaging data.”

This is in addition to Google’s continued investments in health AI startups.

[According to Becker’s](#), “[a]cross various biotechnology fields, Google made the most investments and strategic partnerships in drug research and development since 2019, carving out a place for itself in the field.”

In 2021, “Google Ventures was part of a \$400 million funding round for a machine learning drug discovery startup, Insitro,” followed by investments in four AI startups so far in 2022.

Overall, Becker’s reported, “Google Ventures was digital health’s most [active](#) investor in 2021, closing 22 deals.”

Such [initiatives](#) have included AlphaFold, which maps protein structures from their amino acid building blocks with the use of AI, and Isomorphic Labs, which applies AI to the drug discovery process.

“These investments,” as reported by Becker’s, “signal that Google is pushing to the forefront of health AI and pharmaceuticals and judging from their pattern, they’re not close to stopping yet.”

Amazon promises ‘virtual care’ in all 50 states

Leaked [audio](#) from an “all-hands” meeting at Amazon in November 2021 [revealed](#) CEO Andy Jassy describing Amazon Care — the company’s healthcare initiative — as “one of the ‘innovations’ that most excites him.”

During the meeting executives said Amazon Care “connects patients with doctors over text and video” and, in some areas, “mails prescriptions and dispatches a nurse to people’s homes.”

The company [revealed](#) plans to merge Amazon Care with its existing online pharmacy and health diagnostics services, and said it is looking to expand its primary-care business “through partnerships and new services.”

What is Amazon Care? [Characterized](#) by the company as “a new kind of healthcare” that is “built around you, your life, and your schedule,” Amazon Care was introduced in September 2019.

It is [described](#) by the company — whose [mission](#) is “to be the Earth’s most customer-centric company” — as an effort “to bring the most patient-centric health care to customers when and where they need it.”

The company [said](#) Amazon Care “combines the best of virtual care and in-person services ... as more and more organizations look for convenient, comprehensive, high-quality health care solutions.”

It [offers](#) services such as “clinicians on your schedule” that would be available online, “care that comes to you” via “at-home follow-up” visits for “labs, tests, and treatment,” “convenient testing options” for COVID, and “dedicated care teams,” [adding](#) that it is “[w]orking in lockstep [emphasis added] with our customers to address their growing needs.”

For some, the term “lockstep” echoes a 2010 [report](#) by the Rockefeller Foundation, “Scenarios for the Future of Technology and International Development,” which predicted four future scenarios, including “Lock Step” — described as “[a] world of tighter top-down government control and more authoritarian leadership, with limited innovation and growing citizen pushback.”

According to Amazon:

“Amazon Care provides immediate access to a wide range of urgent and primary care services, including COVID-19 and flu testing, vaccinations, treatment of illnesses and injuries, preventive care, sexual health, and prescription requests and refills.

“When issues can’t be resolved over video, Amazon Care will dispatch a nurse to a patient’s home for additional care where in-person care is available, ranging from routine blood draws to listening to a patient’s lungs.”

Amazon [promises](#) “virtual care in all 50 [U.S.] states,” marking “the first time a big tech firm will be directly in the healthcare services business.”

Amazon Care isn’t just for consumers — it also [targets](#) employers.

Silicon Labs, TrueBlue and Whole Foods Market ([owned](#) by Amazon) have joined the lineup of companies offering Amazon Care to their employees nationwide.

Amazon Care is offered “as a workplace benefit” for employers “desperate for an alternative” to the “runaway inflation in healthcare costs,” and latches onto “a critical gap in telehealth experiences today: access to a medical professional in 60 seconds or less.”

By doing so, Amazon Care is raising the bar for incumbent healthcare providers, eliminating “lengthy wait times and travel times” via a service likened to “Amazon Prime same-day-delivery on steroids,” Healthcare IT News [said](#).

‘Ask Alexa’ for medical assistance?

Similar to Google Health, Amazon is utilizing partnerships to offer many of these healthcare services.

