



Digital Health Trends

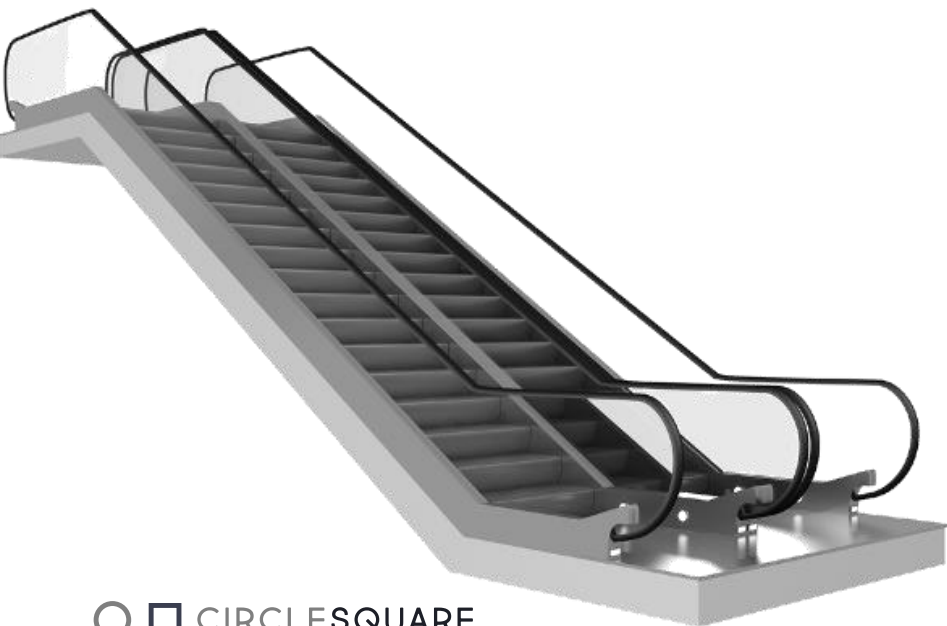
May 2023



HEALTH INFORMATION TECHNOLOGY – CONSUMER HEALTH & TECHNOLOGY

The Ups and Downs of Digital Health

Digital Health Trends
May 2023



From the co-editors...

Interoperable EHRs

Epic is up this month again, as KLAS Research reports it was the only EHR last year to net gains in hospitals and beds, and Signify Research reports it's about to enter the German market. As well, a quick look back at the year so far has Epic striking a number of significant partnerships.

Governance is also up this month with two industry thought leaders focusing on how it is key to transformation in digital health and multi-stakeholder initiatives.

Healthcare Analytics

Google is up with the release of its large language model for health and Mayo Clinic is up with its expansion of its research platform and funding for its AI spinout.

Value-based care is also up as storylines trend positive with increased interest in outcomes evidence, growth in commercial Medicare Advantage, and investment and interest from provider and payer segments.

Consumer Health and Technology

Metabolic health is up this month amid the weight loss drug craze, which finds a slew of digital health companies entering the fray.

Retail health is also up as a report from Definitive Healthcare finds that retail clinic claim volumes have increased by 200% in the past five years, with more than 1,800 active retail clinics across 44 states.

Et Cetera

Virtual care models are up as a new report from McKinsey argues that by shifting acute care to the home, virtual hospitals could deliver three key benefits over traditional brick-and-mortar models of care.

The Medical Futurist looks at more than a dozen healthcare companies that have already implemented ChatGPT, while Nurse.org highlights several robotic technologies that can help ease the burden on nurses.

*Michael Lake and Dave Lake
Co-editors Digital Health Trends*

Contents | Digital Health Trends (May 2023)

Electronic Health Records

Continuing to outpace the market, Epic is the only vendor with positive net change in US hospital market share and number of beds

Epic partnerships this year, so far

Epic is expected to enter the German EHR market and CGM buys m.Doc

Hospice EHR solutions: vendor progress in enhancing clinician usability

Transactions in foundational segments focus this month on revenue cycle management, practice management, and surgical robotics

Interoperability and Security

Governance models and best practices for digital transformation in healthcare enterprises

Lavita AI gets seed funding to implement a healthcare data market on top of a commercial blockchain and cybercurrency platform, Theta

Multi-stakeholder initiatives (MSI) in healthcare IT

Physician survey on a data-driven omnichannel approach to deliver non-marketing, clinically-focused messaging

Healthcare Analytics

Google introduces PaLM 2, its next generation language model

Mayo Clinic Platform expands its data network with international partners

Venture capital funding for medical imaging AI companies since 2015

Innovations in clinical AI include stroke, lung cancer, neurology, Alzheimer's, Parkinson's, sleep apnea, kidney disease, and pancreatic cancer

Roche Information Solutions: Generating evidence for digital health solutions

Half of all eligible Medicare beneficiaries are now enrolled in private Medicare Advantage plans

The six tools value-based care (VBC) providers demand from their information technology

Payer care management market sees use cases expanding in a generally low-performing market

Engaging primary care in value-based payment: Findings from the Commonwealth Fund survey of primary care physicians

Transactions in analytics segments include payer analytics, liquid biopsy, healthcare LLMs, image analytics, and real world data

Consumer Health and Technology

ChatGPT outperforms doctors in answering patient questions

Telehealth companies make long-term play to tackle metabolic health amid weight loss drug hype

Report: patient demand for digital payment communication is on the rise

One in five Americans with limited access to transportation will forgo healthcare

Menopause wearable company Embr Labs leads the month in femtech funding

CVS is shuttering its clinical trials unit, while Walgreens is doubling down

More than half of patients would visit a retail pharmacy first for medical issues

Retail clinic claims volumes have increased by 200% in the past five years

FDA approvals include a health monitoring toilet seat, joint health wearable, more

A small Welsh startup is taking on Apple in the race to non-invasive glucose tracking

Six healthcare startups make the CNBC Disruptor 50 list

Partnerships in consumer health segments

M&A and other transactions in consumer health segments

Funding highlights in consumer health segments

Et Cetera

Virtual hospitals could offer a respite to overwhelmed health systems

15 healthcare companies that have already integrated ChatGPT

Six robotic technologies that can help ease the burden on nurses

A large, flowing graphic composed of many thin, overlapping teal lines that create a sense of movement and depth, resembling a stylized wave or ribbon. It starts from the left side of the page and flows towards the right, with some lines curving upwards and others downwards.

Electronic Health Records

Continuing to outpace the market, Epic is the only vendor with positive net change in US hospital market share and number of beds

Epic is still top choice (gained 14,330 beds)

Epic maintained their position as the top choice for large organizations and continued to increase the distance between themselves and the rest of market. They continue to win customers from all EMR vendors, including vendors not highlighted in this report. Epic’s footprint is the largest in the country—they cover nearly half of all acute care beds in the US, and their customers include most of the largest, well-resourced academic medical centers in the US. Epic had one loss in 2022, from a Community Connect customer that chose to move to CPSI; this decision was not the result of M&A or standardization activity.

Oracle wins smaller hospitals (lost 4,658 beds)

In 2022, Oracle Health (Cerner) saw their first double-digit net gain in hospitals since 2018. Unlike in previous years, in which growth was fueled by expansion from large customers, Oracle Health’s hospital gains in 2022 were driven primarily by small standalone hospitals opting for the CommunityWorks platform—49 of their 50 acute care wins were for hospitals under 200 beds (this is the fifth consecutive year Oracle Health signed the most hospitals of this size), and almost three-fourths were for CommunityWorks.

However, due to the disparity in size between the small hospitals they gained and the larger hospitals they lost, Oracle Health still saw a significant overall decline in beds, the most of any vendor in this report. Due to ongoing revenue cycle challenges, larger Oracle Health customers are leaving; smaller hospitals continue to use the platform, though some share concerns about their experience with Cerner Patient Accounting / CommunityWorks Financials.

2022 US acute care market share

| Vendor | % Hospitals | % Beds |
|------------------------|-------------|--------|
| Epic | 35.9% | 47.6% |
| Oracle Health (Cerner) | 24.9% | 25.8% |
| MEDITECH | 16.3% | 14.0% |
| CPSI | 8.2% | 2.5% |
| Altera (Allscripts) | 3.7% | 4.1% |
| MEDHOST | 2.5% | 1.2% |
| Azalea Health | 0.4% | 0.1% |
| Other | 7.9% | 4.2% |



Editorial: KLAS Research reports that EMR purchasing continued at a strong pace in 2022 and included a significant uptick in migrations and small-organization decisions. Improvements to clinician satisfaction, interoperability, and revenue cycle stability were the primary drivers. Epic continues its domination in the larger organizations. MEDITECH saw record-high legacy migrations to its Expanse platform, but lost market share.

Epic partnerships this year, so far



Epic is partnering with Microsoft to develop and integrate generative AI into its EHR software, with health systems beginning to pilot the new integrations.

The two are training Microsoft's Azure OpenAI on a large collection of information so it can asynchronously draft responses to patient messages for providers.

Azure OpenAI will provide draft messages to providers, who can then review the message and make any modifications before it is sent to a patient.

It aims to reduced the clinician documentation burden.



EHR giant Epic is partnering with medical genetics company Invitae to make genetic test results available through Aura, Epic's specialty diagnostics suite.

Through the partnership, Invitae will make test result information available in Epic's provider organizations' usual workflows

"Genetic testing can inform some of the most important care decisions in patients' lives, and Invitae is making it more accessible to both patients and providers across the Epic community."



Epic has partnered with consumer experience company Press Ganey to integrate patient experience data into MyChart.

Under the agreement, Press Ganey's data and insights will be integrated into Epic's MyChart patient portal and Cheers CRM.

The initial integrations will be available later this year. The data and insights will also be integrated into additional Epic applications in the future.

The aim is to help healthcare organizations gather and use feedback to improve the overall quality of care and experience for patients and staff.



Trusted Exchange Framework and Common Agreement

Epic has been approved to join the Trusted Exchange Framework and Common Agreement, a new health information exchange framework.

Epic announced that it was planning to join in June as an inaugural qualified health information network.

Epic has also collaborated with ONC, the Sequoia Project and others to build the principles and procedures of the HHS-sponsored interoperability framework.

TEFCA aims to help establish a nationwide EHR exchange.



Suki, a leader in voice AI technology for healthcare, announced the integration of its AI-powered voice assistant with Epic EHR software using Epic's ambient APIs.

Suki Assistant helps clinicians complete time-consuming administrative tasks by voice and recently announced the ability to generate clinical notes from ambiently listening to a patient-clinician conversation; the integration enables notes to automatically be sent back to Epic, updating the relevant sections.

Editorial: We reported earlier this year that Epic was temporarily modifying its Orchard marketplace and prioritizing working on deeper integrations with fewer vendors to create more value. This is an impression collection of business development relationships that represent industry-leading solutions in a few key areas: AI LLM, precision medicine, patient experience, interoperability, and voice AI for clinician documentation.

Epic is expected to enter the German EHR market and CGM buys m.Doc

Epic market entry

Software multinational SAP's late 2022 announcement that it would cease supporting Oracle Cerner's i.s.h.med EHR solution by 2030 required a swift and decisive response from Oracle Cerner.

The DMEA 2023 conference would have been an ideal location to reassure Oracle Cerner's German customers, although no major announcement was made. Epic, keen to break into the German EHR market, and CompuGroup Medical SE & Co. KGaA (CGM), eager to secure a greater slice of the German hospital EHR pie, are two of several vendors waiting to swoop at the expense of Oracle Cerner.

CGM acquires m.Doc

CGM, the leading DACH EHR vendor in revenue terms, continued its acquisitive foray by obtaining a majority stake in patient portal provider m.Doc GmbH. The move is partly driven by CGM's strategy to benefit from Germany's Hospital Futures Act (KHZG), which is supporting digital healthcare projects via €4.3 billion of funding.

Patient Portals are one of the 11 "pillars" detailing how the funding is to be used in Germany (highlighted at right). m.Doc (along with Samidi and Doctolib) have emerged as one of the leading vendors addressing this pillar and the CMG deal is likely to cement its position further.

Two years after coming into force, it's taken time for the government funding to trickle down to EHR/IT vendors. 2023 and 2024 will be the years where it really starts to drive vendor revenue growth.

Eleven pillars for German digitalization

| # | Project | Number of applications | Percent of apps that include pillar |
|----|---|------------------------|-------------------------------------|
| 3 | Digital care and treatment documentation | 1,530 | 95% |
| 2 | Patient portals | 1,278 | 79% |
| 5 | Medication management | 1,101 | 68% |
| 10 | IT security | 728 | 45% |
| 1 | Emergency room IT | 449 | 44% |
| 4 | Decision support systems | 655 | 41% |
| 6 | Process digitalization | 665 | 41% |
| 9 | Hospital telemedicine | 354 | 22% |
| 7 | Cross-site performance tuning and cloud computing | 181 | 11% |
| 8 | Hospital bed capacity management | 56 | 4% |
| 11 | Patient room adaption | 18 | 1% |



Editorial: Arun Gill, Senior Market Analyst - HealthTech | Digital Health, at Signify Research, provides his view of the EHR market in Germany in his recent newsletter, linked below. He highlights Oracle slow response to a loss of SAP support for its i.s.h.med EHR as an opening for Epic. And he shows how the CGM acquisition of m.Doc helps support pillar #2, patient portals. The view of the pillars is useful in understanding the current digital health market in Germany and how it is likely to evolve. Signify Research is a leader in its research on global EHR markets including ambulatory segments.

