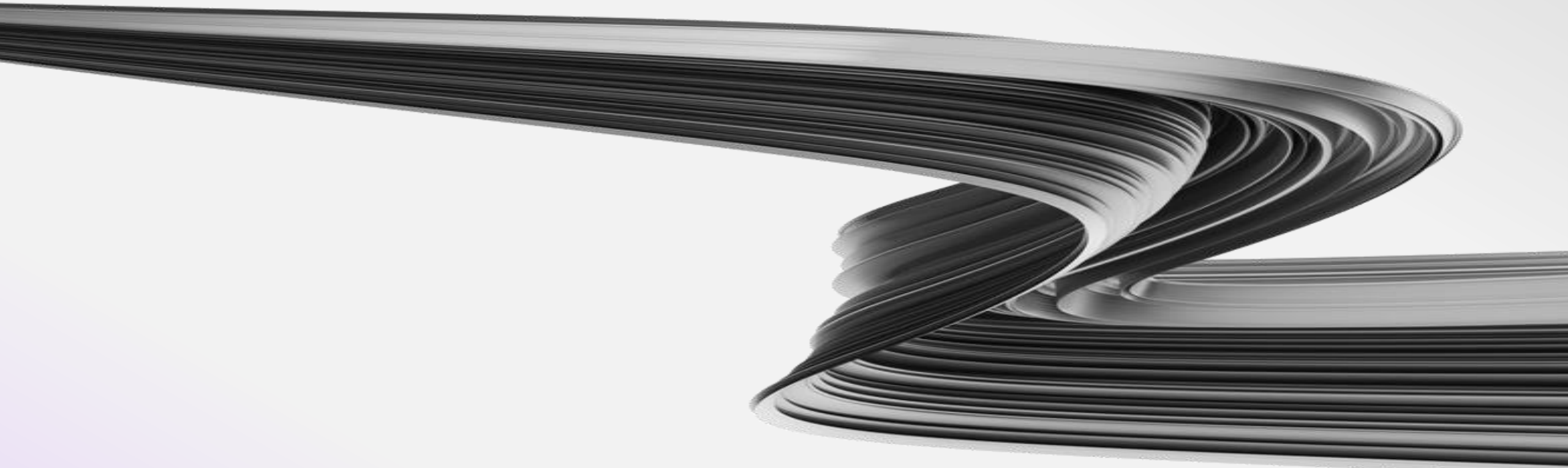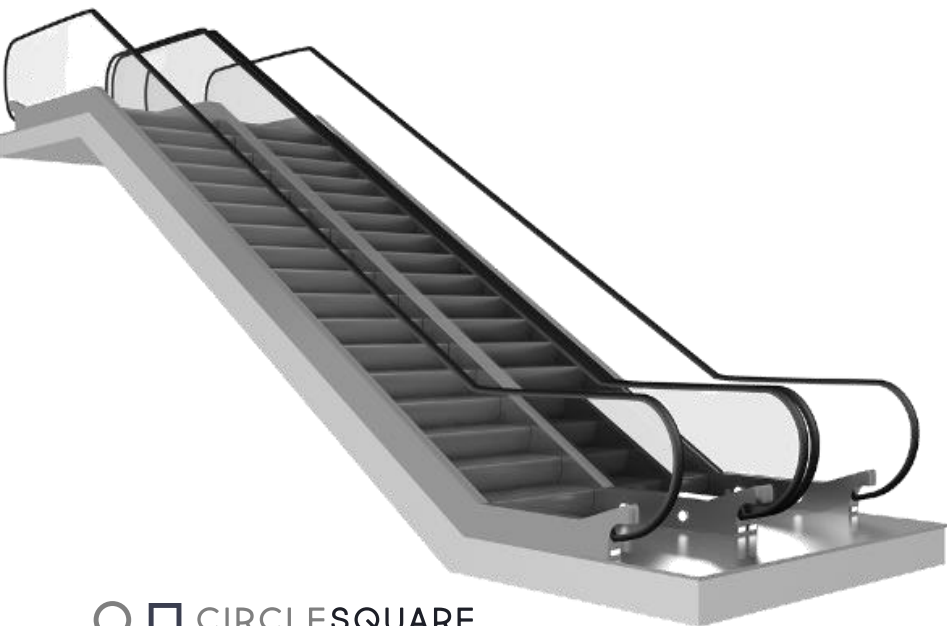# Digital Health Trends

**March 2023**

**CIRCLESQUARE**

HEALTH INFORMATION TECHNOLOGY – CONSUMER HEALTH & TECHNOLOGY

# The Ups and Downs of Digital Health

**Digital Health Trends**
**March 2023**

*From the co-editors…*

## Interoperable EHRs

MEDITECH and Epic are notable for patient accounting performance in small hospitals; NextGen leads in mid-sized practices for patient accounting, with ModMed in the very small, and Veradigm in the very large. Oracle is down as KLAS reports EHR customers are nervous about long term plans. Nuance looks poised to take best advantage of Microsoft's investment in ChatGPT to help physicians with clinical documentation. And in a tough investment climate, Zus Health (ex-athenahealth CEO) raises another $40m for its patient data platform at a valuation of $190m

## Healthcare Analytics

Digital pathology is up this month with Signify Research releasing an encouraging market scan of the segment showing six vendors having raised 60% of the $1.7b total. We report on organoid intelligence (OI), a new frontier in biocomputing that includes intelligence-in-a-dish. And the photo of the month is the IBM quantum computer that's installed at Cleveland Clinic.

## Consumer Health and Technology

UnitedHealth Group is up this month as it continues to lead the way, not only as the largest US payer, but also the most vertically integrated, growing its OptumCare provider business by over 30% last year. CVS and Humana are following their strategic playbook. As well, retail health deals continued to dominate headlines with Best Buy launching a hospital at home program as Walmart and Walgreens announcing they will expand their clinic footprints. Segments seeing significant investments this month include femtech, sleep, and neuro.

## Et Cetera

A pair of reports look at global funding trends, with APAC funding down due to a dip in Chinese investments, and Europe's digital health ecosystem remaining more stable than the US' in 2022. Also, NEJM offers a framework for distinguishing between health equity and healthcare equity.

*Michael*

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

**CIRCLESQUARE**

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## Consumer Health and Technology

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Epic, athenahealth are highly rated in KLAS's 2023 Independent Ambulatory Patient Portals report

Retail health headlines: Best Buy launches hospital at home program as Walmart, Walgreens expand clinic footprints

Vertically integrated payers see steady growth across all segments with the largest making significant investments in provider footprints

Fast Company selects the most innovative healthcare companies of 2023

FTC fines GoodRx and Teladoc's BetterHelp over data misuse, forcing companies to face new regulatory challenges

Fertility unicorn Kindbody leads the month in femtech funding

Telehealth for behavioral health spiked 45-fold since Covid, as investments in the segment declined

Sleep segments see funding for a pair of startups plus a large-scale study

The Medical Futurist lays out the landscape of skin-checking apps

Recent FDA approvals include a focus on migraines, PTSD, Parkinson's monitoring on Apple Watch, and more

Digital health solutions need a framework for tallying clinical robustness

Neurotech startups raise over $100 million as others launch, partner

Acquisitions in consumer health segments

Additional funding in consumer health segments

## Et Cetera

Drop in Chinese investments brought down digital health VC funding in APAC in 2022

Digital health investments in Europe remained more stable than the US in 2022

Why UnitedHealth Group may be the future of US healthcare

A framework for distinguishing health equity and healthcare equity

# Electronic Health
# Records

# Meditech and Epic lead the small hospital (under 250 beds) patient accounting market

*Small hospitals are changing their EMRs and patient accounting systems at a greater rate than that of their large hospital counterparts.*

**Summary:** MEDITECH is the market leader in the small hospital (under 250 bed) market) with additional market energy for Epic and Oracle Health. It also leads in overall performance and four of five core measures.

**Relationship:** MEDITECH excels at creating strong relationships with small-hospital customers

**Product:** Epic offers a high-quality product, while CPSI and Oracle Health customers are dissatisfied with product capabilities

**Culture:** Oracle Health (Cerner), CPSI, MEDHOST and athenahealth fail to deliver on expectations. (Note the latter two had limited data for analysis)

**Operations:** All vendors struggle to provide training that meets small hospitals' needs

**Value:** MEDITECH stands out for driving tangible outcomes, while Oracle Health (Cerner) customers report low value due to price and missing features

## Small hospital (under 250 beds) patient accounting

| KLAS RESEARCH | Overall | Relation-ship | Product | Culture | Ops | Value |
|---|---|---|---|---|---|---|
| MEDITECH Expanse Patient Accounting | **87.2** | **88.0** | 84.6 | **86.4** | **81.7** | **88.5** |
| Epic Community Connect Resolute | 83.3 | 81.1 | **86.6** | 84.1 | 78.5 | 70.4 |
| CPSI Evident Thrive Patient Mgmt | 62.4 | 69.0 | 64.0 | 66.3 | 66.1 | 58.8 |
| Oracle Health CommunityWorks | 58.1 | 62.8 | 61.8 | 50.6 | 58.0 | 49.0 |
| *Limited Data* | | | | | | |
| MEDHOST Enterprise Financials | 68.5 | 70.4 | 69.9 | 64.2 | 73.5 | 59.4 |
| athenahealth Collector for Hosp. | 58.0 | 62.0 | 62.5 | 50.0 | 59.5 | 68.5 |

**Editorial:** KLAS Research reports that MEDITECH is praised by its small hospital customers for their partnership culture and transparency with executives available when problems arise. Epic's solution is highly functional for small hospitals, providing the tools customers need and responsive to changing reimbursement rules. Respondents especially appreciate the deep integration they have with other Epic entities in their area, and this integration is often a key driver in their decision to move to Epic. Due to the unique setup of Epic's Community Connect program, customers seeking support work directly with their host organization, not Epic. KLAS reports respondents say they get up-front transparency about the product's capabilities and gaps.