For example, [it works](#) with [Care Medical](#), a team of clinicians to “help with your primary care and urgent care needs:”

“Care Teams help manage your primary care and preventive health concerns. They promote health and wellness through disease prevention and help manage long-term medical conditions.

“Care Teams are made up of clinicians, with family medicine backgrounds, who are focused on building a relationship with you to provide the care you need, and understand your health goals.”

Amazon also [announced](#) a partnership with [Teladoc](#), a telehealth company that “will provide virtual healthcare services through Amazon’s Alexa,” another example of Amazon leveraging its product offerings — in this case, its Echo smart speaker and Alexa virtual assistant.

[According to Healthline](#), “[c]onsumers will be able to ask Alexa for non-emergency medical assistance and be put in touch with a Teladoc healthcare professional,” adding that “[e]ventually, the company says it plans to have video virtual visits through Alexa.”

An estimated [40 million people](#) in the U.S. now have Amazon Echo, and as stated by Healthline, an Alexa ID will be needed for individuals to access this telehealth service.

This partnership is [described](#) as providing each company with “something the other needs.”

Amazon Care also is partnering with [Moving Health at Home](#), a “home healthcare advocacy group” that “aims to promote home-based care.”

Amazon Care’s services are complemented by Amazon Pharmacy, a service the company [claims](#) “makes it easier for customers to access the medications they need at affordable prices.”

[Launched](#) in November 2020, Amazon Pharmacy is [touted](#) as an effort “to build the world’s most customer-obsessed pharmacy in an industry that is often inconvenient and confusing,” aiming “to make it convenient for customers to access and pay for their medications, and to offer a simple shopping experience that is as easy as any other purchase on Amazon.”

Leveraging services offered to customers elsewhere in the Amazon ecosystem, such as [Amazon Prime](#), Amazon [said](#), through Amazon Pharmacy, “select medications are available

to Prime members for as little as \$1 per month,” with further savings [offered](#) to customers with the use of the Amazon Prime [prescription discount card](#).

Huron Consulting Group [said](#) Amazon has many options at its disposal to leverage its full range of products and services as part of its healthcare offerings and to keep a [close watch](#) on the activities and habits of its customers:

“Alexa or Echo could save physicians’ time in ordering prescriptions by allowing them to simply speak orders rather than typing them up. Amazon’s extensive supply chain network could allow patients to access their prescription in various ways, including traditional mail order, two-day mail-order delivery for Prime members, Prime Now two-hour delivery in select cities, and instant pickup points at Amazon Lockers or at Whole Foods stores — if pharmacies are installed.

“In addition, Amazon’s existing Subscribe and Save feature could be used to automate refills. Prescription data can be aggregated into Amazon profiles, giving the retailer more customer data as it looks to identify trends between purchases and health conditions.

“Amazon’s breadth of resources — including 450 Whole Foods Market stores, online data platforms, an e-commerce site, virtual personal assistants, an extensive supply chain and 80 million Amazon Prime members — position the retailer to disrupt the healthcare industry.”

According to Huron, once Amazon is in the healthcare space, health information — including prescriptions, medical reminders set up on Alexa or Echo, and even medical records — could add consumer insights.

“Using this data, Amazon could suggest food, vitamins, over-the-counter medication and other related products that could help consumers manage their health,” according to Huron.

“In some cases, these recommendations could be for products the customers don’t know they need.”

Amazon Pharmacy also recently introduced features such as an insurance price checker, [billed](#) as a service that makes it “easier for customers to find and compare the price of medication,” and “improved [access](#)” for Amazon Prime Members “who rely on Insulin Lispro to help manage diabetes.”

As with Amazon Care, Amazon Pharmacy is the product of a partnership — with [Inside Rx](#), a prescription drug savings program.

In another recent [partnership](#), Amazon Pharmacy [developed](#) MedsYourWay, a prescription savings card for those insured by “Horizon Blue Cross Blue Shield of New Jersey, Blue Cross Blue Shield of Nebraska, Blue Cross Blue Shield of Alabama, Florida Blue, and Blue Cross and Blue Shield of Kansas.”