Hospice EHR solutions: vendor progress in enhancing clinician usability

Introduction

Resource-strapped hospice leaders are looking for tools that alleviate clinician burnout by streamlining workflows and building additional point-of-care functionality. Slow vendor development on this front has led to an overall decline in customer satisfaction.

Key findings

MatrixCare and WellSky are best at supporting independent hospice, while Epic is best at meeting health system–owned hospice needs.

Netsmart and Homecare Homebase development are misaligned with clinician goals. Needed functionality not being prioritized, while maintenance updates also fall below client expectations.

MatrixCare drives value through improved clinician workflows, while Epic does it through enterprise contracts.

WellSky shows transitions of care success with new referral management tool, while Netsmart fails to deliver third-party interfaces for transitions

Overview of hospice vendor solutions

| | | |
|-----------------------------|------|--|
| Epic (Comfort) | 85.2 | Typically used by hospice groups owned by large health systems. Organizational leaders pleased with platform integration, ongoing support, consistent updates, and collaborative approach to future development. |
| MatrixCare (Hospice) | 80.5 | Customers feel support meets their needs and executives are proactive about taking feedback on their road map. Respondents feel tools are well dialed in to hospice needs. |
| WellSky (Consolo) | 79.2 | Continues to be a valuable solution for independent hospice groups. Customer satisfaction has been stable since acquisition of Consolo. Support team is efficient and consistent. |
| Homecare Homebase | 69.4 | Often the go-to solution for the largest independent hospice groups, despite poor overall customer satisfaction. Revenue cycle functionality is robust and regulatory compliance is good. |
| WellSky (Kinnser) | 69.4 | Superseded by Hospice & Palliative solution. |
| Netsmart (Homecare Advisor) | 63.9 | No longer being developed outside of regulatory updates; myUnity platform is go-forward, but many customers are reluctant to move. |

Performance is rated on 100-point scale; Netsmart had limited data.



Editorial: This KLAS Research report dives into how well hospice vendors meet provider organization needs, including delivery of value, development progress, and support for when patients go through a transition of care. Epic is most notable among hospice organizations that are owned by health systems, largely because of their market leadership for health system enterprise software. MatrixCare and WellSky do best with independent organizations. Homecare Homebase and Netsmart are lagging the market.

Transactions in foundational segments focus this month on revenue cycle management, practice management, and surgical robotics



Clinical coding and NLP

Acquisition

Intelligent Medical Objects, medical vocabulary solutions, acquires Melax Technologies, natural language processing (NLP) and medical coding services for 650+ healthcare orgs for cohort discovery, clinical trials, and knowledge mgmt



Hospital consulting services

Acquisition

Tegria, healthcare consulting and technology services, spun out from Providence in 2020, and includes RCM services, branded as Acclara, acquires Sisu Healthcare IT Solutions, a MEDITECH certified network host



Revenue cycle management

Acquisition

Aspiration, RCM for complex claims and revenue integrity with 1000+ clients and \$3.5b in recovered funds, acquired FIRM RCM, recovery of denied, unpaid, and underpaid claims for hospital systems



Surgical robotics

\$55m Series B

Moon Surgical (Paris), collaborative robotics that enhance traditional laparoscopy with Maestro, a robotic surgical assistant (\$92.2m total raised); competes with Da Vinci; surgeons like being at the bedside



Ear and hearing health

\$23m Series A

TymphaHealth (London), its device and software allow a broad range of pros to perform digital otoscopy, micro-suction wax removal, and hearing assessments (\$31m total raised); NH, Walgreens, Bupa; planning on US entry



Revenue cycle management

\$23.5 Series B

Inbox Health, automates and personalizes patient billing and communications (\$45.3m total raised) for 26k medical practices, 3.5m patients; integrates with practice management and EMRs



Practice management

\$19m Series A

Practice Better (Toronto), all-in-one practice management software platform for health and wellness professionals (\$20m total raised); includes appt scheduling and mgmt, telehealth, charting, billing, and client engagement



Revenue cycle management

\$17.3m

Adonis, AI-driven revenue intelligence and automation platform (\$23m total raised) for private practices, hospitals, revenue cycle organizations, and digital health providers; General Catalyst led funding

Editorial: Additional transactions included Practice Perfect EMR acquired Clinical Billing Solutions, RCM for rehab clinics; Surgical Safety Technologies (Toronto), raised \$15m Series A; MediView XR, clinical augmented reality gets \$15m in strategic funding (\$29m total) from Mayo Clinic, Cleveland Clinic, and others; Laguna Health, AI-driven care transition management, gets \$15m Series A (\$22m total); and Premier, Inc. announced it will pursue strategic alternatives including a sale.



Interoperability and Security



Governance models and best practices for digital transformation in healthcare enterprises



Digital maturity models for health systems

Model 1. EHR as primary platform for digital engagement *(Challenged)*

EHR vendor as digital strategy --- focus on access functionalities e.g., appointment scheduling, real-time video consults --- IT-led, focused on technology enablement

Model 2. Digital initiatives focused on expanding virtual care *(Emerging)*

Telehealth, eVisits --- digital front doors --- patient communications --- extend beyond native EHR capabilities for best-in-class solutions --- led by IT and clinician leadership

Model 3. Stand-alone digital health function *(Able)*

Dedicated digital transformation leader (CDO) with budget for digital health programs --- focused on improved patient experience and increased adoption --- enhanced use of virtual care and remote monitoring models --- increased use of data and analytics

Model 4. Multi-year transformation strategy and investments *(Advanced)*

Comprehensive, documented transformation roadmap --- multiple strategic technology partnerships alongside EHR, leverage startup ecosystem --- advanced data and analytics programs, chief data officer role --- led by team of CXO's reporting to CEO

Digital transformation office

An interesting trend is a small number of health systems that are setting up healthcare digital transformation offices (DTO) to drive enterprise-wide digital transformation initiatives.

Oversight of all digital initiatives-supported by technical and clinical expertise

Implementation of roadmap with best-in-class vendor relationships, internal IT

Manage sourcing and procurement of technology solutions for speed and time to market

May have direct ownership for certain functions

Defines digital strategy and roadmaps, establishes governance and oversight, manages budgets

Prioritizes, aligns, and actively enables digital initiatives across the organization

Editorial: Damo's DigiMTM framework provides a way to assess health systems on four dimensions: (1) maturity in the deployment and adoption of digital engagement tools for patients and providers, (2) maturity in digital programs for care management and virtual care models, (3) adoption of enabling platforms such as cloud and CRM for supporting digital transformation, and finally, (4) maturity in organization models and governance.

Lavita AI gets seed funding to implement a healthcare data market on top of a commercial blockchain and cyberrcurrency platform, Theta

Lavita AI, a next generation AI+Web3 healthcare platform, closed a \$5M seed financing round, led by Camford Capital, and angel investors from blockchain and AI industries. The funds will be used to accelerate the development of Lavita's AI-first platform and applications for patients, healthcare providers, and research institutions. Its decentralized platform provides a privacy-preserving infrastructure to securely share and analyze health data, and brings ownership, control, and value of health data back to individuals.

Applications potentially enabled by the platform include:

- Clinical trials:** Individuals and patients can match with ongoing clinical trials globally, including those that historically are costly to recruit for, such as pivotal clinical studies, or clinical trials for rare/orphan diseases.
- Research:** Life science researchers can use the platform to convene data cohorts for conducting large-scale population studies such as genome-wide and phenome-wide association studies.
- Data sharing:** Biopharma companies can utilize Lavita platform to securely share data across multiple parties for applications in drug discovery or development partnerships.
- LLM:** Health institutions will be able to partner on Lavita platform to train and fine-tune their own large language models (LLMs) for their domain-specific use cases such as medical imaging and clinical records.

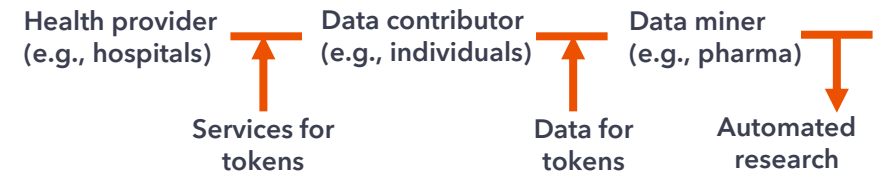
Lavita in partnership with Theta Network will allow individuals to participate in the platform and earn LAVITA tokens, a new set of TNT-20 tokens natively built on the Theta Metachain.

These tokens can then be used to access services from participating healthcare institutions, as well as to participate in Theta Edge Network, for training and fine-tuning healthcare AI models.

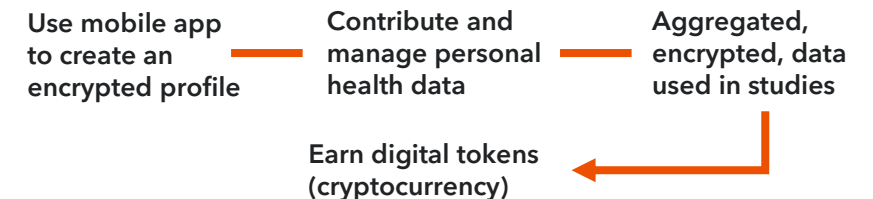
Editorial: Lavita AI explains its architecture as having five components supported by its platform partner, Theta Labs: 1) decentralized blockchain; 2) secure data storage; 3) secure computing; 4) AI-powered data research; 5) secure key management; all supported by Theta smart contracts. Camford Capital is an investor in Theta Labs, having raised \$113m over five rounds. Theta Labs is a web3 blockchain infrastructure for video, media, and entertainment. This is the first use case outside of that domain. There are other companies, including Sangus Health, building similar healthcare-specific blockchain and token-based platforms for patient data that are operating in stealth mode.

Lavita Platform

A decentralized data marketplace



User workflow



Multi-stakeholder initiatives (MSI) in healthcare IT

Point-of-Care Partners critical factors for MSI success

Member champion(s). Successful coalitions include one or more champions who are passionate about the cause and are strong advocates for the changes that will ensue.

Member commitment. All of the participants in an effective multi-stakeholder initiative must be committed to its success, not just as stakeholders keeping an eye on how it's going but as active "doers."

Expectations and value proposition.

Champions and early leaders/participants need to align on an MSI's vision and early artifacts. Then, together, they must conduct the difficult but vital work of devising clear messaging about the need and value of their particular initiative, which is a vital step for bringing on other key partners and supporters (such as government agencies).

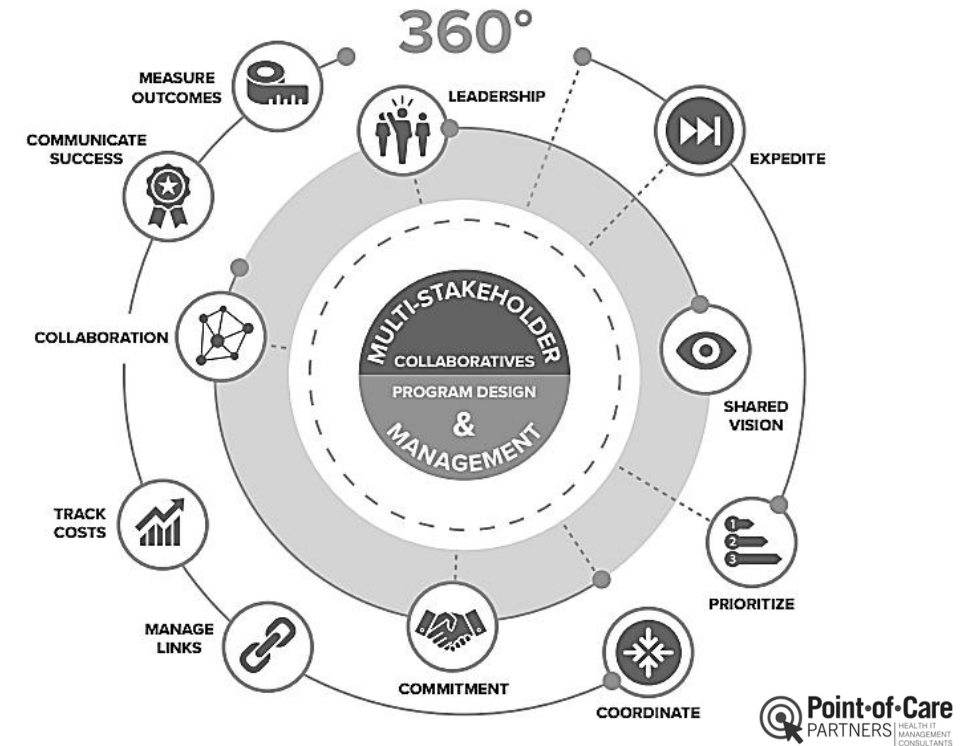
Broad and diverse membership. Thoughtfully including the "right" participants is an integral part of forming a transformation-focused, sustainable, and successful collaboration. That means stakeholders/members must represent a sharply focused but deliberately diverse range of knowledge, expertise, points of view, and business interests.

Dedication to solving big, important problems.

While many aspects of MSIs can be very different, successful multi-stakeholder collaborations share many common elements. Perhaps the most important of them, again, is that they keep their eyes on the prize.