# High-acuity clinical information system (CIS) battleground:
## Best-of-Breed versus EHR

### Where do opportunities exist?

**Perinatal:** The Perinatal IT market is still dominated by best-of-breed vendors, who typically offer additional surveillance in the form of Cardiotocography (GTG) traces, mother and baby's heart rates, contraction rate and/or fetal movement. Notable is the System C Healthcare acquisition of Scottish maternity and neonatal specialist Clevermed (Feb, 2023).
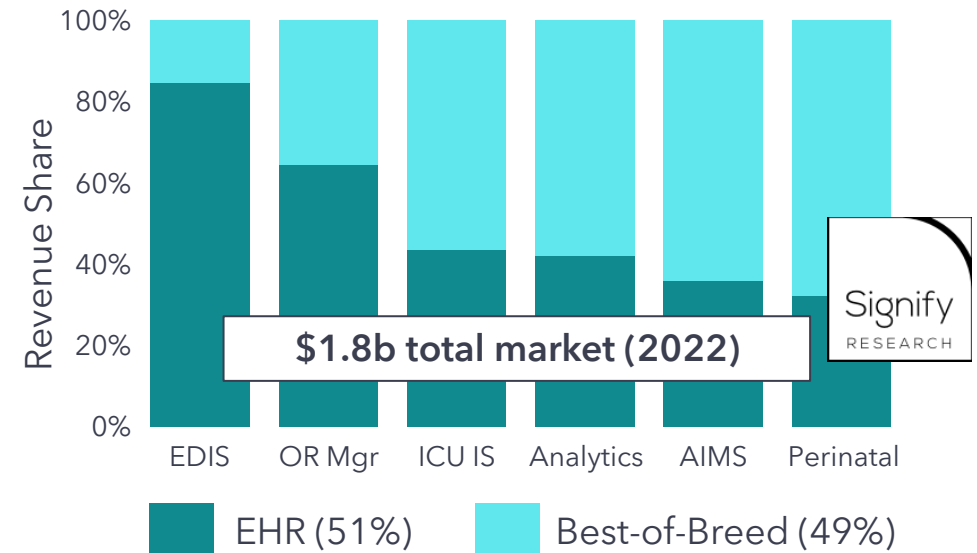
**EDIS:** Conversely, the Emergency Department Information Systems (EDIS) market has a relatively higher proportion of EHR vendors that have captured share of the overall revenues. This trend is most prevalent in the US and Western Europe (e.g., the UK, DACH) where EHR vendors account for +90% share.

**AIMS:** There are also growth opportunities for the best-of-breed vendors in less developed high-acuity CIS segments. For example, the Anesthesia Information Management Systems (AIMS) market in many regions of EMEA is still under-developed with many anesthesia departments still utilizing paper-based systems.

**Analytics:** Interest in Analytics/AI-based applications has increased in recent years, as vendors pushed clinical solutions that assisted in patient care by providing supporting data analytics to help improve care provision. Getinge's acquisition of Talis Clinical is an example of vendor activity in this segment.

**Integration:** Device integration and vendor-neutral solutions are becoming priority considerations for healthcare providers, given the complex communication landscape.

### High-acuity CIS revenue share by vendor type



**$1.8b total market (2022)**

EHR (51%)    Best-of-Breed (49%)

Signify RESEARCH

# Demand for physician practice management tools is driven by increasing administrative burden, shrinking labor pools, and reimbursement pressures

**Over half will upgrade.** 54% of medical groups with 10 or more clinicians indicated they plan to significantly upgrade or replace their current practice management system software in the next 18 months. Drivers include the need to document clinical quality to achieve optimized revenue benefits and the intensified requirements for data sharing to coordinate care to ready organizations for value-based care capitation.

**Almost all large practices will go cloud-based.** 95% indicated they will select an integrated, cloud-based solution that can offer benefits not available in older practice management systems, including telehealth, workflow process improvements, interoperability, patient portals, and complex analytics tools supporting population health management.

**Three most pressing digital enhancements:**

1. Analytics and Practice Performance Data (89%)
2. Cybersecurity (79%)
3. Revenue cycle and coding improvements (67%)

**Staffing.** Additionally, The Great Resignation has affected physician practices more than other industries with the highest office staff attrition rates experienced to date.

## Top-rated practice management systems by practice size

| Practice size | Vendor (# responses) | |
|---|---|---|
| Solo practices | eClinicalWorks (n=3,996) | eClinicalWorks "Improving Healthcare Together" |
| 2-5 group practitioners | ModMed (n=5,101) | ModMed MODERNIZING MEDICINE |
| 6-10 group practitioners | NextGen (n=4,205) | nextgen. healthcare |
| 11-25 group practitioners | NextGen (n=4,590) | nextgen. healthcare |
| 26-99 group practitioners | NextGen (n=3,315) | nextgen. healthcare |
| 100+ group practitioners | Veradigm (n=4,292) | veradigm. |

**Editorial:** The 2023 Black Book Research physician software user polls include 25,501 physicians, practice administrators, financial staff, clinicians, and support personnel from over 22,000 medical offices and clinics. The survey is comprised of 18 qualitative key performance indicators on client experience and satisfaction, evaluating 208 electronic health records vendors with integrated practice management tools. These survey results are generally consistent with the research from other analysts and pollsters. NextGen is notable for its focus on the mid-tier. ModMed benefits from its specialty focus. eClinicalWorks is a surprise, as it has been rated lower in other research, but not specifically in the solo practice category.

# Clinical documentation strategies can be viewed across levels of human intervention into six functional categories supported by a variety of vendors

**Market overview:** Outcomes and value are top of mind in provider decisions. Over the last three years, healthcare organizations have seen increased employee attrition, heightened levels of physician burnout and dissatisfaction, and increased costs that have squeezed already tight profit margins

**Ambient speech recognition:** Technology is rapidly growing and showing initial promise, as early customers express satisfaction. The market is in very early stages.

**Front-end speech recognition:** Becoming the go-forward platform for documentation. Improved accuracy and ability to detect accents, puts it on par with the accuracy seen in transcription.

**Computer-assisted physician documentation (CAPD):** Organizations see benefits, but physician buy-in remains low. The real-time nature of CAPD enables more efficient code capture leading to improved revenue and reduced documentation time.

**Clinical documentation integrity (CDI):** Technology drives results, but development has been slow. CDI software often provides a solid ROI through increased billing capture, more efficient workflows, and improved prioritization and guidance.

**Transcription services:** Adoption is decreasing due to speech recognition technology, but still a valuable part of provider workflow, particularly for those hesitant to adopt newer technology.

**Virtual scribes:** Still having highly positive impact, though replacements cause inconsistencies. 94% of respondents feel that their virtual scribe has a positive or highly positive impact on their documentation time.

## Clinical documentation strategies

**← Level of human intervention →**

**KLAS RESEARCH**

| Validated solutions | Ambient Speech | Front-end Speech | CAPD | CDI | Tran-scription | Virtual scribe |
|---|---|---|---|---|---|---|
| Nuance | O | O | O | O | | |
| Dolbey | | O | | O | | |
| 3M | | O | O | O | | |
| Iodine | | | | O | | |
| Optum | | | | O | | |
| AQuity | | | | | O | O |
| DeliverHealth | | | | | O | |
| ScribeEMR | | | | | | O |

*Note: grey circle O indicates limited data for analysis*

**Editorial:** KLAS Research reports that for years, documentation has been a pain point that has led to clinician frustration and burnout, but numerous strategies have emerged to ease that burden and enhance patient care. Covid-19 has exacerbated burnout, leading organizations to renew their focus on improving documentation. Nuance (Microsoft) is a standout with its breadth of function and its superior performance, leading in all categories in which it competes except for CDI, getting edged out by Iodine.

# Global (Non-US) EMR users report on eight top benefits they are achieving

## Increased staff efficiency

Benefit is enhanced by clinician documentation templates, less duplication, electronic communication tools, and alerts. Often the level of improvement falls below expectations; EMR documentation increases IT load, and it can take time for clinicians to get up to speed on EMR processes. Difficult to measure efficiency gains in a concrete way.

## Reduced paper usage

Very often achieved by respondents, especially those live 5+ years. Most take a phased approach, beginning in specific sites and departments, with the end goal of going fully paperless. Time required to convert historical paper documents and specialized forms.