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Partnering with data-mining firms

Amazon is also expanding its foothold in other aspects of healthcare services.

For instance, Amazon Web Services (AWS), the company's cloud computing platform, has been [expanding](#) its [partnerships](#) with major healthcare companies and organizations across the world, including Moderna, the National Health Service in the United Kingdom and the Government of New South Wales (Australia).

As [reported by The Defender](#) in January, the [Vaccine Administration Management System](#) used by the U.S. Centers for Disease Control and Prevention features "robust security that is shared with Amazon Web Services," while AWS is also one of the backers of the [SMART Health Card](#), a private vaccine passport initiative adopted by several countries and U.S. states.

Along with AWS, Google is also a backer of the SMART Health Card, via its participation in the [Vaccine Credential Initiative](#), the entity supporting its development and rollout.

Moreover, in 2014, AWS received a [\\$600 million contract](#) from the CIA for cloud computing services, while in 2020, the CIA [awarded](#) its Commercial Cloud Enterprise contract to five companies: AWS, Google, IBM, Microsoft and Oracle.

Similar to Google, Amazon has also been investing in health-related personal wearable technology, through the [development](#) of the [Halo Band](#), which "offers a variety of services including analysis of sleep, body composition, nutrition, and activity tracking."

Amazon, via AWS, also launched a [healthcare accelerator](#), with a stated goal "to cultivate and promote innovative startup solutions that achieve the Quadruple Aim of improved patient experience, improved clinician experience, better health outcomes, and lower cost of care."

Via this accelerator, AWS also describes its intention to work with public healthcare entities, [stating](#): "AWS will support public sector healthcare enterprises to accelerate their digital transformation."

Highlighting the importance of data, perhaps as a prime motivator of such healthcare initiatives on the part of Amazon and other Big Tech companies, Amazon also recently developed a "stealth lab," known as 1492, of which little is known.

The lab [reportedly](#) is "developing tools to mine data from electronic health records, new telemedicine technologies and healthcare applications for its existing products."

Another [foray](#) into healthcare services by Amazon and AWS is the [Amazon Health Lake](#) data management service, which [allows](#) healthcare organizations "to aggregate information into a centralized, searchable lake [database] and normalize it using machine learning and FHIR [[fast healthcare interoperability resources](#)]."

Walmart: from Big Retail to Big Healthcare?

Unlike Google and Amazon, Walmart already operated pharmacies in its brick-and-mortar retail locations. Now, it's entering the realm of online healthcare services.

According to Becker's, "[t]he health business was Walmart's fastest-growing line in the fourth quarter of 2021 after focusing on telehealth and allowing pharmacists and techs to practice at the top of their license."

One example of Walmart's investments in this field is Epic, its electronic health records service for patients, which is already used in more than 2,000 hospitals and more than 45,000 clinics in the U.S.

John Furner, president and CEO of Walmart U.S., said in a recent earnings call with investors, "[t]he health business was our fastest-growing comp [complimentary] business in Q4 [the fourth quarter of 2021]," while Walmart's 2021 revenue from such services was \$572.8 billion.

Concerns over market concentration, censorship and the future of healthcare

Natalie Schibell, a senior healthcare analyst at Forrester Research, described the move toward telehealth as a trend that began during the pandemic:

"What the pandemic did was it really trained everyone to have everything at their fingertips. So now, healthcare companies have to stay relevant and competitive.

"This is the trend going forward... Care concierge at your fingertips."

Dr. Ahmed Banafa, professor and expert on cybersecurity at San Jose State University in California, cited such factors as widespread staff shortages and an aging U.S. population as factors fueling the growth of telehealth, adding that it "could save hospitals and insurance companies tons of money in reducing face-to-face visits."

Health Care IT News raved about Amazon Care:

"As work-from-home gains momentum, employers seeking to keep today's busy workforce healthy may find that Amazon Care offers them an attractive combination of speed, convenience and peace of mind."

"Healthcare is already being disrupted at the edges as digital-first companies expand their footprint in primary and urgent care and consumers become more comfortable with virtual care delivery in the aftermath of the pandemic.