Experienced program management. Working consistently within an effective governance structure is clearly critical to an MSI's success and ensuring that all members do so is arguably the program manager's primary ongoing task.

Integrated layers of task and culture



Editorial: Point-of-Care Partners (POCP) has established itself as the leader in helping industry stakeholders get benefits from participation in multi-stakeholder initiatives (MSIs). Examples include [Da Vinci](#), [Project CARIN Alliance](#), [SEMI](#), and [AzHeC Initiative](#). POCP brings expertise in governance of the critical tasks and leadership in the organizational culture required to make these initiatives successful. A white paper is linked below that explains the issues and dynamics of this complex world.

Physician survey on a data-driven omnichannel approach to deliver non-marketing, clinically-focused messaging

Engagement deepens when personalized, relevant information, and the patient journey align.

Research showed that a high percentage of HCPs believe information provided by life science brands is most valuable — and therefore most likely to increase adoption — when it is:

- 1) Aligned with their current patient population;
- 2) Provides non-clinical info relevant to their patients, such as formulary status, prior authorization requirements, or financial assistance; and
- 3) Clearly communicates clinical benefits over existing treatments. What's more, 40% of all physicians agree that when the information is “generic and not personalized to their current needs,” they are less likely to engage with it and less likely to adopt a new drug or device.

40% of physicians say that if the information presented by a life science manufacturer feels generic or not personalized to their current needs, they are less likely to engage with it.

OptimizeRx

A software platform that uses AI can create custom models or algorithms for a drug or device's ideal patient profile.

This AI model can apply patient or HCP demographics, patient treatment history, claims data, EHR data, treatment algorithms, and utilization management data to identify patients — especially hard-to-find patients — who are eligible today for the brand's drug or device.

The most advanced, effective models are built with clinical input and oversight to ensure they reflect a physician's needs and point of view. AI can use NPI numbers, geographic, specialty and other data to locate the physicians/potential prescribers actively treating those patients, via channels including medical sites, EHRs or social platforms like Instagram or Facebook.

It can guide a message delivery platform to immediately push brief messages (usually fewer than 10-15 words) of relevant information such as savings, insurance info, pharmacies where available, formulary messaging and diagnosis tips, trial enrollment, patient support programs, clinical benefits, or competitor and treatment comparisons — based on each brand's specific needs and engagement goals.

Physicians are getting clinical or brand information on >10 types of media

Percentages are the number of physicians ranking these sources in their top three choices

| | |
|---------------------------------------|-----|
| Email | 74% |
| Journal articles | 73% |
| Sales rep visit | 71% |
| EHR systems | 68% |
| Medical conferences | 63% |
| Medical science liaison visit | 58% |
| Brand-sponsored speaker events | 57% |
| Social media | 53% |
| Third-party websites (e.g., UpToDate) | 52% |
| Company website | 45% |
| HCP-only platforms (e.g., Doximity) | 34% |
| Podcasts | 31% |

Editorial: OptimizeRx works with brand teams at life sciences companies to help them get clinically-relevant messages to prescribers and patients at the point of care. As research for this white paper, OptimizeRx partnered with REACH, an independent research company, to conduct quantitative primary market research with 123 US physicians between February 25 and March 3 of 2023. Respondents included dermatologists (n=20), endocrinologists (n=20), cardiologists (n=20), primary care physicians (n=20), oncologists (n=23) and neurologists (n=20). ConnectiveRx is another digital health company in the segment.

The background features a series of flowing, wavy green lines that create a sense of movement and data flow. The lines vary in opacity, with some being solid green and others fading into the background. The overall aesthetic is clean and modern, with a focus on organic, wave-like patterns.

Healthcare **Analytics**

Google introduces PaLM 2, its next generation language model



Improvements

Multilinguality: PaLM 2 is more heavily trained on multilingual text, spanning more than 100 languages. This has significantly improved its ability to understand, generate and translate nuanced text — including idioms, poems and riddles — across a wide variety of languages, a hard problem to solve. PaLM 2 also passes advanced language proficiency exams at the “mastery” level.

Reasoning: PaLM 2’s wide-ranging dataset includes scientific papers and web pages that contain mathematical expressions. As a result, it demonstrates improved capabilities in logic, common sense reasoning, and mathematics.

Coding: PaLM 2 was pre-trained on a large quantity of publicly available source code datasets. This means that it excels at popular programming languages like Python and JavaScript but can also generate specialized code in languages like Prolog, Fortran, and Verilog.

Includes Med-PaLM 2

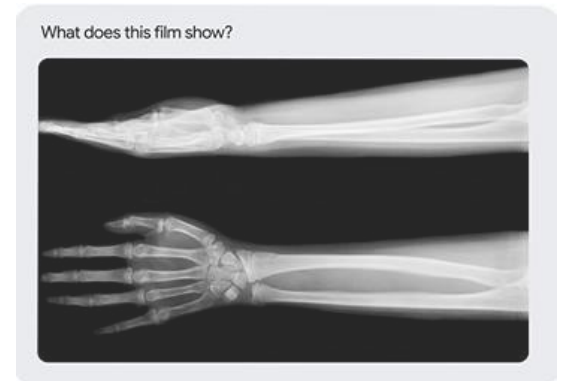
Med-PaLM 2 was trained by Google’s health research teams with medical knowledge, can answer questions and summarize insights from a variety of dense medical texts.

It achieves state-of-the-art results in medical competency and was the first large language model to perform at “expert” level on US Medical Licensing Exam-style questions.

Google is adding multimodal capabilities to synthesize information like x-rays and mammograms to one day improve patient outcomes.

Med-PaLM 2 will open up to a small group of Cloud customers for feedback Summer 2023 to identify safe, helpful use cases.

Future example



FOREARM (2 VIEWS)

Findings:

- Minimally displaced acute oblique fracture through distal radial metaphysis (Salter-Harris II).
- Possible minimally displaced vertical fracture through distal ulnar epiphysis with ulnar styloid avulsion fracture vs. unfused ossification center.
- No dislocation.

Impression:

Acute distal radius fracture, indeterminate assessment of distal ulna; clinical correlation recommended.

Editorial: Here we are at the dawn of the large language model wars. Google responds to Microsoft’s investment in and release of ChatGPT. It positions its PaLM 2 this way: “When you look back at the biggest breakthroughs in AI over the last decade, Google has been at the forefront of so many of them. Our groundbreaking work in foundation models has become the bedrock for the industry and the AI-powered products that billions of people use daily. As we continue to responsibly advance these technologies, there’s great potential for transformational uses in areas as far-reaching as healthcare and human creativity.” Many AI visionaries are troubled by the potential downstream effects of a technology AI war, concerned that it could spiral out of control and damage the society and its information ecosystem.

Mayo Clinic Platform expands its data network with international partners

In pursuit of more accurate and equitable AI models, Mayo Clinic is broadening its network to include de-identified datasets in Brazil, Israel, and Canada.

With new collaborations with Brazil's Hospital Israelita Albert Einstein, Israel's Sheba Medical Center and Canada's University Health Network, the data-sharing network plans to broaden its capabilities toward more advanced and accurate artificial intelligence applications.

Those three health systems join Missouri-based Mercy, which began a 10-year data sharing and model validation collaboration with Mayo Clinic in 2022.

With the new expansion Mayo Clinic Platform_Connect offers clinicians and researchers secure, cloud-based access to de-identified data across three continents.

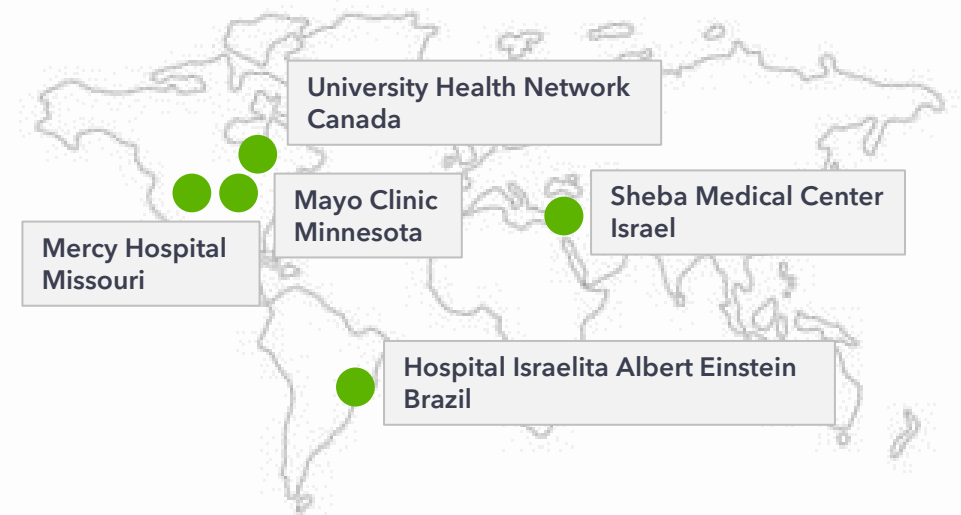
With Mayo's "Data Behind Glass" approach, each health system will have access to extensive datasets to work with, without the need to move it among the organizations – each organization keeps control over its own data throughout the process.

The goal is development and deployment of new and innovative machine learning models, built using more diverse and representative patient data.

Mayo Clinic Platform plans to add new US and global members to the collaboration in the months ahead.

Healthcare IT News

Mayo Clinic Platform_Connect offers cloud-based access to de-identified data across three continents



Editorial: This is encouraging validation that the industry can surmount previous language barriers and the complexity of healthcare data, to allow this kind of data sharing. It will help make the research data sets less bias and more useful across geographies.

Venture capital funding for medical imaging AI companies since 2015

Executive summary

Independent software vendors (ISVs) developing AI image analysis solutions for medical imaging have raised almost \$5 billion in venture capital (VC) funding since 2015. There are over 200 ISVs, most of which are startups, but some have started to mature, with the top 25 companies accounting for 73% of the total VC funding raised (\$3.6 billion).

The number of deals appears to have peaked in 2022 (at 95); although the number of deals per year is declining, the appetite of investors has not abated. There has been a shift in funding, from many smaller early-stage funding deals to fewer, but larger later-stage funding deals

Companies from the US have received the most funding (almost \$2 billion), almost double the funding received by companies from China (\$1.1 billion). Companies from Israel (\$513 million), the UK (\$310 million) and South Korea (\$255 million) make up the top five of countries with the most funding.

HeartFlow remains the most well-funded vendor, having raised over \$650 million since 2015. Three other companies that have raised over \$250 million in VC funding (Shukun Technology, Cleerly, Viz.ai). Infervision is also assumed to have surpassed this mark, but its Series C funding round remains undisclosed.

There are a further 8 companies that have also raised more than \$100 million, a marker deemed by Signify Research to be indicative of potential long-term success. These include companies from Israel (Aidoc, CathWorks), China (Keya Medical, Deepwise Shenrui), and one each from the US (Imagen Technologies), the UK (Perspectum), South Korea (Lunit), and Australia (Annalise).

Top funded medical imaging AI by region

| | | | | |
|----------|---|----------------------|-------------|---------|
| Americas | 1 | HeartFlow | US | \$655.8 |
| | 2 | Cleerly | US | 280.5 |
| | 3 | Viz.ai | US | 252.2 |
| | 4 | Imagen Technologies | US | 135.0 |
| | 5 | VoxelCloud | US | 78.5 |
| EMEA | 1 | Aidoc | Israel | \$237.5 |
| | 2 | CathWorks | Israel | 150.8 |
| | 3 | Perspectum | UK | 142.0 |
| | 4 | Ultromics | UK | 59.0 |
| | 5 | Zebra Medical Vision | Israel | 57.4 |
| APAC | 1 | Shukun Technology | China | \$304.9 |
| | 2 | Infervision | China | 224.0 |
| | 3 | Lunit | South Korea | 137.8 |
| | 4 | Deepwise | China | 130.0 |
| | 5 | Keya Medical | China | 125.0 |



Editorial: Sanjay M Parekh, PhD and Ellie Baker, Signify Research, release this free summary report ahead of its comprehensive market analysis: AI in Medical Imaging World Market Analysis 2023 (June 2023). The full report to be released in June 2023 collects and analyzes the almost \$5 billion invested since 2015 in medical imaging AI.

Innovations in clinical AI include stroke, lung cancer, neurology, Alzheimer's, Parkinson's, sleep apnea, kidney disease, and pancreatic cancer



Stroke

Johns Hopkins is training a computer algorithm to recognize changes in the patients' features, such as the paralysis of certain facial muscles or unusual eye movements, that might indicate damage to the brain from a stroke



Lung cancer

Atrium Health Wake Forest Baptist has implemented AI and robotics tools from Optellum to help clinicians predict and diagnose lung cancer to improve early detection, based on imaging characteristics



Neurology

Health technology company PicnicHealth, pharma giant Roche and its subsidiary Genentech are expanding their partnership globally to speed up neurological disease research through investments in real-world data.



Alzheimer's and Parkinson's

Rigshospitalet, Aarhus University, and T&W Engineering collaborate on a project to develop an ear-EEG device for early detection of Alzheimer's and Parkinson's diseases. Funded by a DKK 15 million grant from Innovation Fund Denmark,



Sleep apnea

A new AI model for diagnosing sleep apnea has been developed by Seoul University Bundang Hospital. The AI analyses cephalograms, focusing on the tongue which is highly associated with sleep apnea.