## Improved billing operations

Top of mind especially in regions with private healthcare organizations. Supported by integration between clinical and financial systems and standardized documentation; results in more accurate charge capture at point of care and improved billing workflows.

## Less duplicate documentation

EMR enables information to be collected once and used multiple times, reducing need for duplication at multiple steps in the patient journey. Less measurable due to lack of pre-implementation baseline data. Highly dependent on how well EMR is adopted across the enterprise.

## Fewer unnecessary orders

Benefit is driven by increased visibility into patient history and journey, along with tools like alerts, triggers, and CDS. Difficult to measure. Lagging adoption results in lower-than-expected degree of improvement for more than half of respondents. Also affected by lack of information exchange with outside organizations and clinician skepticism around alerts or alert fatigue.

## Regulatory requirements met

Not usually a primary driver—the exception being where regulations mandate electronic record use. EMR as single source of truth supports improved reporting. Some mentioned the need to audit data for accuracy or work with their vendor to make the EMR fit their regulatory needs.

## Fewer integrations and vendors

Achieved at least in part by all interviewed organizations. Many are able to reduce legacy systems (by up to 60%) and consolidate to fewer vendors and contracts (by up to 25%). Requires time and organizational buy-in to set up needed integrations and retire legacy systems.

## Increased patient throughput

Orgs are split on whether EMR can increase patient volume. Use of virtual care is the most tangible benefit around patient volume. Some feel it organizes patient flow. Less-than-expected staff efficiency gains hindered potential increases in patient volume.

**AKLAS** RESEARCH

**Editorial:** KLAS Research reports that as EMR adoption grows worldwide, healthcare organizations considering this digital transformation all have the same question: what benefits can we really expect to receive from implementing an EMR? KLAS interviewed leaders at 36 non-US healthcare organizations—12 of which are HIMSS Level 6 or 7—to learn about their journey to realizing benefits from an EMR implementation. We summarize the key benefits above. The full report is publicly available at the link below.

# **In EHR-related news,** Oracle is losing long-term customer support and Nuance and Abridge Health continue to make progress in automating clinical notes

## Health systems question Oracle Health as a long-term partner due to lack of tangible results and product road map

Large health systems are more likely to say they don't have an optimistic view of Oracle Cerner, with reasons including delays in its revenue cycle product and staffing issues.

KLAS surveyed more than 20 Oracle Cerner customers throughout 2022, when Oracle took over ownership of Cerner. In November, about one-fourth reported that they no longer saw the EHR vendor as a viable long-term partner, with health systems of 1,000 or more beds being more likely to switch opinions.

Top concerns include the road map, execution and delivery, staffing and cost/value.

## OpenAI-powered app from Microsoft will instantly transcribe patient notes during doctor visits

Microsoft and its Nuance Communications subsidiary announced Dragon Ambient eXperience (DAX) Express, a clinical notes application for healthcare workers that is powered by artificial intelligence.

DAX Express aims to help reduce clinicians' administrative burdens by automatically generating a draft of clinical notes after a patient visit.

The technology is powered by a combination of ambient AI, which forms insights from unstructured data like conversations, and OpenAI's newest model, GPT-4.

## University of Kansas Health System taps Abridge to roll out AI-based medical transcription for thousands of docs

The University of Kansas Health System tapped medical transcription startup Abridge as a new tech partner to automate clinical notes and medical conversations for doctors.

The rollout has the potential to serve more than 1,500 physicians across the system's more than 140 locations. Abridge's technology listens to visits and uses smart tech to summarize the most important parts of the conversation for clinicians and patients.

The company touts the partnership as the most significant rollout of generative AI in healthcare to date.

**Editorial:** We were hopeful that Oracle could convince US large health system customers to give them a chance to make leaps in product development and stability. KLAS Research reports this month that large customers are expressing long term concerns. Researchers report that the stories from Nuance and Abridge come at a time when providers around the country are buckling under increasing burnout, largely driven by clinical documentation responsibilities. At the University of Kansas Health System, providers spend 130 minutes a day on documentation outside work hours, according to the organization. This is often made worse by providers having to field additional follow-ups from patients.

# Transactions in foundational segments focus this month on revenue cycle management, EHR platforms, and robotics

## Equipment maintenance
**$170m partnership**

Advantus Health Partners, hospital supply chain services, partners with GE HealthCare, in a ten-year equipment maintenance agreement; Advantus clients will have access to GE HealthCare's real-time location technology

## Revenue cycle management
**Acquisition**

GeBBS Healthcare Solutions, RCM and risk adjustment (Chrys Capital PE), with 14k employees, acquires CPa Medical Billing, RCM to FQHCs and other multi-specialty physician groups

## Post-acute EHR platform
**Acquisition**

PointClickCare (Ontario), long-term care EHR for 27k providers and 2,800 hospitals, having raised $200m, acquires Patient Pattern, a value-based care EMR and integrated care management platform

## Medication management
**Acquisition**

Cureatr, value-based medication mgmt and optimization services to at-risk healthcare organizations, acquires the SinfoníaRx business in medication therapy mgmt (MTM), from Tabula Rasa Healthcare

## Robotics and virtual reality
**$56m via SPAC**

DIH, robotics and VR combined to enhance healthcare rehabilitation and human performance via 4,500 robots and 1,800 orgs, raises funds via a $360m SPAC, listed on Nasdaq as ATAK

## Autonomous medical coding
**$55m Series A**

Codametrix, multi-specialty coding AI-platform that translates clinical info into medical code sets for patient care and revenue cycle processes, gets first funding; Mass General and Yale investing

## Revenue cycle management
**$45m private equity**

Janus helps health systems and revenue cycle service companies better understand, optimize, and automate RCM workflow processes; includes a payer portal navigation tool

## Health data management
**$40m venture round + partnership**

Zus Health, provides patient data at the point of care via API, embedded components and direct integration with EHRs (total raised $74m valuation $190m; works with 30 partners and adds Elation Health

**Editorial:** The largest transaction this month in foundational segments was a ten-year GE HealthCare equipment maintenance partnership. The acquisitions highlighted add functionality or new segments. SPACs remain an alternative strategy with DIH participating. Additional transactions include Medwing, healthcare staffing in Germany, gets Series C financing, $78m total; Doctorly, practice software in Germany, gets Series A financing, $15m total; Carle Health makes an undisclosed investment in Health Catalyst, data management and population health.

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*Source: Storylines are linked to text boxes, logos to company websites*

# Interoperability
and Security

# Ambulatory and enterprise EMR interoperability in 2023: Are deep adopters close to the ideal?

**Market Overview: Moving forward will require cooperation among all stakeholders.** End users at provider organizations are often slow to adopt what is available, and vendors reportedly still work in silos that don't always allow for broad, consistent data exchange.

**Connectivity: Epic and Oracle Health (Cerner) customers lead in FHIR API adoption to support third-party connectivity.** Epic also outpaces other EMR vendors with connections to in-home patient monitoring technology, partly due to their work with APIs

**Utility: Duplicate data is a major issue, with NextGen Healthcare making notable progress.** Its customers consistently report functionality that removes duplicate information from incoming data before it is integrated into the clinician workflow.

**Use Cases: NextGen Healthcare is leading in making external data actionable.** Altera Digital Health (Allscripts), eClinicalWorks, and Greenway Health are falling behind.

**Outcomes: Organizations are starting to see real outcomes as interoperability advances.** The majority of outcomes are related to data access for patient care decisions. 40% of NextGen Healthcare, athenahealth, Epic, and Oracle Health (Cerner) customers are able to reduce duplicate testing.

## Overview of EMR vendor interoperability

**KLAS** RESEARCH

| Validated solutions | | Overall grade | Connectivity | Utility | Use cases | Outcomes |
|---|---|---|---|---|---|---|
| Ambulatory Care | NextGen Healthcare | B | B | B | A- | B+ |
| | athenahealth | B- | B | B- | B- | B |
| | Greenway Health | F | F | D- | F | F |
| | *eClinicalWorks* | *D* | *C-* | *C-* | *F* | *F* |
| Enterprise | Epic | B- | A | C+ | C+ | B |
| | Oracle Health (Cerner) | C+ | B+ | C- | C- | B |
| | MEDITECH | C- | B | C- | D | C |
| | *Altera Digital Health* | *D* | *C+* | *D-* | *F* | *D* |

*Note: Gray and italicized companies and grades indicate limited data for analysis*

**Editorial:** KLAS Research reports that interoperability is a continued area of critical focus for the healthcare industry. There is no question that progress is being made, but there is still significant room for improvement. For this report, KLAS talked to vendor-identified deep adopters to take a holistic look at the current state of interoperability in ambulatory and enterprise EMRs and measure how close we are to an ideal state. The chart above shows NextGen, athenahealth, Epic, and Oracle above average, and MEDITECH just missing, with no vendors getting any A grades.