"Healthcare is in the very early stages of a transformation to an entirely new model of care. If Amazon is the one to deliver the big breakthrough we have been waiting for, so be it. Someone has to do something."

In turn, Amazon's partnership with Teladoc was described as "part of a growing trend toward virtual healthcare."

But not everyone has a positive view of Big Tech's foray into healthcare.

Brian Hooker, chief scientific officer for Children's Health Defense, told The Defender:

"I am concerned especially with the level of censorship at Google that they would be stepping into the healthcare arena, with the possibility of suppressing information on alternative therapies."

Dr. Madhava Setty, a board-certified anesthesiologist and senior science editor for The Defender, said:

"I see healthcare in the same way I see the equities market and the U.S. dollar. It's all extremely fragile and is dependent on the confidence people put into it.

"If these large media platforms validate them [big tech healthcare services], they will persist, with all of their failings (including the enormous conflict of interest at the top), indefinitely. If they actually called it out for what it is, we get thrown into a real crisis."

Others expressed [antitrust concerns](#), due to the significant market power that companies such as Google and Amazon could potentially attain within the healthcare industry and across the various other industries in which they are active.

A March 30 Politico [report](#) describing Amazon's entry into the healthcare market as a "gold rush" quoted Idris Adjerid, a Virginia Tech professor of business information technology, and Stacy Mitchell, an antitrust advocate who is co-director of the nonprofit organization [Institute for Local Self-Reliance](#).

Both expressed reservations about Amazon's healthcare endeavors in particular.

[According](#) to Adjerid, Amazon's ability to integrate services across its multiple businesses and areas of activity gives the company a competitive advantage, which is concerning considering the company's prior history of leveraging its extensive market power.

Mitchell [said](#) if Amazon is successful in the fields of telehealth and healthcare more broadly, it could potentially use its significant market power to create a relationship of reliance between it and the individuals and businesses that use its services, placing them at a disadvantage and potentially violating antitrust law.

Mitchell added that Amazon is losing significant sums of money from its healthcare ventures but can afford to, putting competitors with fewer resources at a disadvantage.

Eleanor M. Fox, professor of trade regulation at the New York University School of Law, told The Defender in a recent interview that a successful antitrust case is difficult to accomplish.

That's because the law does not set a limit on a company's market power, but looks at whether consumers have been hurt and competitors have been actively shut out.

Fox explained:

"In almost all jurisdictions, [antitrust law] doesn't say you have too much market power. It could control conduct, say, of the big tech platforms when they are using market power to hurt competition and consumers.

"If Google, for instance, has the power and might to keep anybody else out of the market ... that would be illegal if it blockades the market, rather than competing on its merits.

"If Amazon, for example, has monopoly power, a plaintiff is trying to prove that case has to clear that hurdle first. Does Amazon have monopoly power? They're trying to do it in a couple of cases in the United States, but it's a difficult hurdle and it depends how you define monopoly power ... We have to prove monopoly [power] first."

"[If a company is] growing in ways that respond to the market, that means giving people what they want. So it gives them more of what they want when they're more

inventive and it gets bigger and it might even get a monopoly share, that's all considered good under antitrust law.

"But if it had the power to decree that nobody else can ... become a competitor of it and it builds a blockade against that competitor, that would be illegal."

However, legal changes may be on the way, as proposed legislation aims to strengthen antitrust protections, Fox said:

"There's a lot of legislation pending recognizing this conservative nature of our law, trying to expand it and to make it more elastic and to cover more acts, [such as] the [Klobuchar-Grassley bill](#) [proposed October 2021] against a small group of big platforms for preferring themselves over all of their rivals on their platforms."

Unsurprisingly, "big tech firms are spending billions of dollars to try to prevent the legislation from being passed," according to Fox.

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Michael Nevradakis, Ph.D., based in Athens, Greece, is a senior reporter for The Defender and part of the rotation of hosts for CHD.TV's "Good Morning CHD."

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