Kidney disease

Healthy.io, transforming the smartphone camera into a clinical-grade device, confirms \$100m Series D investment as the first FDA-approved smartphone-powered, at-home kidney test.



Pancreatic cancer

An AI tool has identified people at the highest risk for pancreatic cancer up to three years before diagnosis using solely the patients' medical records, via research led by Harvard and Copenhagen, with partners



Diabetic kidney disease

Sanford Burnham Prebys and the Chinese University of Hong Kong have developed a computational approach to predict whether a person with type 2 diabetes will develop kidney disease.

Editorial: Additional innovations in clinical AI include: UNSW Sydney with Boston University [developed](#) a tool that targeting detection of Parkinson's disease years before the first symptoms start appearing; Mayo Clinic [developed](#) a tool that can help pathologists detect problems in kidney transplants; The University of Western Australia [found](#) its AI/ML helps reduce cardiovascular complications after non-cardiac surgery; University of Edinburgh [finds](#) the CoDE-ACS algorithm was able to rule out a heart attack in more than double the number of patients, with an accuracy of 99.6%.

Roche Information Solutions: Generating evidence for digital health solutions

The digital health industry has grown rapidly in recent years. This growth is reflected by the rising number of companies emerging in the sector and increasing amounts of investment in digital health over the last decade.

There is a deficit of robust evidence for most digital solutions on the market. A comprehensive study revealed that 44% of the digital health companies had no regulatory filings nor clinical trials published.

There is a broad range of evidence generation activities that innovators may pursue. These may serve a formative function, with evidence from literature or real-world data (RWD) being used to quantify a clinical problem, validate a concept, and inform product development.

More consensus is needed on the types of evidence required for various digital health solutions. There is huge diversity amongst digital tools.

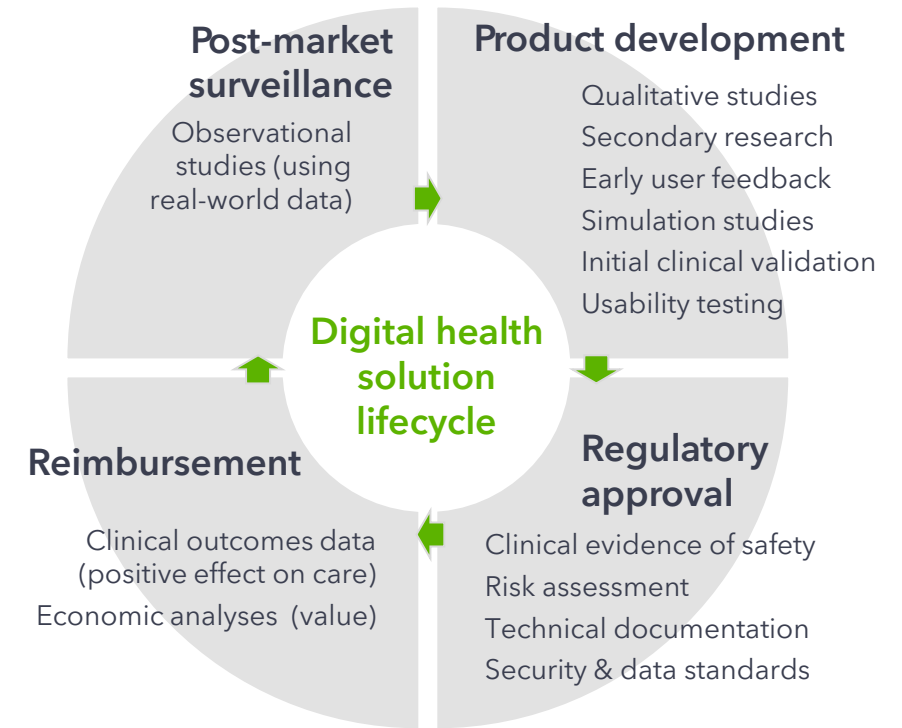
Commonality of language will facilitate more efficient discussions between stakeholders in digital health. Evidence generation in digital health is still at a nascent stage

Innovators face significant challenges in generating strong evidence for the safety, efficacy and overall value of novel digital health solutions. Traditional methods of evaluation are ill-suited to many digital health solutions.

Novel evaluative approaches are required for these novel technologies. Both molecules and algorithms now variously represent safe and effective treatments for disease.

Effective reimbursement pathways are pivotal for evidence generation and wider adoption of digital solutions. In many markets, the routes to reimbursement for digital solutions remain unclear

Examples of evidence generation for digital health solutions by stages of development



Editorial: Roche Diagnostics collaborated with Prova Health (London), a consultancy focused on generating evidence for digital health solutions, for this white paper, linked below. The report is based on a research process that included a review of the relevant literature, individual interviews with experts, three roundtables (focused on the US, UK, and EU markets respectively) and a survey of 144 healthcare leaders.

Half of all eligible Medicare beneficiaries are now enrolled in private Medicare Advantage plans

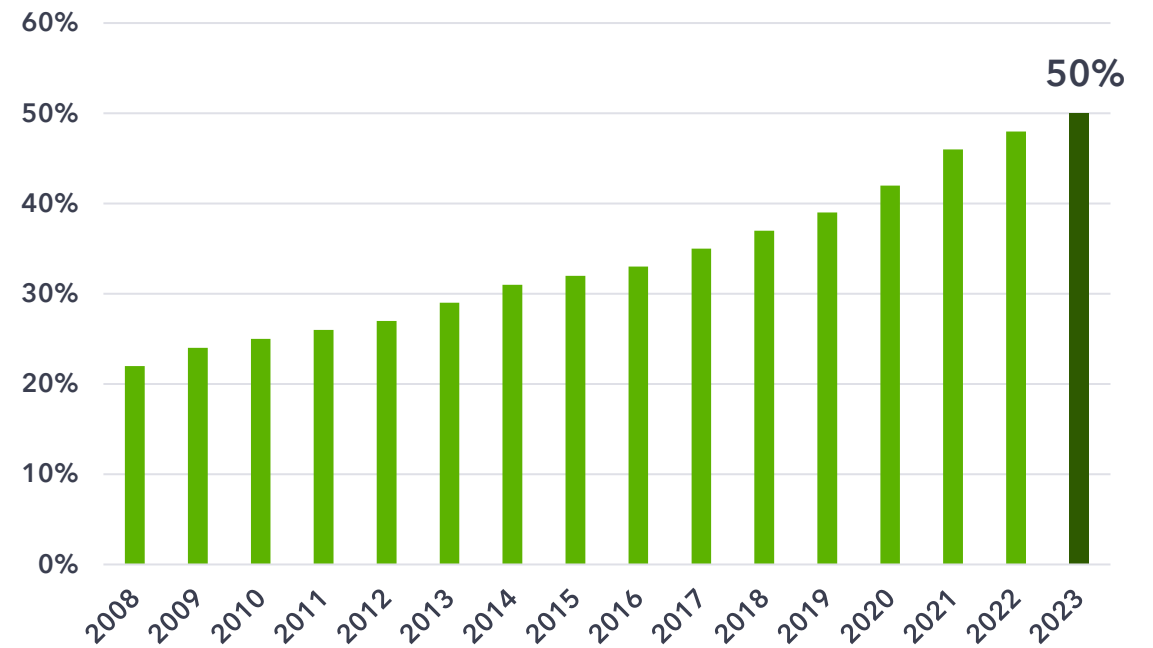
In January 2023, 30.19 million of the 59.82 million people with both Medicare Part A and Part B were enrolled in a private plan

Enrollment in Medicare Advantage has increased dramatically in recent years. In 2007, less than one in five (19%) eligible Medicare beneficiaries were enrolled in a private plan. The growth in enrollment is due to a number of factors, including the attraction of extra benefits offered by most plans, such as vision, hearing, and dental services, and the potential for lower out-of-pocket spending, particularly compared to traditional Medicare without supplemental coverage. Medicare Advantage plans also offer the simplicity of one-stop shopping, in that enrollees do not need a separate Part D prescription drug plan or supplemental coverage.

At the same time, Medicare Advantage plans typically use tools to manage utilization and costs that may limit access to care, such as prior authorization requirements and referrals for specialists and mental health providers. For example, in 2021, Medicare Advantage enrollees submitted 35 million prior authorization requests. In addition, Medicare Advantage plans generally require enrollees to receive care from in-network providers or pay more out-of-pocket for out-of-network care.

As the role of Medicare Advantage grows, so will interest in understanding how well the program serves the increasingly diverse group of enrollees who receive their Medicare coverage from private insurers, including a disproportionate share of Black, Hispanic and Asian and Pacific Islander beneficiaries.

Medicare Advantage enrollment as a share of the Medicare Part A and B population, 2007-2023



Editorial: Here are the details for the chart above: Includes Medicare Advantage plans: HMOs (including POS), PPOs (local and regional), PFFS, and MSAs. Excludes cost plans, PACE plans, HCPPs, and MMPs. About 59.82 million people are enrolled in Medicare Parts A and B in January 2023. With narrower networks employed by MA plans there is more opportunity for value-based care. A recent [review](#) of evidence on how Medicare Advantage compares to traditional Medicare found few differences between the programs. Additionally, gaps in data make it difficult to evaluate plan performance, including assessments of the program's impact on value and equity.

The six tools value-based care (VBC) providers demand from their information technology

1. Identify patient cohorts

Our research has highlighted that EHRs are the main sources of patient information that are used to identify specific patient cohorts to target as part of VBC, coupled with manual data handling processes. Some EHRs are basic without clinical decision support (CDS) tools for closing care gaps.

2. Risk stratify patient cohorts

VBC providers highlighted a reliance on off-the-shelf algorithms to prioritize patient cohorts into high- and low-risk categories for interventions and care plans, e.g., Milliman RX, Hierarchical Condition Category (HCC), Charlson Comorbidity Index, QAdmission Risk Algorithm (UK), Electronic Frailty Index (UK), and Kaiser Triangle.

3. Clinical decision support

Advanced VBC organizations have developed integrated tools/dashboards providing care gap closure recommendations. However, the system is still not perfected as many CDS options are not integrated with care coordination team workflows requiring timely manual processes and additional staff resources.

4. Population health management

Improvements to current population health management (PHM) tools on the market are needed. Many orgs currently use broad dedicated PHM tools that enable care management teams to view cohorts based on risk and then drill down into specific patients to receive input and advice on what actions are needed to close gaps in care.

5. Patient activation and outreach

The telephone remains the primary method of contacting patients and enrolling them into VBC. Enrollment success varies greatly across organizations, with some leveraging additional outreach tools such as texting tools and various patient apps and portals to contact patients. Communication is initiated and managed via workflows that originate from the EHR which housing patient contact info.

6. Performance tracking / reporting

Organizations are required to participate in annual audits that measure performance and track outcomes. Analysing data for these audits is extremely valuable but is a labor-intensive process and many healthcare organizations lack adequate resources and skill sets to create these reports. Most use some form of DIY BI tools created by internal staff to track various program success metrics.



Editorial: Rohinee Lal, Signify Research, provides an interesting model for categorizing the HIT tools that are central to value-based care. We abstracted some comments about each from her white paper, linked below. It was developed from interviews with hundreds of VBC decision-makers and buyers from ACOs and IDNs in the US and similar organizations internationally about their healthcare IT needs. It is consistent with and supportive of similar models from KLAS Research and Chilmark Research.

Payer care management market sees use cases expanding in a generally low-performing market

Introduction

Over time, care management vendors have developed new functionalities that have allowed payer organizations to move beyond traditional use cases (e.g., case management and utilization management) into emerging use cases (e.g., behavioral health, automated prior authorization).

Care management solutions are in an already low-performing market with persistent integration and functionality challenges, and with these emerging use cases, customers have a renewed need for strong engagement and support from vendors.

Key findings

InfoMC, ZeOmega, and MHK drive strong customer relationships.

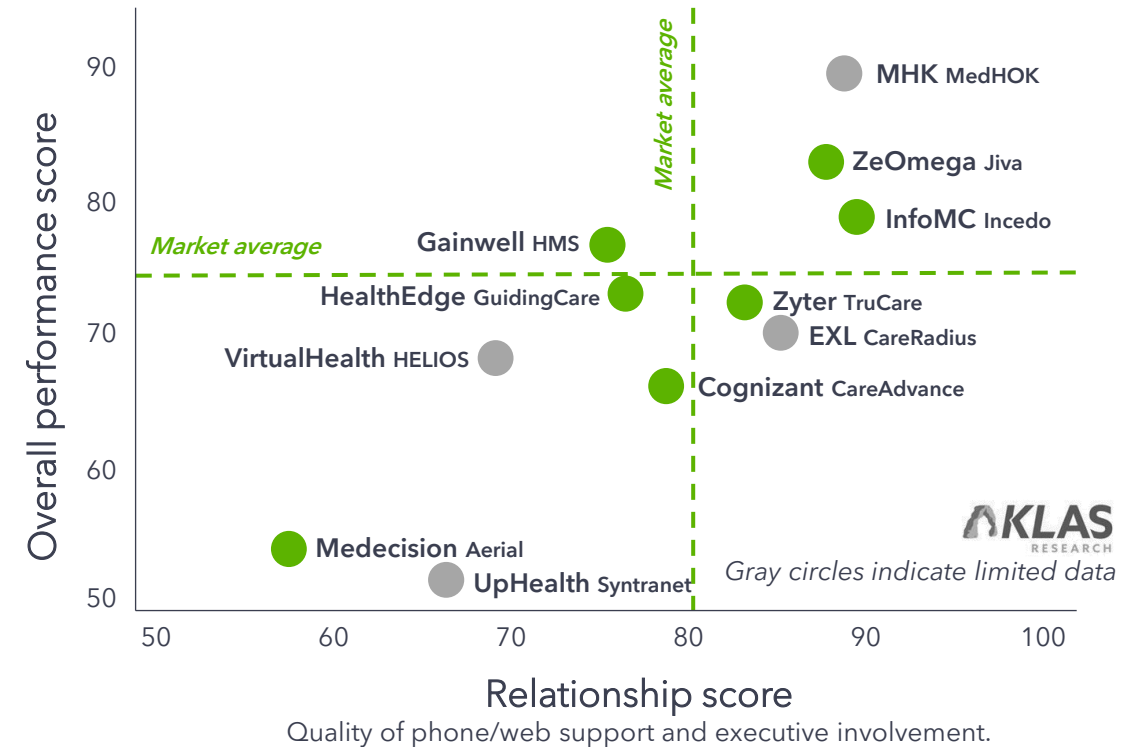
Medecision and UpHealth struggle to meet customers product and relationship needs.