# ONC report to US Congress: update on the access, exchange, and use of electronic health information

## Barriers to implementing the Federal Health IT Strategic Plan

**ONC and HHS' lack of authority under the Cures Act to tell entities whether their specific instances constitute information blocking.** Subsequently, ONC wrote that it is unable to disseminate such advisory requests and responses to the rest of the industry "so that other entities could review them and apply the analysis to consider whether their own practices might be assessed if subject to HHS review."

**Insufficient progress on electronic health information sharing.** As of 2019, 70% of non-federal acute care hospitals had at least one challenge in public health reporting, despite requirements from the Centers for Medicare and Medicaid Services. These systems between hospitals and public health entities need to be modernized with, among other means, the use of standardized application programming interfaces (APIs) and TEFCA to unlock pandemic-relevant capabilities.

**Fragmented state/regional health information exchanges (HIEs).** Most HIEs are only serving their local markets and lack the common information standards to share information between hospitals or other entities. "This presents barriers to better care, higher costs to the healthcare system, and a diminished user experience for patients and healthcare providers," ONC officials wrote in the report.

**Few incentives for health IT and data exchange adoption for certain portions of the care continuum.** HHS' authorization to incentivize providers to adopt certified EHRs doesn't extend to certain types of behavioral health professionals, long-term and post-acute care, hospice and home and community-based providers. Particularly in regard to interoperability, gaps in adoption are hamstringing care transitions from hospitals to other settings.

## Nine ONC-recommended US federal actions

### Recommended actions

| | |
|---|---|
| 1 | Prioritization of information sharing |
| 2 | Promotion of nationwide exchange across networks |
| 3 | Improvements in certified health IT and user experiences |
| 4 | Advancement of standards |
| 5 | Coordination of health IT efforts |
| 6 | Protection and security of EHI |
| 7 | Modernization of public health data systems |
| 8 | Support of health equity and comprehensive health and care needs |
| 9 | Advancement of health IT for research and data analytics |

**Editorial**: ONC led with a progress report in three areas: (1) 96% of hospitals and 80% of physician practices have adopted certified EHRs; (2) launch of the inaugural cohort of companies approved to begin onboarding as Qualified Health Information Networks (QHINs) within the Trusted Exchange Framework and Common Agreement (TEFCA), a key step for cross-network interoperability; (3) updated United States Core for Data Interoperability (USCDI) with 20 new proposed data elements.

# A life sciences company roadmap to reach healthcare providers (HCPs) in moments that matter, at the point of care

## Agencies-of-Record
Companies that drive engagement and creative strategy, and partner with media providers to reach physicians

## White label resellers
Companies that package creative and media bundles, programmatic displays on mass digital channels, or specialized precision targeting (ad-tech) that prioritize HCPs for outreach without interactive contact; e.g. PulsePoint, Pulse Health, Swoop, Relevate Health

## Media agencies
Companies that reach HCPs through preferred buyer status on traditional digital channels, e.g., paid display or search ads, email, social networks, etc.; e.g., Real Chemistry, Publicis, CMI, H4B Chelsea, Evoke

## Diverse workflow sources
Companies provide platforms for HCPs to conduct and document clinical care (EHR, ePrescribe, Telehealth, etc.); e.g., DrFirst, Altera, Veradigm, Mend, Populus

## Clinical workflow networks
Companies that offer direct access to physicians within the clinical workflow of the EHR ecosystem through established networks of multiple EHR / e-prescribe, or other care delivery platforms; e.g., ConnectiveRx, OptimizeRx

## Publishers
Companies which have built proprietary HCP and/or patient networks through unique content generation, specialized HCP services, or communication platforms such as closed social networks or in-office digital signage; e.g., DeepIntent, Phreesia, PatientPoint

### Alternative communication channels
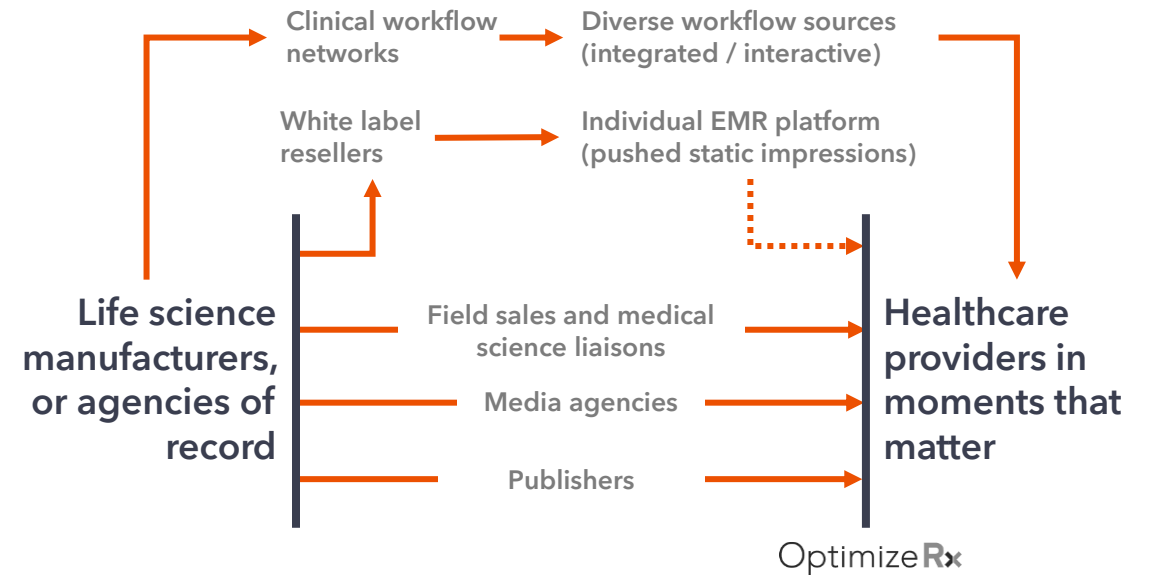


OptimizeRx

**Editorial:** OptimizeRx is one of two clinical workflow networks enabling life sciences company communications to relevant healthcare providers at the point of care through a set of EHR platforms that are integrated into an interactive physician workflow. The company released its view of the communications landscape; excerpts are outlined above. Traditional communications include sales reps and pharma clinical professionals communicating directly with physicians, and media agencies and publishers reaching physicians across a variety of platforms. OptimizeRx and ConnectiveRx, as clinical workflow networks, differentiate from white label resellers who buy ad space inventory on individual EMR platforms, by the integrated and interactivity of its services. The OptimizeRx report is available at the link below.

# Healthcare
# **Analytics**

# As digital pathology investment matures, venture capitalists get selective

**Investment in the digital pathology market spiked significantly during 2021.** This before declining sharply again in 2022. Average funding per round does however remain elevated and has been steered significantly towards more mature vendors.

**Funding has been allocated primarily towards three key vendors, PathAI, Paige.ai and Owkin.** All are focusing on artificial intelligence for digital pathology. However, seed rounds are still being raised as of 2022 and new entrants to the market are expected to persist.

**Investment in DP is now starting to scale.** This is relative to markets like medical imaging AI and AI in drug development. Penetration of digital pathology remains low, in part due to regulation, the fragmented supply chain and limited investment from healthcare providers in modernizing clinical labs so far.

## VC funding for digital pathology 2014-2022 by vendor

| Rank | Vendors | Funding ($m) |
|------|---------|--------------|
| 1 | Owkin | 304 |
| 2 | PathAI | 255 |
| 3 | Paige.AI | 220 |
| 4 | Strateos (3Scan) | 118 |
| 5 | Ibex Medical Analytics | 102 |
| 6 | Proscia | 69 |
| 7 | Nucle.ai | 47 |
| 8 | Hangzhou Diyinga | 46 |
| 9 | Volastra | 44 |
| 10 | Aiforia | 43 |
| | Others | 507 |

## $1.7b raised since 2014, with 42.4% during 2021
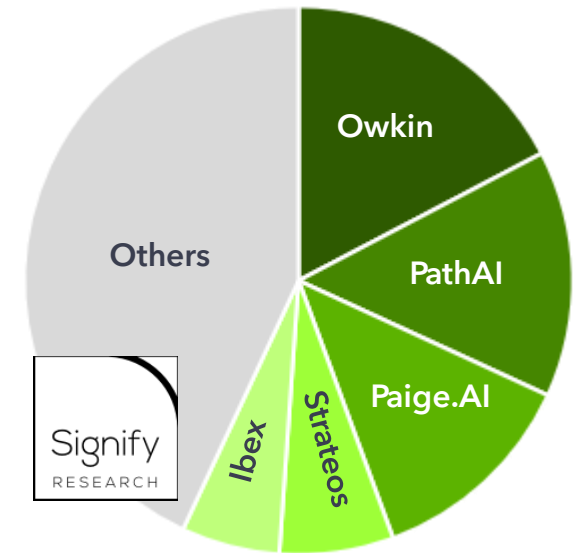


Top five vendors account for nearly 60% of the funding.