ZeOmega and HealthEdge support broad emerging use cases—still, some functionality challenges persist

Even with broad use-case functionality, Cognizant customers have mixed success with integration, and Zyter (Casenet) customers want less buggy upgrades.

HealthEdge leads in considerations and wins, while EXL and Gainwell are vulnerable to replacement.

Vendor performance and relationships



Editorial: This KLAS Research report examines which vendors are providing strong customer relationships, delivering innovative product functionality, and facilitating adoption and long-term customer loyalty. ZeOmega (Best in KLAS), InfoMC, and MHK are rated above industry market averages across both relationship and overall performance measurements.

Engaging primary care in value-based payment: Findings from the Commonwealth Fund survey of primary care physicians



Fee-for-service payments dominate primary care

More PCPs are receiving FFS payment than VBP. Seventy-one percent of respondents reported that their practice was receiving any FFS payments, while fewer than half (46%) reported receiving any VBP. Similar rates of primary care practices report receiving two common types of VBP, shared savings or capitation (30% and 32%, respectively).

VBP participation is more likely among larger and urban or suburban practices

Practices with five or more physicians, those part of large integrated health systems, or those in suburban or urban areas were more likely than not to report they received VBP. These findings are consistent with other research, which has found that practices with greater capital and resources may be more prepared to engage in VBP because they can better manage financial risk and invest in necessary staff and technology.

Value-Based Payment Associated with Other Efforts to Improve Care Quality

Participation in VBP was associated with efforts to provide higher-quality and more comprehensive care. PCPs in practices receiving VBP, compared to those not receiving these payments, were more likely to report participating in accountable care organizations (66% vs. 24%) or patient-centered medical homes (53% vs. 30%).

Types of payment primary care practices may receive

| Types of payment primary care practices may receive | % US PCPs that receive any revenue from each category |
|--|---|
| Fee for service with no links to quality | 44% |
| Fee for service with links to quality, such as physician bonuses for meeting performance goals | 56% |
| Percent of respondents who said "yes" their practice receives revenue from either of these FFS payment types. | 71% |
| Shared savings models, with upside or downside risk. Physicians may be rewarded with financial gains, for meeting specific clinical or cost goals. In some models, physicians may also be penalized for falling short of goals. | 30% |
| Capitation or population-based payment models. Physicians are paid an upfront sum to cover the costs of patient care for a given period for an overall population of patients. Payments include shared savings and require practices to actively manage costs. | 32% |
| Percent of respondents who said "yes" their practice receives revenue from either of these VBP models. | 46% |

Editorial: One way to ease the burdens of primary care is through value-based payment (VBP). In recent years, VBP models have become more common across the health system, increasing from 30% to 40% of payments between 2016 and 2021. Researchers at Commonwealth Fund present new findings about how PCPs are paid and what characteristics are associated with VBP participation, using responses from more than 1,000 US physicians who participated in 2022 survey.

Transactions in analytics segments include payer analytics, liquid biopsy, healthcare LLMs, image analytics, and real world data



Payer analytics

Divestiture to private equity

Centene [CNC] sells its AI-powered healthcare analytics platform, Apixio, to New Mountain Capital, private equity; compiles and analyzes large volumes of unstructured patient data into insights and curated data



Provider network analytics

\$160m acquisition

MultiPlan [MPLN], provider network and analytics services (\$2.6b raised), acquires Benefits Science Technologies, data science as-a-service, for employers, insurers, brokers, health systems, PBMs, others (\$16m revenue)



Liquid biopsy

\$59m Series B

Foresight Diagnostics develops ultrasensitive cancer detection tests via blood analytics (\$71m total raised); focus is on minimal residual disease (MRD) and cancer recurrence testing; also works with solid tumors



Health large language model

\$50m seed round

Hippocratic AI is building a LLM for healthcare, focus on non-diagnostic, patient-facing apps and certification, targeting patient well-being and reinforcement learning; co-led by General Catalyst and Andreessen Horowitz



Antibiotic susceptibility testing

\$28.7m Series C

Pattern Bioscience, rapid diagnosis and antibiotic susceptibility testing (AST) for bacterial infections (\$68m total raised); first tests target critically ill patients with pneumonia and bacteremia, to ID the cause and antibiotics



Commercial pharma analytics

\$25m Series B

Odaia (Toronto) provides Maptual, an AI-powered commercial insights SaaS platform for pharmaceutical companies (\$43.4m total raised); HCP engagement, sales coaching, and market knowledge for campaigns



Real world data marketplace

\$23m venture round

Prognos Health, integrated RWD marketplace (\$66.6m total raised); 200b lab results, medical and Rx claims records; 325m de-identified patients; 500 linkable data sources; Cigna, Merck, LabCorp, investing



Retina image analytics

\$12m launch

Northwell and Aegis (Ascertain) launch Optain that uses AI-backed retinal imaging to find early signs of disease based on technology from Australian company Eyetelligence.

Editorial: Additional transactions included Medisolv, data quality management for 1,650 hospitals and 8,000 providers, [gets](#) PE funding; Pear Bio, uses micro-tumors taken from patient cells to predict how cancer will respond to treatments, [gets](#) \$14m Series A (similar to Foresight, above); Sensydia, non-invasive cardiac performance, [gets](#) \$8m (\$18m total); Lucem Health, agnostic AI platform, leveraging Mayo Clinic Platform, [gets](#) \$7.7m Series A; MultiOmic Health (London), precision therapeutics discovery platform for metabolic syndrome-related medical conditions, [gets](#) \$6.2m seed funding; Leadoptik, imaging deep inside human lungs and enabling early diagnoses of cancer, [gets](#) \$5m seed funding; Autonomize AI, pharma and healthcare LLM, [gets](#) \$4m seed.

A decorative graphic consisting of multiple overlapping, wavy blue lines that flow across the page from left to right, creating a sense of motion and depth. The lines vary in opacity, with some being solid blue and others being lighter, creating a layered effect.

Consumer Health and Technology

ChatGPT outperforms doctors in answering patient questions

A new study published in JAMA Internal Medicine found that ChatGPT might actually be successful in providing high-quality, empathetic answers to patient questions during an era in which doctors and nurses are too busy to do so.

The study compared two sets of written responses to real-world patient questions. One set was written by physicians, the other by ChatGPT.

Both sets of answers were evaluated by a panel of licensed healthcare professionals. The panel preferred ChatGPT responses 79% of the time.

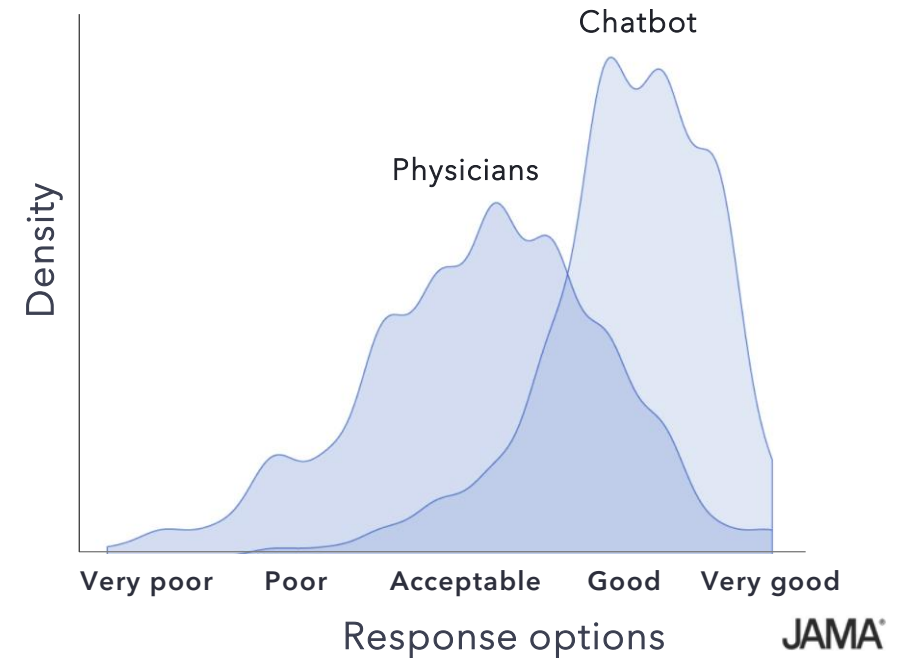
More than a quarter of physicians' responses were deemed as less than acceptable in quality, while this was the case for only 3% of ChatGPT responses.

Nearly half of the AI model's responses were categorized as empathetic, while just 5% of physicians' responses were.

The study demonstrated that ChatGPT has significant potential to alleviate the massive burden physicians face in their inboxes.

The research proves that ChatGPT can provide faster, more detailed responses to patient questions, so researchers believe that the AI model can boost patients' health by helping them better manage their conditions at home.

Chatbot and physician responses to patient questions



Editorial: The study was led by John Ayers, a public health researcher at the University of California San Diego. Patient questions were sourced from Reddit's AskDocs, a subreddit with about 452,000 members who ask medical questions and receive answers from licensed medical professionals. Because AI does not suffer from burnout, it's easier for the tool to express empathy in its responses. For example, when you tell ChatGPT that you have a headache and need advice, the first thing it does is express that it's sorry you're feeling that way. Physicians usually have so much on their plate that they forget that step.

pCare awarded 2023 Best in KLAS winner for interactive patient systems

pCare is the 2023 Best in KLAS winner for interactive patient systems, and their broad digital patient room capabilities drive high satisfaction for deep-adopting customers.

Get Well is more narrowly adopted and is validated deeply for multiple capabilities, leading measured vendors in adoption of digital whiteboards.

Vibe Health by eVideon was broadly validated across all capabilities except BYOD integration and is viewed as a complete solution by two-thirds of respondents.

Among interviewed **Avidex** customers, half feel the offering is complete and meets all expectations, highlighting outcomes such as nursing efficiencies, improved time management, fewer patient safety events, and decreased fall rates.

Epic's integrated system drives deep adoption of patient care coordination capabilities, and customers appreciate how these capabilities help patients have more transparency throughout their hospital journey and be more actively involved in their care.

SONIFI Health's capabilities are broadly adopted by customers, who report the functionality drives strong patient experience scores.

Customers of **Oneview Healthcare** (limited data) have achieved increased HCAHPS scores and physician satisfaction by enabling patients to be in more control of their care.

Overall performance score (100-point scale)

| | | |
|------------------------|--------|------|
| pCare | (n=20) | 93.2 |
| Vibe Health by eVideon | (n=15) | 89.3 |
| Avidex | (n=16) | 87.0 |
| Epic | (n=25) | 86.7 |
| Get Well | (n=39) | 81.7 |
| SONIFI Health | (n=20) | 78.3 |
| Limited data | ----- | |
| Oneview Healthcare† | (n=8) | 79.3 |

† Oneview Healthcare did not provide a list of deep adopters; instead, the vendor asked KLAS to speak to any of their customers.



Editorial: Digital patient rooms use technology to improve personalization, accuracy, and overall experience for patients and providers within the hospital. While vendors of interactive patient systems have traditionally focused on and still provide education and entertainment technology in the patient room, the report focuses on advanced digital patient room capabilities. These capabilities include: (1) patient care coordination, (2) automated non-clinical service requests, (3) patient feedback surveys, (4) digital whiteboards, (5) BYOD (bring your own device) integration, (6) room/environmental controls, (7) digital door signs, and (8) video/in-room telehealth. The full report is available below with a KLAS subscription.

Telehealth companies make long-term play to tackle metabolic health amid weight loss drug hype

The environment

The effectiveness of weight loss drugs like Wegovy and Saxenda, as well as the diabetes drug Ozempic, have created sky-high demand for these glucagon-like peptide agonists, or GLP-1s.

In 2022, more than 5 million prescriptions for Ozempic, Wegovy and others were written for weight management, compared with just over 230,000 in 2019—a 2,082% increase.

GLP-1 medications support weight loss by sending signals to the brain and body that help regulate metabolism and help patients feel full and satiated longer.

Vendor responses

Teladoc recently expanded its provider-based care service for employers to include weight management and prediabetes programs.

Everly Health is building out its virtual care services combining diagnostic testing, treatment and ongoing condition management. As part of this service, the company is offering GLP-1 drugs to qualified patients.

WeightWatchers is moving into the obesity drug market with its recent acquisition of telehealth company Sequence for \$132 million.

In January, direct-to-consumer health and wellness company **Ro** launched a weight loss program that provides access to GLP-1 medications.

Hims & Hers has not yet dipped its toes into weight loss and obesity medications but has signaled that it plans to in the future.

Weight loss telehealth platform

Calibrate offers a digital program that combines medication, including GLP-1 drugs, with behavior change delivered through lifestyle interventions.

Form Health pairs patients with a physician and dietitian team for frequent check-ins that incorporate medical guidance and behavioral, nutrition, and activity changes for lasting weight loss and improved health.

One Medical, now Amazon-owned, offers a weight management program that includes prescriptions for obesity medications combined with lifestyle medicine focused on diet and activity.

Omada announced a program that offers lifestyle and behavior support to patients who are struggling with chronic obesity and taking GLP-1s; company chose not to prescribe GLP-1s itself.

After a pilot last year, **Noom** is launching an option that will include prescriptions for obesity drugs like Wegovy for about \$120 a month.

Editorial: Rock Health estimates that the obesity care market hovers around \$13b in the US. Medication for obesity care makes up a large portion of the market at 40%—and it's expected to increase as more drugs are approved and insurance coverage is expanded. Digital health solutions, which include digital weight management tools focused on disease prevention as well as obesity-focused behavior change tools, make up a burgeoning 55%. Also this month, weight care company Found launched a program for employers that offers prescriptions for 13 different medications (including GLP-1s) with support from providers, coaching, and an app that offers meal and activity tracking. Lastly, Novo Nordisk paused ads this month for Wegovy as it struggles to meet demand.

Report: patient demand for digital payment communication is on the rise

About 62% of respondents said patient portals were their favorite method for paying medical bills. Patients want online portals to enable them to seamlessly access their medical information, pay their bill, and receive personalized notifications.

Email is still the most popular method that patients choose for billing notifications, but text messaging has seen significant growth as a preferred payment reminder option.

Patients' interest in receiving text message notifications about their medical bills rose by more than 30% this year from 2022. 51% of this year's survey respondents said that a text message reminder would prompt them to pay their bill faster.

Some health systems are starting to give their patients text-to-pay options, which allow them to pay their bill via a secure link sent through a text message. Orgs that accommodate diverse patient preferences through a wide range of payment options often have higher patient satisfaction scores.

The preference for printed statements via mail decreased from 36% to 31%, indicating a shift towards digital communication methods.

67% of patients are looking for their healthcare provider to offer more communication options, better digital statements, or more accurate bills.

Key takeaways and trends

| | |
|---|------|
| Increase in interest in receiving text message billing notifications | 30%+ |
| Percent of respondents who said a text message reminder would prompt them to pay their bill faster | 51% |
| Percent of patients who would recommend their provider based on their billing communication efforts | 52% |
| Percent of patients who paid their bill by credit or debit card via an online patient portal | 62% |

SALUCRO®

Editorial: For the report, Salucro, a healthcare payment technology company, surveyed 1,348 US healthcare consumers this spring. "You can have a phenomenal clinical experience," said Christopher Johnson, Atrium Health's vice president of revenue cycle management, "but we as healthcare providers can lose the game if we don't get your patient financial experience right." Atrium initiated a text-to-pay feature last year. Since June, \$6 million has been collected from this mobile pay program, and 40,000 paper statements have been eliminated. Also this month, patient billing communication platform Inbox Health, raised \$22.5 million in a Series B funding round. The platform is used by 2,600 medical practices in the US and has collected payments from 3.5 million patients.

One in five Americans with limited access to transportation will forgo healthcare

21% of US adults without access to a vehicle or public transit went without needed medical care last year.

Individuals who lacked access to a vehicle but reported neighborhood access to public transportation services were less likely to skip needed care (9%).

5% of all US adults reported forgoing healthcare due to transportation barriers.

Black adults (8%), adults with low family incomes (14%), and adults with public health insurance (12%) were all more likely to forgo needed care due to difficulty finding transportation.

Adults with a disability (17%) were more than three times as likely to report skipping care due to transportation concerns.

Select non-emergency medical transport (NEMT) companies

| Company | Description |
|---------------|--|
| Modivcare | Works with local, community-based transportation providers |
| Roundtrip | Connects patients with rideshare, medical sedans, wheelchair vans, more |
| Kaizen Health | Logistics hub for both provider and patient; integrations with EHRs |
| Hitch Health | Connects to a provider's EHR to identify patients who could benefit |
| Veyo | Network of 70 private taxi and van companies |
| Ride Health | Options ranging from public transit to ambulances |
| SafeRide | Works with health plans to provide transportation to a variety of services |
| Tobi | Scheduling, dispatching, billing, and reporting for NEMT businesses |

Editorial: Using June 2022 data from the Urban Institute's Health Reform Monitoring Survey (HRMS), it was identified that there exists a link between transportation barriers to healthcare and the association between public transit accessibility and access to care. Research shows that public transportation expansions improve access to health care, especially for people covered by Medicaid. While 91% of adults reported having household access to a vehicle, this figure was substantially lower among Black adults, adults with low family incomes, adults with a disability, and adults with public health insurance or no health insurance coverage.

Menopause wearable company Embr Labs leads the month in femtech funding

Embr Labs

Menopause

\$35 million debt

Embr Labs, makers of a wearable that treats menopause symptoms in real-time, raised \$35m to expand its retail footprint

The wrist-worn Embr Wave device delivers on-demand cooling and warming sensations, a nonhormonal intervention clinically proven to relieve hot flashes and improve sleep

New capital will support Embr's growth and expansion into new retail channels and markets; currently available in US and UK via Costco, Sam's Club, Walmart, more

\$50.2 million raised to date

kindbody

Fertility

\$25 million venture

Hybrid fertility and reproductive care company Kindbody scored a \$25 million investment from JPMorgan Chase's business unit focusing on employer-sponsored healthcare, Morgan Health

Kindbody offers virtual and in-person services, including egg freezing, contraception care, gynecological care, fertility testing, and virtual wellness and coaching

100+ corporate clients, including Walmart, Lyft, and GEICO

\$306 million raised to date

INTRINSIC

Packaged goods

\$15 million Series A ext

New York City-based Intrinsic is a consumer packaged goods (CPG) company that acquires and sells female health brands — like lactation massagers and hands-free pumping products — in stores like Target and online

It also sells to large health systems (which then offer the goods to patients), to government programs which can provide them to low-income families and to medical supply distributors so women can purchase them with other supplies covered by their insurance

\$128 million raised to date

FEMTHERAPEUTICS

Prosthetics

\$1.8 million Seed

Montreal-based Fem Therapeutics is building the world's first customizable gynecological prosthetic (or vaginal pessary) to provide symptomatic relief to pelvic health conditions like incontinence and Pelvic Organ Prolapse (POP)

Startup uses cloud computing and AI to develop a platform for pelvic health that allows it to visualize each patient's condition in 3D software and subsequently propose pessary designs that are modeled to the patient's unique anatomical characteristics

\$2.3 million raised to date

femtec health

Health and beauty

Shutting down

On the other end of the funding spectrum, women's health startup FemTec Health is out of money and winding down operations

A document emailed to several shareholders dated May 12 says FemTec "has decided to discontinue its business" and is "indebted to various creditors and unable to pay its debts in full."

The company's brands include Birchbox, Mira AI, Liquid Grids, Nutrimed, Awesome Woman, and Ava

Editorial: Halle Tecco, co-founder of Cofertility, Natalist, and digital health venture fund Rock Health, [shared a blog post](#) this month on her experience as an angel investor. She doesn't invest exclusively in women's health startups, but she's been a big advocate and a founder of several. Tecco is more than ten years into angel investing, has personally invested over \$250k of her money and \$2.5 million of a VC's money, and her conclusion is still that it is still too early to tell if she's good or not. "So have I made money angel investing?," she writes. "Yes I have made more money than I have invested. But the answer is a little more complicated than that."

CVS is shuttering its clinical trials unit, while Walgreens is doubling down

Two years after its launch, CVS Health is planning to close down its clinical trials unit by the end of 2024, to refocus on core operations

CVS launched its clinical trials unit in May 2021, with a focus on driving access to clinical trials and boosting engagement

The company enrolled 300,000+ volunteers who met study inclusion criteria for vaccine trials, and connected them to studies close to where they live

In the two years since launch, it's only achieved 11% of that scale, enrolling 33,000 participants

CVS' move was closely followed by pharmacy chains Walgreens and Walmart, which launched their own health research institutes in 2022

Most recently, Kroger opened a clinical trial site network in January

At the time of the news, CVS was still recruiting patients for five active trials that include studies focused on rheumatoid arthritis, kidney health, and narcolepsy

The company will wind down the trial business in phases with a full exit by the end of December 2024

The announcement comes on the heels of two major acquisitions by CVS, both of which are more central to the company's long-term vision of building a vertically integrated healthcare business

Meanwhile, Walgreens, which launched its clinical trials business last year, said it remains committed to conducting clinical trials

Last month, it launched a partnership with the biotech company Prothena to help recruit patients for the company's experimental treatment of Alzheimer's disease

Timeline of retailers moving into clinical trials

| | |
|---|--------------|
|  | May 2021 |
|  | June 2022 |
|  | October 2022 |
|  | January 2023 |

Editorial: Healthcare Huddle [cites](#) a report that says CVS's Clinical Trial Services grew 10x from year one to year two. The report indicates two likely reasons for the decision to shut down: (1) Sales to revenue conversion issues; (2) Thin margins. CVS's exit from the \$22.6 billion market is noteworthy considering the substantial profit potential in this sector. Marissa Moore, investor at OMERS Ventures, remains optimistic about the market, however. "Their exit shouldn't be taken as a signal that the opportunity isn't worth pursuing," she said. "There are plenty of startups in this space as well and we hope, in time, that the broader collective will make clinical trials much more accessible and more representative of the population at large."

More than half of patients would visit a retail pharmacy first for medical issues

Pharmacies are becoming the first line for non-emergency care, with 58% of Americans likely to visit a local pharmacy as a first step with a non-emergency medical issue, according to a new report from Wolters Kluwer. 81% trust a pharmacist, nurse, or nurse practitioner to diagnose minor illnesses and prescribe meds to treat them.

80% of consumers said they would probably never go to a department store like Walmart or Target for healthcare.

One in three consumers said convenience is more important than credentials in a non-emergency situation. 43% prefer urgent care clinics to traditional physician's offices due to knowing the cost of care in advance.

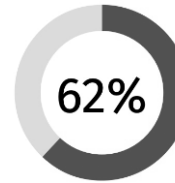
Prescription costs and availability still weight heavily. 37% chose not to fill a prescription because of cost; 86% would use generics if it saved them money, and 92% feel their physician or pharmacist should inform them of alternatives.

Two-thirds prefer prescriptions via mail and/or subscription, like Amazon Pharmacy if it means lower cost, however more than half are concerned about tampering as well as unexpected interactions between medications they received via mail/subscription service and other medications they are taking.

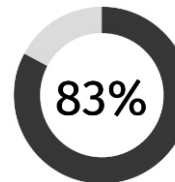
Care is rapidly decentralizing



Consumers who say they're likely to visit a local pharmacy as a first step for a non-emergency medical issue



Consumers who say they would go to a local pharmacy for flu shots and other adult vaccinations



Patients who would still go to a traditional physician's office for annual physicals



Editorial: "Primary care decentralization is continuing," said Peter Bonis, MD, Chief Medical Officer for Wolters Kluwer Health. "The traditional one doctor-one patient, single point of coordination is vanishing, and this is especially evident in younger generations." More than half of Millennials and Gen Z have visited a pharmacy for care this past year, compared to 40% of Gen X and 35% of Boomers. This signals a fundamental shift in the healthcare ecosystem and will change how all stakeholders approach primary care delivery in the coming years. Wolter Kluwer's Pharmacy Next survey was conducted online between March 15-21, 2023, with 1,017 US adults ages 18 and older. The full report is available for free at the link below.

Retail clinic claims volumes have increased by 200% in the past five years

Claims growth for retail health clinics, which are usually located in stores like Walmart, CVS and Walgreens, have greatly outpaced growth in claims for urgent care centers, emergency departments and physician practices, according to a new report from Definitive Healthcare.