**Editorial:** Signify Research (UK) tracks the digital pathology market worldwide and is offering a free summary report which can be downloaded from the link below. The full report is planned for release in April. Analyst Imogen Fitt reports that the post-pandemic period reflected a time of renewed interest and adoption in the market, for both clinical and research use-cases. Positive developments from both regulatory bodies and key institutions framed digital pathology as a rapidly growing market that had finally started to mature – an easy win. However, sentiment from investors rapidly shifted as economic and political conditions saw backers pivot strategies to a much more conservative approach in 2022. Consequently, funding reached only 29.0% of the previous year's total This is expected to continue.

# Organoid intelligence (OI): the new frontier in biocomputing and intelligence-in-a-dish

**Biocomputing:** Biological computing (or biocomputing) could be faster, more efficient, and more powerful than silicon-based computing and AI, and only require a fraction of the energy.

**OI:** Organoid intelligence (OI) describes an emerging multidisciplinary field working to develop biological computing using 3D cultures of human brain cells (brain organoids) and brain-machine interface technologies.

**Scaling up:** OI requires scaling up current brain organoids into complex, durable 3D structures enriched with cells and genes associated with learning and connecting these to next-generation input and output devices and AI/machine learning systems.

**New models:** OI requires new models, algorithms, and interface technologies to communicate with brain organoids, understand how they learn and compute, and process and store the massive amounts of data they will generate.

**Improve understanding:** OI research could also improve our understanding of brain development, learning, and memory, potentially helping to find treatments for neurological disorders such as dementia.

**Embedded ethics:** Ensuring OI develops in an ethically and socially responsive manner requires an 'embedded ethics' approach where interdisciplinary and representative teams of ethicists, researchers, and members of the public identify, discuss, and analyze ethical issues and feed these back to inform future research and work.

## Architecture of an OI system for biological computing

*At the core of OI is the 3D brain cell culture (organoid) that performs the computation*



Biological computing via OI — AI/machine learning — Big data management

Inputs
- Electrical signals
- Chemical perfusion
- Optogenetics
- Complex biologicals, e.g., retinal organoids

Biofeedback — Brain organoid — Micro-electrode array — Probe

Outputs — *Imaging*
- Electrophysiology recording
- Fluorescence
- Confocal microscopy

3D culture system optimized for organoid scalability, durability and learning via:

Culture conditions – Cell enrichment – microfluidic systems – IEG expression

**Editorial:** Researchers from Johns Hopkins, University of California, and University of Luxembourg report that recent advances in human stem cell-derived brain organoids promise to replicate critical molecular and cellular aspects of learning and memory and possibly aspects of cognition in vitro. Coining the term "organoid intelligence" (OI) to encompass these developments, the authors present a collaborative program to implement the vision of a multidisciplinary field of OI. They aim to establish OI as a form of genuine biological computing that harnesses brain organoids using scientific and bioengineering advances in an ethically responsible manner.

# Data, digitalization, and diversity
## impacts on medical affairs and medical science liaisons

**H1**

*Stacey Rivkin, VP*
*Client Solutions*

## Data

Roughly one-third of global data generated is within the healthcare industry. Medical affairs professionals are the natural owners of scientific data across the product lifecycle, and it's clear that this data holds the potential to improve the care everyone receives. Data will touch every aspect of Medical affairs in 2023, from increased hiring of data engineers and analysts, to greater data democratization and the use of real-world data (RWD) to support clinical trials and commercial drug discovery and launch.

**Pharmaceutical companies will lean on data and insights…** improving the ability to analyze and leverage the data collected and stored by healthcare and pharmaceutical companies to improve decision-making.

**Democratizing and digitizing global healthcare data will be a priority.**

**The use of real-world data (RWD) will expand.**

## Digitization

The evolving nature of key opinion leaders (KOLs) means that Medical Affairs and MSLs themselves will also have to evolve. In response, pharmaceutical companies will hire professionals more versed in omni-channel strategies and will cultivate these skills in-house. Digital awareness will be a sought-after skill, digital engagement will be a key strategy, and investment in digital tools will increase.

**Digital opinion leaders (DOLs) will gain ground…** by 2027, MSLs expect to spend almost as much time identifying DOLs as traditional offline KOLs.

**…and will transform Medical Affairs teams.**

**The pace of digital transformation will continue.** Medical affairs teams will invest in new AI-based tools for discovering and engaging with DOLs that will help surface, curate, and personalize insights in preparation for meetings.

## Diversity

This year will bring a renewed commitment to diversity across the entire pharmaceutical industry – from diversity in clinical trials to building more diverse in-house teams and tapping a broader diversity of thought.

**Pharma companies will be held accountable for clinical trial diversity.** Governing bodies are finally starting to hold companies accountable for real, substantial changes to their clinical trial processes – the FDA has already made progress with recently issued guidance calling for companies to develop and submit diversity plans.

**Medical affairs teams will seek broader diversity of thought.** There is a need for increased diversity of thought, and encouraging MSLs to be closer to patients can help achieve this.

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**Editorial**: Stacey Rivkin is Vice President of Client Solutions at H1. With the rapid digitization of the entire industry and a new generation of talent waiting in the wings, Medical affairs teams need access to data and modern technology to engage with a new generation of influencers, improve diversity, and develop stronger go-to-market strategies.

# Innovations in clinical AI this month are unusually varied in terms of disease states and data types

## Mass General Brigham
### Alzheimer's disease
A team at Massachusetts General Hospital (MGH) recently developed an accurate method for detection that relies on routinely collected clinical brain images. The advance could lead to more accurate diagnoses.

## qure.ai — MAMMOSCREEN by Therapixel
### Breast cancer
Qure.ai will distribute MammoScreen, Therapixel's AI-powered decision support tool for breast cancer screening; It enables radiologists to read large numbers of screening mammograms in 2D and 3D more confidently.

## LS CancerDiag
### Lynch syndrome
LS CancerDiag (Finland) has developed a new technology for diagnosing Lynch syndrome, DiagMMR, which is more effective than other methods for diagnosing this hereditary cancer syndrome.

## ASCERTAIN — Northwell Health®
### Preeclampsia
Northwell Health and Aegis Ventures' company Ascertain announced a new algorithm for predicting preeclampsia tackling worsening maternal mortality rates; Raised $100m in April 2022.

## PocDoc
### Cardiovascular disease
PocDoc (UK) is an app-based technology platform that combines proprietary lateral flow tests and cloud-based AI diagnostics to deliver end to end digital pathways for the assessment, diagnosis and treatment of major diseases, focusing first on CVD.

## MAYO CLINIC
### Heart failure
Mayo Clinic is using AI to help detect new cases of heart failure and cases of irregular heart rhythms. The AI tool is helping the organization detect these conditions years before they might otherwise have been detected.

## CanoHealth
### Diabetic retinopathy
Cano Health (Miami), a value-based care provider, used AI to analyze images from an eye camera to identify diabetic retinopathy, a cause of blindness that can affect people with diabetes.

## LIFEBRIDGE HEALTH®
### Sepsis
Sinai Hospital (Baltimore) is using an algorithm to identify which hospitalized patients are most at-risk for sepsis. The algorithm alerts physicians if it detects that a patient is septic or deteriorating.

**Editorial:** AI clinical diagnostics is becoming broadly applied across disease states and data types. Clinical algorithm development began with a focus on oncology and radiology imaging. It's also encouraging to see investors with a continuing interest in the segment. There were less innovations reported this month, than typical, which is likely an extension of the investment climate with a return to an economy with non-zero interest rates.