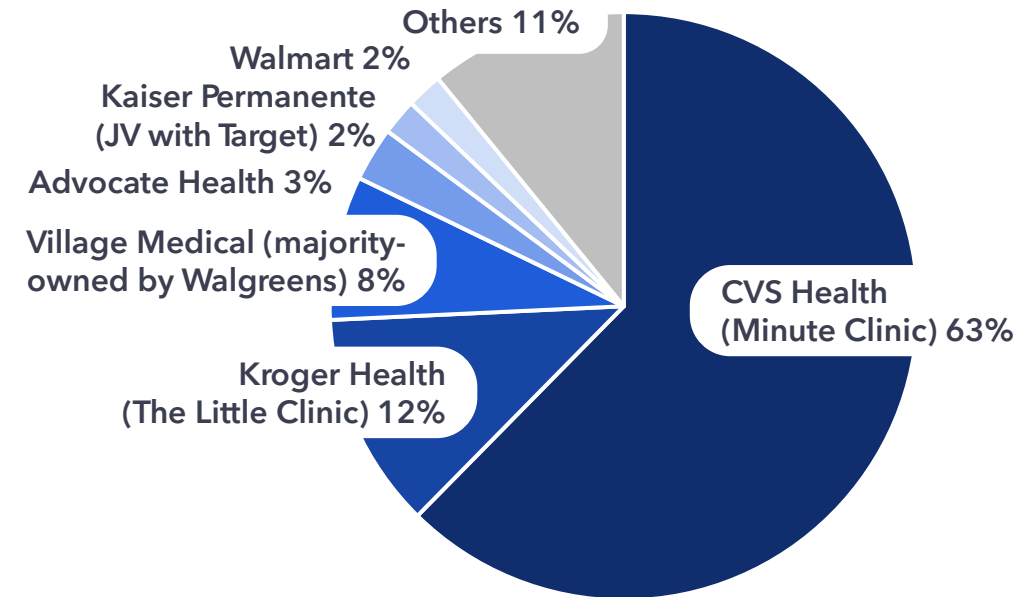
Urgent care center claims grew by 70% in the past five years. Meanwhile, emergency room usage dropped by 1%, and primary care office claims declined by 13%.

There are 1,800+ active retail clinics across 44 states, with about half concentrated in seven highly populated states (California, Georgia, Illinois, Florida, Ohio, Tennessee, Texas). Just 2% of clinics are located in rural areas.

Patients are attracted to retail healthcare for two main reasons: easier access and lower costs. Patients can usually schedule a clinic appointment on the same day or within a couple of days, whereas the typical wait time to see a primary care provider was 26 days in 2022. Clinics are also located within stores patients already frequent.

Retailers are also doing more to meet patients' demands for low-cost care than traditional providers, offering self-pay options with transparent and fixed pricing.

Retail clinic market share by number of locations



Editorial: 90% of retail clinics are owned by six organizations. Pharmacy giant CVS is the biggest player in the US, with more than half of all retail clinic sites. CVS also operates enhanced retail clinics called HealthHUBs that focus on chronic disease management. Supermarket giant Kroger Health is the second-largest operator through its Little Clinic business, which it acquired in 2010. They have 220 clinics across 35 states. Walgreens is third, shifting its strategy from partnering with healthcare providers to owning them, increasing its stake in primary care clinic chain VillageMD. Walmart is making a push to double its footprint of in-store clinics. Other prominent retailers making meaningful moves in healthcare include Amazon, Best Buy, and Dollar General. The full report is available for free below.

FDA approvals include a health monitoring toilet seat, joint health wearable, more

casana

Health monitoring toilet seat

Casana's Heart Seat received the agency green light for monitoring heart rate and oxygen saturation in adults at least 22 years and older who weigh 90 to 350 pounds

The battery-powered seat can run for several years without recharging, sending health data to providers and notifying them when parameters are outside of a set threshold



SibEL

Pediatric vital sign monitoring

Sibel Health received clearance for its ANNE One platform, which offers continuous neonatal and infant vital sign monitoring

Clinical-grade wearable consists of Anne limb, which measures skin and body temperature, and Anne Chest, which monitors heart and respiratory rates, step count, fall count and skin temperature



SAMSUNG

Irregular heart rhythm notification

Samsung announced its Irregular Heart Rhythm Notification feature on the Samsung Health Monitor App has been cleared by the FDA

Galaxy Watch users can now be alerted when heart rhythms suggestive of atrial fibrillation are detected; works with the app's existing on-demand Electrocardiogram function



STARTOON LABS

Joint health wearable

Indian medical device startup Startoon Labs received clearance for Pheezee, a device that measures the surface electromyogram of bulk muscles and the range of motion of primary joints to determine joint health

Intended for use in tracking patients' recovery from physiotherapy, neurological, and MSK injuries



iHealthScreen PREVENT DISEASES

AI-enabled eye screening

iHealthScreen, maker of AI-enabled software for retinal imaging, received clearance for its system that leverages AI to help providers determine if a patient over 50 has age-related macular degeneration

Screens for AMD by using AI to analyze high-resolution images of a patient's eyes; test can be done in five minutes with results available within 60 seconds



Editorial: In other news, Elon Musk's neurotechnology company Neuralink has [received the green light](#) from the FDA to test and implant its AI brain-reading wearable device to people for its first-in-human clinical study. Recruitment is not yet open for the clinical trial, but the implant aims to help patients with severe paralysis regain their ability to communicate by controlling external technologies using only neural signals. In March, [Reuters reported](#) on the company's struggles to gain approval for the device.

A small Welsh startup is taking on Apple in the race to **non-invasive glucose tracking**

Results of a recent clinical study found that Afon Technology's device can successfully read a person's blood glucose levels without having to inject into the skin.

Unlike most wearables and health trackers, it's not a dedicated smartwatch. The Afon glucose tracker sits under the wrist and can be added to existing watch straps and worn with smartwatches, or even classic wristwatches.

This differentiator means it won't compete for wrist space, and people won't have to choose between wearing an Afon tracker, or an Apple Watch, for example.

Afon works using an RF sensor, which is the same technology tested by Movano on their smart rings, but different from the rumored Apple sensor, which uses a spectroscopic sensor.

As well as being more convenient and less expensive than a CGM, and unlike competitors like Abbott and Dexcom, which measure interstitial fluid and have a 10–12-minute lag, Afon's device measures blood glucose directly, providing immediate results.

Device has a rechargeable battery that lasts two weeks.

Company will aim its product at type 2 diabetics and pre-diabetics, who are looking to manage their condition but are unlikely to engage with a CGM.



The compact device is designed to be worn with a watchstrap and connected via Bluetooth to a user's smart watch/device

Editorial: While tech giants like Apple have spent hundreds of millions of dollars on their solutions, Afon is a team of 16 people in South Wales with just £5 million in funding. "Our regulatory team has been working from day one to ensure we meet all commercialization requirements," says Sabih Chaudhry, founder and CEO. "Our primary goal is to obtain the CE mark, and we are also engaging with a consultant for FDA approval." Competitors are exploring a variety of different technologies for non-invasive glucose monitoring, such as sweat monitoring, implantables, near-infrared spectroscopy, and radio frequency (RF) technology.

Six healthcare startups make the **CNBC Disruptor 50** list



Digital Rx

Launched: 2015; **Funding:** \$523 million

Alto is a full-service pharmacy with roughly \$1b in annualized revenue, reaching more 41m+ people in 12 metropolitan areas. They streamline the prescription procurement process for both doctors and patients while patients can consult with a support team and get free prescription delivery to their homes.



Wearables

Launched: 2013; **Funding:** \$352 million

ŌURA's smart ring is equipped with research-grade sensors to track everything from heart rate to temperature to sleep cycles. Data is then analyzed to provide health insights. Recently announced a deal with Best Buy to be its first US-based large-scale retail partnership, putting its rings in more than 850 stores. Over 1 million rings sold.



Mental health

Launched: 2016; **Funding:** \$300 million

Spring Health offers mental health benefits to employers and health plans, drawing, using its platform to pinpoint and deliver what works for each person — whether that is meditation, coaching, therapy, medication, and beyond; serves 800+ companies, including General Mills, Bain, and Instacart. It's available in 40 countries and 20 languages.



Underserved populations

Launched: 2017; **Funding:** \$869 million

Cityblock Health provides primary care, mental healthcare, and additional social services to historically marginalized populations, including low-income and elderly Americans, primarily those who qualify for Medicaid. Operates in Indiana, New York, Massachusetts, North Carolina, Ohio, and Washington, D.C.



Women's health

Launched: 2014; **Funding:** \$292 million

Maven Clinic is the largest women's and family health platform. After the Supreme Court overturned Roe v. Wade, Maven saw a 67% month-over-month in companies looking for travel benefits, as well as other health-care support for pregnant women. 15m lives under management, with clients incl. Microsoft, L'Oreal, Snap, Bumble, Boston Scientific.



Fertility

Launched: 2018; **Funding:** \$315 million

Kindbody has a network of 31 clinics offering services such as egg freezing, genetic testing, IVF, donor and surrogacy services and adoption. Works with 100+ large employers that want to incorporate fertility care in their benefits offerings, including Walmart. Breadth and scale allows it better control costs — as much as 20% lower than competitors.

Editorial: The 11th annual CNBC Disruptor 50 list was open to all private, independently owned startups founded after Jan. 1, 2008. Nominated companies were required to submit a detailed analysis, including key quantitative and qualitative information. PitchBook provided data on fundraising, implied valuations and investor quality, while IBISWorld was used to compare the companies based on the industries they are attempting to disrupt. OpenAI topped the list, becoming the first company to reach No. 1 in its first year making the list. Other featured non-healthcare startups include Canva, Chime, Discord, Zipline, Stripe, and Airtable.

Partnerships in consumer health segments



Telehealth

Digital employee benefits platform HealthJoy is expanding its partnership with virtual care provider Teladoc Health to include virtual primary care services. The extended partnership fully integrates Teladoc's virtual primary care services into HealthJoy's employer offerings.



On-demand home care

Virtual care company Included Health is partnering with DispatchHealth to offer on-demand, in-home care in Denver and Phoenix. Included plans to add more home health partnerships since Dispatch doesn't yet operate nationwide.



Behavioral health

Behavioral health company NeuroFlow partnered with Georgia-based healthcare system Emory Healthcare to deliver psychiatric services. NeuroFlow's platform allows healthcare providers to track, assess and connect with patients between office visits.



Condition management platform

Partnership between Horizon, New Jersey's largest health insurer, and Solera, services and point solutions, will initially focus on MSK care, stress, sleep, tobacco cessation and weight management. Employees access Solera through a web-based platform.



h2o Therapeutics, AI, AR and mobile-based therapeutics, is partnering with AmerisourceBergen to commercialize its Parkinson's disease-focused offering, an Apple Watch app that monitors an individual's Parkinson's disease symptoms.



Rightway, care navigation and pharmacy benefits platform, is allowing members to access One Medical's primary care services through its care navigation platform, with One Medical receiving centralized reporting and simplified contracting.



Menopause startup Gennev will partner with LifeStance, a mental healthcare provider that offers integrated in-person and virtual services. Goal of the partnership is to better integrate physical and mental healthcare to enhance menopause patient outcomes



PatientsLikeMe will partner with Massachusetts General Hospital to share de-identified patient data that can improve research outcomes for ALS; Includes 8k de-identified records from ALS patients across 28 completed clinical trials

Editorial: Additional partnerships this month include Lifesum and ÖURA partnering to connect nutrition and sleep via Health Connect by Android; Mastercard and HealthLock partnering to offer Americans help in protecting themselves against medical bill fraud, claim errors and overcharges; University Hospitals Cutler Center for Men is piloting a technology-assisted concierge service with Microsoft to better engage men in their healthcare.

M&A and other transactions in consumer health segments

OURA  proxy

Digital identification

Acquisition

Health tracking smart ring company OURA purchased digital identification startup Proxy in an all-equity deal. Proxy offers digital identity tech that aims to replace keys, cards, badges, apps and passwords. The startup said it had been working to include its offerings on wearable devices as well as phones. The deal values Proxy at \$165 million.

halo

Wearables

Shutting down

Amazon is closing its Halo health tracking division and laying off employees who worked on the products. Launched in 2020, the company's first device, Halo Band, was a screenless, wrist-worn wearable that tracked basic health and activity metrics such as steps, heart rate, and sleep time. Amazon has now closed three of its healthcare divisions since 2021.

 florence™ ZIPNOSIS

White-label telehealth solution

Acquisition

Healthcare enablement software company Florence, which focuses largely on workflow automation, acquired Zipnosis, an asynchronous-first virtual care solution, in what it said was an all-cash deal, although the financial terms were not disclosed. Acquired from insurtech Bright Health, which has been selling off business lines in a bid to avoid bankruptcy.

 babylon

Digital primary care

Going private

Less than two years after the company debuted on the New York Stock Exchange, Babylon Health, a digital primary care provider, plans to be taken private as it continues to be saddled with mounting losses. It also entered into an agreement with AlbaCore Capital for a loan facility for up to \$34.5 million to support the company's plans to delist.

bonatra MYAVA

Women's health

Acquisition

Bonatra, an Indian startup focused on chronic diseases, acquired MyAva, a women's health and wellness company that offers curated programs for managing chronic health conditions such as PCOS, thyroid disorders, and insulin resistance. Move is aimed at expanding Bonatra's holistic healthcare programs.

 PEAR
THERAPEUTICS

Digital therapeutics

Assets sold at auction

Four companies agreed to buy the assets of Pear Therapeutics after they filed for bankruptcy last month. Click Therapeutics, Welt Corp, Harvest Bio, and Nox Health Group each acquired bits of the company for \$6.05 million, far short of the \$32 million in debt Pear carried. XR Health also bid on some of Pear's pipeline assets but did not win.

Editorial: In addition to selling Zipnosis to Florence, Bright Health executed its reverse stock split buying itself time on the NYSE from delisting. The board and shareholders approved a 1:80 split. On the New York Stock Exchange, a company risks being delisted if its shares don't reach \$1 and hold that value for 30 consecutive days. In October of last year, it announced it would not offer individual and family health plans through its insurtech Bright HealthCare next year and is cutting Medicare Advantage products outside of California and Florida.