# IBM
# Quantum
# System One
# at Cleveland
# Clinic

*"Quantum and other advanced computing technologies will help researchers tackle historic scientific bottlenecks and potentially find new treatments for patients with diseases like cancer, Alzheimer's and diabetes."* --- *Cleveland Clinic CEO*
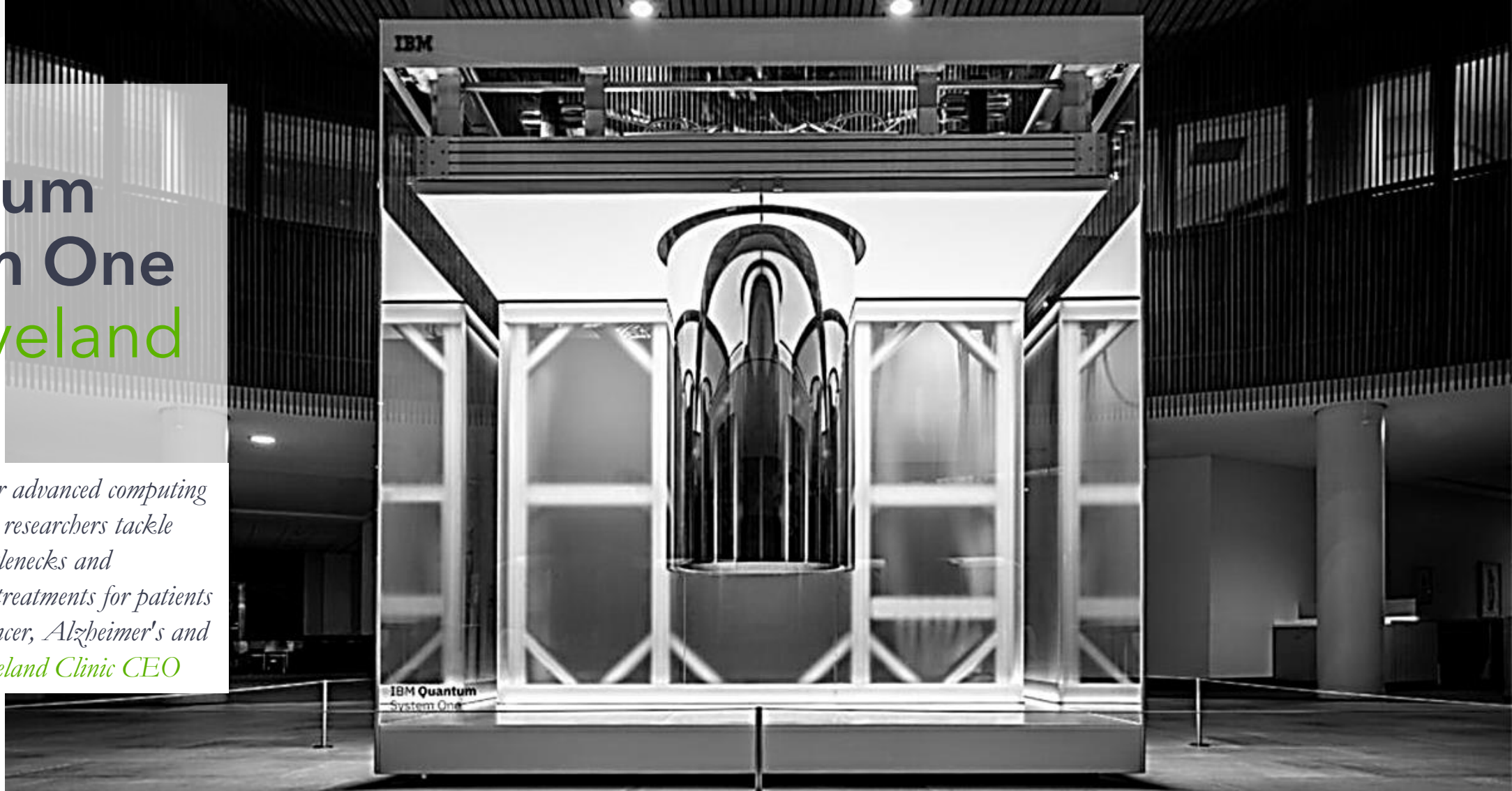


**Photo of the month:** Mike Miliard at Healthcare IT News reports that The new IBM Quantum System One now deployed at Cleveland Clinic is being touted as the first on-site private sector IBM-managed quantum computer in the United States and will be the first such machine in the world to be dedicated solely to healthcare research. Future projects include development of quantum computing pipelines to screen and optimize drugs targeted to specific proteins; improved quantum-enhanced prediction models for cardiovascular risk following non-cardiac surgery, and AI applications to search genome sequencing findings and large drug-target databases for more effective Alzheimer's drugs.

# Accountable care In 2023:

## evolving terminology, current state, and priorities for Medicare, Medicaid, and commercial insurance

### Making investments in accountable care more attractive vs. FFS-based care

NOCD ($34m Series B): Provides mental health services including exposure and response prevention (ERP) therapy for OCD, which impacts about 2.3% of US adults over their lifetimes.

Firsthand ($28m Venture): Uses a peer-support model to help patients with serious mental illness (SMI) access care via peer-support specialists who have lived experience with SMI and are trained to engage with a patient at home.

Marker Learning ($15m Series A): Network of psychologists and educators that deliver evaluations, tutoring, coaching and other learning services to people with learning disabilities.

### Advancing health equity through accountable care, a priority for CMS

Answers Now ($11m Series A): Pairs families with a dedicated clinician for ABA therapy sessions hosted on its custom-built virtual platform that eliminates distractions for patients with autism.

Spectrum.Life ($5.3m Series A): 24/7 access to unlimited mental health and wellbeing support, including a personal mental health coach and open-ended therapy for insurers, employers, employees, and students; 200 employees.

Fort Health ($4.5m Venture): Telehealth-based mental health clinic that partners with pediatricians for referrals and health plans for coverage.

### Integrating specialty care and engaging specialists in accountable care

Syndi Health ($2m Pre-Seed): Uses artificial intelligence to recommend well-being support to employees; brings various mental health apps into one place, using AI as a means to keep employees engaged; UK-based.

Beaming Health ($1.7m Seed): Enables community support for patients with autism and provides a network of provider access without long term trial and error search for good fits.

ShareWell ($1.3m pre-Seed): Offers 10k+ peer support groups as an alternative to therapy; platform prohibits one-on-one communications

**Editorial:** The researchers conclude that it is an important time for accountable care, with (1) an enhanced focus on predictable, long-term support for investments in whole-person care, (2) an intentional focus on improving health equity through accountable care, (3) new steps to advance accountable care reforms to improve the patient journey through specialty care, and (4) collaborations to reduce the burden and increase the impact of accountable care reforms across payers.

# Transactions in analytics segments focus this month on oncology, drug development, and value-based care

## Oncology drug development
**$700m partnership agreements**

Tempus adds Pfizer to its pharma partners (AZ and GSK) who get access to Tempus' AI-enabled platform and its library of de-identified, multimodal data focused on oncology for research

## Oncology therapy prediction
**$90m funding and launch**

Artera, multimodal AI-based predictive and prognostic cancer tests, launches with $90m in funding; its flagship test is the ArteraAI Prostate Test, the first to predict therapy benefit in localized prostate cancer

## Value-based care
**$84m Series B**

Wellvana partners with health providers in 22 states to transition from traditional fee-for-service payment models to value-based or full-risk capitation contracting ($140m total raised); Memorial Hermann investing

## Value-based care
**$45m acquisition**

Agilon Health [AGL], primary care physician platform focused on Medicare ($10b market cap), acquires mphrX, a clinical repository and unified patient record platform using FHIR-based APIs

## Medical image analytics
**$40m venture round**

Viz, medical imaging that provides an AI-based care coordination tool for disease detection and workflow optimization for 220m lives across 1,300+ hospitals in US and Europe; ($292m total raised)

## Drug discovery-as-a-service
**$35m Series A**

Tandem AI (China) integrates AI-driven and physics-based high-performance computation with large-scale in-house wet lab operations to deliver a turnkey drug discovery as a service solution ($60m total raised)

## AI for pharma procurement
**$20m Series A**

Labviva provides a SaaS platform and marketplace unifying product discovery and procurement and connecting suppliers and purchasers, allowing scientists to make better purchasing decisions ($30m total raised)

## Image analytics for inflammation
**$19m Series C+**

Perspectum (UK) provides AI-driven software that measures organ inflammation for chronic metabolic diseases, multi-organ pathology, and cancer using standard MRI images ($140m total raised)

**Editorial:** Additional transactions included Iktos (Paris), AI for drug discovery, raised €15.5m in Series A funding; Protai (Tel Aviv), a proteomics and AI-powered drug discovery startup adds $12m to its seed round, bringing the total amount to $20m; Droplet Biosciences, provides sensitive cancer diagnostics via analysis of lymph fluid, raised $8m in seed funding.

# Consumer Health
## and Technology

# Basic smartwatches rescue wearables market as **Apple, Samsung, Fitbit stutter**

**Smartwatches with advanced capabilities, like those from Apple, Samsung, and Fitbit, experienced a difficult market in 2022,** and while sales are expected to grow this year, they will do so very slowly.

**In stark contrast,** the Indian market for basic smartwatches has taken off (see chart at right).

**In 2023, 184 million smartwatches are expected to be sold,** which would represent growth of 16% on 2022, with nearly all of the increase coming from India, where demand is expected to grow by 75%.

**Growth in India is being fueled by the increased availability and popularity of basic devices,** which are generally priced between $30 and $70.

**Smartwatch sales in India were negligible** three years ago.

**Market share has fallen across the board,** as the new Indian brands start to make their presence felt.

**Smartwatches from Apple, Google, Garmin, and Samsung** declined by 7% in 2022.

**Global sales of basic smartwatches are expected to reach 118 million units in 2027,** accounting for one-third of the 353 million total smartwatches expected to be shipped that year.

**Advanced smartwatches continue to dominate the market,** despite their sales in units declining by 7% in 2022.

**Smartwatches dedicated to children and seniors** are projected to remain a firm, albeit small, part of the global market, mostly concentrated in China.

## Smartwatch market share by company:

| Manufacturer | 2021 | 2022 |
|---|---|---|
| Apple | 35% | 32% |
| Huawei | 15% | 11% |
| Samsung | 9% | 8% |
| Indian brands (boAt, Noise, Fire-Boltt) | 6% | 18% |
| Fitbit / Google | 5% | 3% |
| Garmin | 4% | 3% |
| Others | 26% | 25% |

**Editorial:** "We expect basic smartwatches to have the most success in emerging markets," CSS analyst Kane McKenna said, "where the high price of advanced smartwatches puts them out of reach of all but the most affluent consumers, and these low-cost basic smartwatches provide an in-road to the previously inaccessible smartwatch market." But he doesn't believe that they can grab the US or UK markets. "They might be able to scoop some of the demand out of fitness tracker and kids' smartwatch categories, but ultimately the broader buying public are more likely to wait until they can afford a more capable device."