Funding highlights in consumer health segments

| Company | Segment | Round/Total | What they do |
|----------------------------------|--------------------------|---|--|
| Patient21 (Germany) | Primary care | \$108m Series C / \$188m | Combines a digital healthcare platform with real-world brick-and-mortar clinics. Platform spans the whole patient cycle, from online bookings through check-ins, billing, insurance and more |
| Amino | Care navigation | \$80m Venture / \$125m | Digital navigation experience that guides members to care through their unique health plans and benefits; 1.6 million members with a 97% customer retention rate |
| Healthy.io | Urinalysis | \$50m Series D / \$140m | Urinalysis tests that use a smartphone to analyze results; Its FDA-cleared kidney test can detect an early sign of chronic kidney disease |
| Uwill | Behavioral health | \$30m Series A / \$35m | Provider of a mental health and wellness solution for colleges and students; Partners with more than 150 institutions, including Boston College, UC Santa Barbara, American Public University System |
| Wellthy | Caregiving | \$25m Venture / \$78m | Matches caregivers with families to help them with things like making follow-up doctor appointments, providing transportation to those appointments and acquiring needed equipment and supplies |
| Laguna Health | Care transitions | \$15m Series A / \$22m | Recovery platform and app use data, digital care tools, and behavioral health interventions to reduce negative health outcomes for patients leaving the hospital |
| Lifeforce | Health optimization | \$12m Series A / \$12m | Biomarkers associated with physical, psychological, cognitive and sexual performance are analyzed and reviewed via telehealth with recommendations for lifestyle adjustments and supplements |
| ORA (Singapore) | Telehealth | \$10m Series A / \$11.2m | Vertically-integrated telehealth platform that has delivered 250k+ consultations; houses three brands: online dermatology (Modules), men's health (&sons), and female health (Ova). |
| Domo Health (Switzerland) | Primary care for seniors | \$9.4m Venture / \$17m | Range of integrated solutions including a digital health platform, connected medical devices, alert systems and a mobile app; investors include Swiss public energy service SAK |
| TidalSense (UK) | COPD detection | \$9.3m Venture / \$12m | Handheld device detects changes in lung function to enables quick, accurate and automated diagnosis of COPD; asthma to follow |
| Thesis | Cognitive performance | \$8.4m Series A / \$13.5m | Offers potent nutrient compounds formulated to enhance mental performance, based on users' unique brain chemistry and the cognitive states they want to achieve |

Editorial: Other funding includes [\\$8m Seed](#) for **Neura Health** (virtual neurology clinic), [\\$7m Series A](#) for Germany's **HelloBetter** (CBT programs), [\\$7m Seed](#) for **Stella** (trauma-focused therapy), [\\$3.3m Seed](#) for Ireland's **Amara Therapeutics** (pelvic and bladder health), [\\$3m Pre-Seed](#) for **TARA Mind** (psychedelic-assisted therapy), [\\$1.7m Venture](#) for **Cascade Health** (price transparency), [\\$1.5m Pre-Seed](#) for **Mi Alma** (grief and loss support), and [\\$1m grant](#) for **Augment Therapy** (gamified rehab).



Et
Cetera

Virtual hospitals could offer a respite to overwhelmed health systems

A new report from McKinsey argues that by shifting acute care to the home, virtual hospitals could deliver three key benefits over traditional brick-and-mortar models of care:

Expanded bed capacity available through virtual care. By reducing the need for inpatient hospital services, virtual hospitals could flexibly and rapidly scale bed capacity, helping hospitals meet fluctuating healthcare demands.

Greater patient satisfaction and outcomes. Despite the medical prowess of traditional hospitals, many patients, particularly those suffering from chronic disease and comorbidities, would rather receive care at home. Patients are also concerned about hospital-acquired infections. As well, nearly 80% of surveyed Australian consumers have either heard of or used virtual care, and 90% of those who have used it report being “somewhat” or “very” satisfied.

Lower costs for providers and patients. Virtual hospitals deliver direct cost savings and cost avoidance savings. Independent of the reduction in hospital capacity demand, virtual-hospital-unit costs (costs per episode of care) are approximately AU \$1,000 lower than comparable inpatient unit costs, primarily due to reductions in medical and other clinical labor costs.

Virtual acute care could unlock bed capacity and reduce the need to build new hospitals



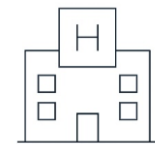
9,500

Treating 9,500 patients virtually instead of in brick-and-mortar settings each year could save approximately 47,500 bed days



130 beds

Saving 47,500 bed days is equal to unlocking brick-and-mortar ward capacity of 130 days



~AU \$90 million

Unlocking brick-and-mortar ward capacity reduces the need for infrastructure expenditure to build new hospitals, which is equivalent to ~AU \$90 million

McKinsey
& Company

Editorial: The analysis of the Australian public-hospital system, a possible bellwether for other advanced systems, found that an estimated 11% of inpatient hospital admissions could be done virtually. Authors offer a four-step process for considering a virtual hospital: (1) Explore the feasibility and attractiveness of establishing a virtual hospital; (2) Define how to measure success; (3) Assess readiness to begin implementation; (4) Plan to increase efforts. Despite some indications that physicians and patients are ready to further embrace virtual care, the deeply entrenched belief that sick people belong in a brick-and-mortar hospital will be challenging to overcome.

15 healthcare companies that have already integrated ChatGPT

The range of healthcare companies incorporating GPT-4 into their services is quite diverse. In addition to prominent players like Ada Health, Microsoft, and Doximity, numerous smaller digital health companies have also taken advantage of the technology. This reflects the versatility of large language models (LLMs) and their potential to benefit companies of all sizes within the healthcare sector.

One of the primary use cases of GPT-4 in healthcare stems from health management and coaching. Unsurprising given the advanced conversational capabilities of these models, which significantly outperform earlier chatbot iterations, and can also meaningfully enhance human conversations.

GPT-4 is also being employed for tasks that can be automated, such as medical scribe tools. The benefits of implementing LLMs in medical scribe applications are easy to grasp: they can save tons of time, and address a major cause of physician burnout: excessive amounts of administration,

Unsurprisingly, a majority of the companies integrating GPT-4 into their services are based in the US. OpenAI, the creator of ChatGPT, is an American company, and the language model performs best in English.

Healthcare companies integrating ChatGPT



| Company | Description | Country |
|----------------|---|---------|
| Nuance | Medical note-taking | USA |
| Nabla | Transcribes video conversations | France |
| Doximity | Prepares referrals & authorization requests | USA |
| Be My Eyes | Connects blind people with sighted volunteers | USA |
| ChatBeacon | Support through emotional assistance | USA |
| Bionic Health | Preventative health management | USA |
| Ferma.ai | Provides answers to life science questions | USA |
| MedMatch | Connects physicians and patients | USA |
| livewello | Genetic data analysis | France |
| Epic Systems | Electronic medical records | USA |
| Litely | Fasting app for weight loss | USA |
| Dot Compliance | Quality management solution | USA |
| Kahun | A clinical reasoning tool | Israel |
| Wondercise | Fitness content services | Taiwan |
| Amazfit | Health management wearables | China |

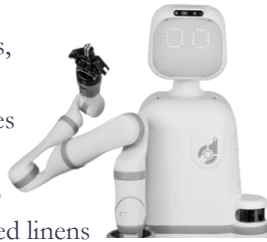
Editorial: The Medical Futurist cites the absence of clear guidelines as a potential challenges, as well as opportunities for abuse, as the integration of GPT-4 into healthcare services continues to gain momentum. Privacy issues may also arise as healthcare companies navigate this regulatory vacuum. It will be crucial to establish appropriate guidelines for the safe, secure, and ethical use of these algorithms in healthcare as soon as possible. Robert Califf, the head of the Food and Drug Administration, [warned consumers](#) this month that the US needs to be “nimble in the use and regulation of large language models” to avoid being “swept up quickly by something that we hardly understand.” Califf did not provide details on how he envisions regulating LLMs.

Six robotic technologies that can help ease the burden on nurses



Moxi is an advanced robot designed to assist healthcare teams

Robotic assistant is outfitted with sensors, cameras, and AI algorithms that allow it to autonomously roam healthcare facilities engage with people and complete non-patient-facing tasks such as delivering lab specimens and supplies or collecting soiled linens



TUG is used to increase efficiency in nursing, pharmacy, and laboratory tasks

Robotic cart is designed to transport materials around a facility safely. It can transport meds, lab samples, and surgical supplies. It can also be used to facilitate EVS services by moving waste. In use at 37 VA hospitals in the US; Moves supplies 370 miles per week



Robear can lift patients from beds into wheelchairs or help them stand up

Prototype lifting robot, Robear, from Japanese firm Riken, can lift a patient from a standing position or from the floor, transfer a patient to a wheelchair, carry a patient from point A to B, and turn patients in bed; Weighs in at 140kg



Seal-like Paro is a social robot for dementia, kids with developmental disorders

Paro is a complement to non-pharmacological approaches in dementia care, palliative care, and for children with developmental disorders. Can also be used to combat cognitive decline and depression by providing companionship



Pencil is designed to be a companion to the elderly, especially those with Alzheimer's

Thai firm designed the stationary robot with embedded voice recognition, voice command and face recognition, as well as AI features that allow the robot to learn more about the elderly person's voice, face, behavior and lifestyle



Pepper is able to recognize faces and basic human emotions

Pepper assists with activities such as guiding patients, giving directions, answering basic questions, and providing emotional support. It is designed to welcome and engage patients. Hospitals in Japan used Pepper to greet visitors and provide valuable information at facility entrances. In Germany, it provided socialization for Alzheimer's patients



Editorial: Robotic assistants in healthcare are not meant to replace human caregivers but rather to support them. Nurses will continue to play an important role in providing compassionate care, making clinical judgments with critical thinking, and applying their experience. Meanwhile, robots can decrease stress and increase healthcare efficiency by performing simple, time-consuming, and routine tasks—freeing up nurses to perform specialized interventions.

Companies mentioned in this report

| | | | | | | | |
|------------------------|--------------------|-----------------------|---------------------|--------------------|------------------------|-----------------------|----------------------|
| Ada Health | Calibrate | Epic | Hippocratic AI | Lunit | Noom | Prognos Health | Teladoc |
| Adonis | Casana | Everly Health | Homecare Homebase | m.Doc | Nuance | Prothena | Thesis |
| Aethon | Cascade Health | eVideon | iHealthScreen | Maptual | Odaia | Proxy | Theta Labs |
| Afon Technology | CathWorks | EXL | Imagen Technologies | Mastercard | Omada | Rightway | TidalSense |
| Aidoc | Centene | Fem Therapeutics | Inbox Health | MatrixCare | One Medical | Riken | TymphaHealth |
| Allscripts | Cerner | FemTec Health | Included Health | Maven Clinic | Oneview Healthcare | Ro | Ultromics |
| Alto | CGM | Ferma.ai | Infervision | Medecision | OpenAI | Roche | UpHealth |
| Amara Therapeutics | ChatBeacon | FIRM RCM | InfoMC | MEDHOST | Optain | Salucro | Uwill |
| Amazfit | Cityblock Health | Florence | Intelligent Medical | Medisolv | Optellum | Samidi | Viz.ai |
| Amazon | Cleerly | Foresight Diagnostics | Objects | MEDITECH | OptimizeRx | Samsung | VoxelCloud |
| AmerisourceBergen | Click Therapeutics | Form Health | Intrinsic | MediView XR | ORA | Sangus Health | Walgreens |
| Amino | Clinical Billing | Found | Invitae | MedMatch | ŌURA | SAP | Walmart |
| Apixio | Solutions | Gainwell | Kahun | Melax Technologies | Patient21 | Sensydia | WeightWatchers |
| Apple | Cognizant | Genentech | Keya Medical | MHK | PatientsLikeMe | Shukun Technology | WellSky |
| Aspirion | CompuGroup Medical | Gennev | Kindbody | Mi Alma | Pattern Bioscience | Sibel Health | Wellthy |
| Augment Therapy | ConnectiveRx | Get Well | Kroger | Microsoft | pCare | Sisu Healthcare | Wolters Kluwer |
| Autonomize AI | CPSI | Google | Laguna Health | Moon Surgical | Pear Bio | Solera | Wondercise |
| Avidex | CVS Health | h2o Therapeutics | Lavita AI | MultiOmic Health | Pear Therapeutics | SONIFI Health | Zebra Medical Vision |
| Azalea Health | Deepwise | HealthEdge | Leadoptik | MultiPlan | Perspectum | Spring Health | ZeOmega |
| Babylon Health | DispatchHealth | HealthJoy | Lifeforce | MyAva | PicnicHealth | Startoon Labs | Zipnosis |
| Be My Eyes | Doctolib | HealthLock | LifeStance | Nabla | Point-of-Care Partners | Stella | Zyter |
| Benefits Science Tech. | Domo Health | Healthy.io | Lifesum | Netsmart | Practice Better | Suki | |
| Bionic Health | Dot Compliance | HeartFlow | Litely | Neura Health | Practice Perfect | Surgical Safety Tech. | |
| Bonatra | Doximity | HelloBetter | livewello | Neuralink | Premier | TARA Mind | |
| Bright Heath | Embr Labs | Hims & Hers | Lucem Health | NeuroFlow | Press Ganey | Tegria | |