# Epic, athenahealth are highly rated in KLAS's 2023 Independent Ambulatory Patient Portals report

**Athenahealth's portal is seen as stable and customers don't often reach out to the support team to solve issues;** product quality is ranked high and viewed as part of a comprehensive platform that helps practices save money compared to third-party solutions.

**Epic (limited data) customers appreciate the helpful support team, which resolves problems efficiently;** customers believe MyChart is a powerful and robust tool for interacting with patients at a fair price and that is highly-customizable.

**Almost all of eClinicalWorks' customers are dissatisfied,** citing unresolved tickets that were preemptively closed and a support team that prioritizes selling new services over fixing broken functionality; respondents spent a lot of time troubleshooting with patients.

**Greenway Health respondents are very satisfied with the portal's functionality overall,** especially because they don't often receive complaints from patients; Greenway doesn't oversell the portal's capabilities and they keep their promises around upcoming functionality upgrades.

**NextGen Healthcare respondents are dissatisfied** with the portal due to bugs, glitches, and workflow issues.

**Allscripts (limited data) customers mention technology improvements,** specifically highlighting the addition of post-visit summaries.

## Overall Performance Score, 2020–2022

**Vendors ordered by 2022 performance score (100-point scale)**



Hollow circle = limited data

Legend:
- Epic MyChart
- athenahealth athena Communicator
- Greenway Health Greenway Patient Portal
- Epic MyChart Community Connect
- Allscripts FollowMyHealth
- eClinicalWorks Patient Portal
- NextGen Healthcare Medfusion Patient Portal
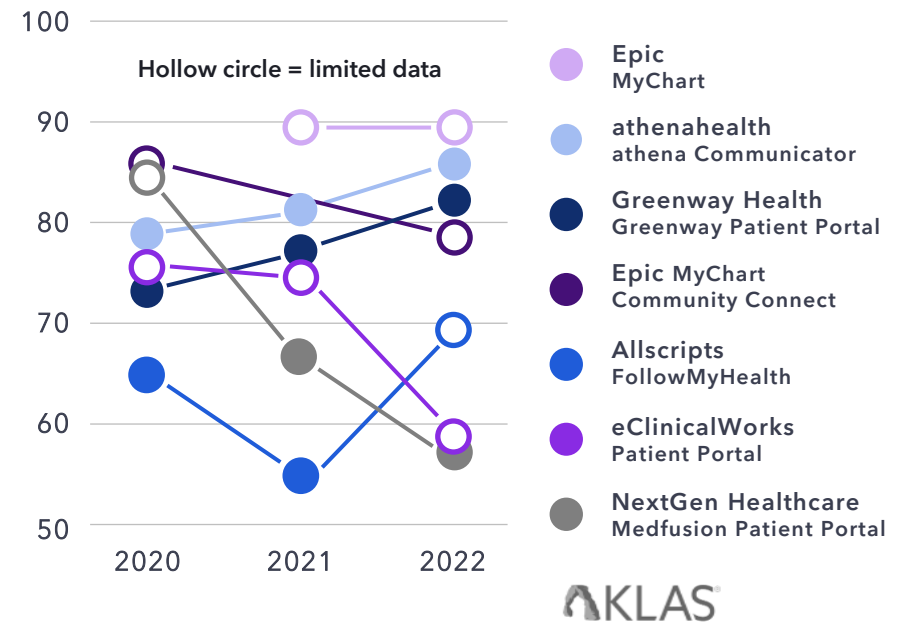
**Editorial:** Though KLAS has historically looked at how portals perform in the IDN setting, this report examines the customer experience in the independent ambulatory space (clinics not owned by a hospital/health system). Athenahealth's patient portal rated highest in Overall Performance, Value, Relationship, Culture, and Operations scores, and second highest in Product. Patient portals can influence a patient's ability to seek and receive care. Since the outbreak of Covid-19, healthcare organizations have become keenly interested in technology that gives patients ownership of their health and enhances office efficiencies.

# Retail health headlines:

## Best Buy launches hospital at home program as Walmart, Walgreens expand clinic footprints

**BEST BUY.**

### Best Buy will set up in-home hospital care through a new deal with Atrium Health

The consumer electronics retailer struck a three-year deal with Atrium Health, a North Carolina-based healthcare system, to help enable a hospital-at-home program

Best Buy's Geek Squad will go to patients' homes, set up technology that remotely monitors their heart rate, blood oxygen level, or other vitals and train the patient or others in the home how to use the devices

Data would then be shared securely with doctors and nurses through the telemedicine hub from Current Health, which Best Buy acquired for $400m in 2021

**Walmart**

### Walmart Health plans clinic expansion in 2024, pushing into two new states

The company plans to open 28 new Walmart Health centers in 2024, bringing its number of total locations to more than 75

Walmart Health will open clinics in Missouri and Arizona for the first time, while deepening its presence in Texas by expanding in the Dallas area and growing into Houston

The medical centers, which are geared towards patients with no or poor insurance coverage in underserved areas, are located next to or inside Walmart Supercenters, offering a range of services, including primary and urgent care, labs, X-rays and diagnostics, dental, optical, hearing, and behavioral health in one location

**Walgreens**

### Walgreens-backed VillageMD acquires Connecticut medical group

VillageMD, which is majority-owned by Walgreens, acquired Starling Physicians, a primary care and multi-specialty group in Connecticut

Starling operates more than 30 locations throughout the state offering primary care and a range of specialties including cardiology, ophthalmology, endocrinology, nephrology and geriatric care

The acquisition expands VillageMD to more than 700 medical centers, as Walgreens continues to invest in expanding its clinical footprint

**Editorial:** In the first wave of this trend, retailers were more focused on urgent care or one-off visits for vaccines. In recent months, retailers are investing in end-to-end primary care. In January, CVS Health announced a plan to buy Oak Street Health, a primary care group focused on Medicare patients. Amazon, CVS and Walmart have made some of the most consequential moves by combining their massive retail footprints with assets like primary or urgent care sites, pharmacies, and some sort of relationship with insurers. Other companies like Rite Aid, Albertson's, and Dollar General have launched programs in healthcare delivery as well.

# Vertically integrated payers see steady growth across all segments with the largest making significant investments in provider footprints

*UnitedHealth Group continues to lead the way, not only as the largest US payer, but also the most vertically integrated, growing its OptumCare provider business by over 30% last year.*

**Playing catch-up, the other payers have also shown willingness to spend large sums on provider acquisitions,** with CVS dropping nearly $20b on primary care company Oak Street and home health company Signify last year.

**UHG and Humana also recently spent over $5b each, on their own home health companies,** in pursuit of lower cost settings for treating their Medicare Advantage enrollees.

**Cigna and Elevance have not been as active in the M&A space of late,** prompting Cigna investors to question the CEO on whether the company may be at a competitive disadvantage.

## Annual revenues of major payers, by segment *($billions)*

UNITEDHEALTH GROUP · ❤CVSHealth · Cigna · Elevance Health · Humana

| Segment: Avg. growth: | Insurance **11%** | PBM **9%** | Provider **34%** | Other **8%** |
|---|---|---|---|---|

**UnitedHealth Group**
- 2021: 380 (223, 91, 54, 12)
- 2022: 435 (250, 100, 71, 15)

**CVS Health**
- 2021: 335 (82, 153, 100)
- 2022: 367 (91, 169, 107)

**Cigna**
- 2021: 174 (41, 121, 12)
- 2022: 181 (40, 129, 12)

**Elevance**
- 2021: 157 (122, 25, 10)
- 2022: 180 (138, 29, 13)

**Humana**
- 2021: 83 (81, 2)
- 2022: 93 (89, 4)
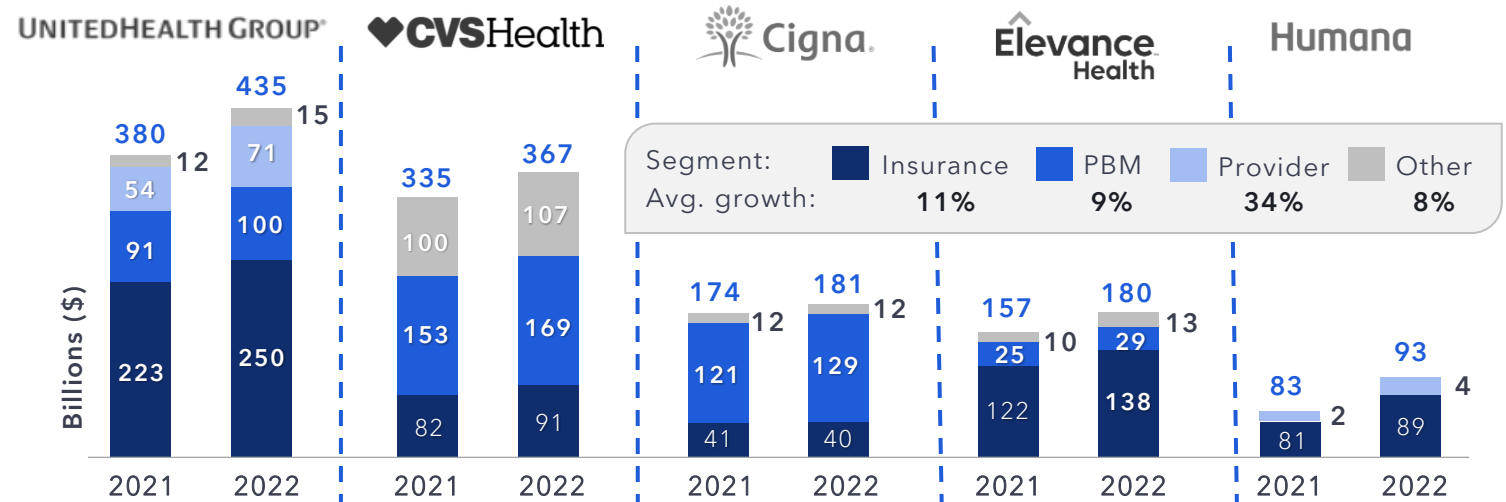
### Notable recently announced or closed transactions:

- LHC GROUP / CHANGE HEALTHCARE — $5.4b / $7.8b
- Oak St. Health / signify health — $10.6b / $8b
- MDLIVE — undisclosed
- BioPlus Specialty Pharmacy / myNEXUS — undisclosed
- Kindred at Home — $5.7b

**Editorial:** Gist Healthcare, independent strategic advisory service, which created the infographic above, says the race is on to create full-stack, vertically integrated healthcare platforms, illustrated by the approach of the large payers. Looming even larger than UHG, CVS Health, and the like: Amazon and Walmart, both of which are actively pursuing their own platform visions in healthcare. A deeper look at UHG's strategy is featured in the Et Cetera section.

# Fast Company selects the **most innovative healthcare companies of 2023**

| Rank | Company | Segment | Funding | What they do |
|------|---------|---------|---------|--------------|
| 1 | **Folx Health** | LGBQT+ telehealth | $60 million | Healthcare startup for LGBQT+ individuals, offering both virtual primary care and queer-specific services from specialized doctors |
| 2 | **Cityblock Health** | Underserved populations | $891 million | Blends primary care, behavioral health, and chronic disease management services, taking into account environmental and societal factors that can lead to chronic health conditions |
| 3 | **Maven Clinic** | Women's health | $293 million | Focused on women's and family health, offering a range of benefits, from basic OB/GYN visits to egg freezing, genetic counseling, and lactation consultations |
| 4 | **Hazel Health** | Pediatrics | $51 million | On a mission to ensure all children can get high-quality care, regardless of hurdles like family income, insurance status, and other social determinants of health—right through their schools |
| 5 | **Wisp** | Telemedicine abortion | Acquired by WELL Health | Medical abortion service by delivery, including a phone line with 24/7 access to a care team; currently available in nine states; 620k patients in 2022 |
| 6 | **Bicycle Health** | Addiction | $87 million | Offers telehealth treatment allowing patients to meet with a team of experts and get a prescription for suboxone, one of the safest and most effective ways to treat opioid use disorder |
| 7 | **Overjet** | Dental imaging | $80 million | Artificial intelligence software that analyzes and annotates x-rays, helping dentists make diagnoses; expects to cover over 100 million patients in 2023 |
| 8 | **Level Ex** | Physician training | $17 million | Creates video games that train doctors on different procedures and treatment methods, including intubations and diagnosing cardiology and dermatology cases |
| 9 | **DiRx** | Discount medications | $15 million | Focused on making prescription drugs more affordable by buying generic drugs directly from manufacturers and passing those savings onto customers |
| 10 | **Oula** | Pregnancy | $22 million | Oula's collaborative care model brings OB/GYNs and midwives together in the company's clinic for prenatal, birth, and postpartum care; accepts all major insurance plans |

**Editorial:** For the list, Fast Company selected 540 firms making the biggest impact across 54 categories, including artificial intelligence, augmented and virtual reality, gaming, and healthcare. OpenAI, McDonalds, and Airbnb were its top three picks overall. In healthcare, the publication found several companies focused on making care more equitable—for transgender individuals (Folx Health), women (Maven Clinic), children (Hazel Health), and lower-income patients (Cityblock Health)—by companies that are tailoring their offerings to communities that have traditionally been poorly served.

**FAST COMPANY**

CIRCLESQUARE

# FTC fines GoodRx and Teladoc's BetterHelp over data misuse, forcing companies to face new regulatory challenges

**FEDERAL TRADE COMMISSION**

The Federal Trade Commission has started cracking down on digital health companies for allegedly sharing consumers' health data for advertising purposes

**Prescription discounter GoodRx settled with the FTC for $1.5 million for deceptive advertising practices, while Teladoc-owned BetterHelp agreed to pay $7.8 million and change a variety of its business practices to resolve allegations that it shared consumer data with third parties despite telling customers it would not**

BetterHelp said the settlement is not an admission of wrongdoing and that it did not share patient names or their clinical information with third parties

Both companies are prohibited from sharing consumer data with third parties for advertising purposes and require them to get explicit consent from consumers for any other kind of data sharing

**Sharing personal consumer data, including health information, in order to retarget ads to people who once showed interest in a product is a widespread practice**

Since 2020, the FTC has taken several actions to protect consumer health data collected online and in apps; previously, the agency brought cases against period tracking app Flo Health and data broker Kochava

**Earlier this month, digital prescribing startup Cerebral admitted that it inadvertently shared sensitive health information with outside advertisers like Meta and Google, breaching HIPAA laws**

For years, telehealth companies have used free tracking technologies known as pixels — provided by big technology companies like Google, Meta, and TikTok — to gather data about customers' behavior on the site, which can then be used to target ads later

A group of Democratic Senators proposed expanding HIPAA to prevent companies from using identifiable health information for advertising at all

**Editorial:** Scott Loughlin, partner at Hogan Lovells, who also leads the law firm's global privacy and cybersecurity practice, called the FTC's action "groundbreaking." He points out that FTC is trying to fill a hole created within the HIPAA legal landscape since it doesn't cover certain orgs that operate and process sensitive health information. As well, the OCR, the primary enforcer of HIPAA, doesn't have jurisdiction over certain consumer-oriented healthcare orgs. "The FTC does not typically issue rules and regulations. Instead, they often will put out guidance," he said. "And then they'll support that guidance through specific types of enforcement actions, almost creating a common law of FTC enforcement, which puts the community on notice that this is the expectation."

# Fertility unicorn Kindbody leads the month in femtech funding

## kindbody

### Fertility
#### $100 million

Kindbody operates 31 fertility clinics and provides family-building benefits for employers

Company aims to make fertility and family-building care more accessible by serving people wherever they are—virtually through telehealth, in person at clinics, in the workplace or at home

Fertility benefits provider for 112 employers, covering more than 2.4 million lives; last year, the company added 42 large employer clients, including Walmart

$281 million raised; $1.8 billion valuation

## emulait™

### Baby feeding
#### $11 million Series A

Emulait's baby bottle system uses 3D scanning technology to biomimic the structural anatomy of a mother's breast and nipple anatomy

Bottle is designed to simulate the experience and benefits of breastfeeding, closing the gap between breast and bottle and eliminating the problem of nipple confusion

Moms take digital scans of their breasts to create a personalized feeding system using one of 25 bottle top variations

$16 million raised

## Gynoveda
*ayurveda for women's health*

### Holistic remedies
#### $10 million Series A

India-based Gynoveda aims to make Ayurveda-based self-care solutions for gynecological and lifestyle-related disorders accessible

Products for infertility, menstruation, PCOS, hair loss, pigmentation, and more

Currently sells its products direct-to-consumer on its own website and on various other online marketplaces and plans to build out its retail presence

Every product includes unlimited doctor consultations, a diet book, and access to webinar sessions

## Iron HEALTH

### Virtual care
#### $4.5 million Seed

Iron Health is a tech-enabled women's health platform that acts as a virtual extension of an OB/GYN's practice, offering connectivity between primary and specialty care while assisting with coordinated care and virtual services

Provides patients with virtual visits, direct messaging and access to an OB/GYN Iron Health team member, including NPs, registered dieticians, clinical social workers, and registered nurses

First venture investment for the March of Dimes Innovation Fund

## ma(+)e

### Fertility
#### $4.2 million Series A

Mate partners with OB/GYNs in underserved markets or underserved communities within broader markets, to bring fertility services back into their practice rather than being referred out and having patients travel great distances to get treatment

Provides both practical and logistical support and education for those delivering treatment as part of its program

22% above clinical national average clinical pregnancy rates; 30 to 40% less expensive than other providers

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**Editorial:** Also this month, OCA Ventures offers a look at the global fertility market. Although employers and health plans are increasingly subsidizing costs of fertility treatments, coverage is still insufficient. "Reproductive health should not be treated in a vacuum," the authors said, "but rather integrated into the broader preventative healthcare and maintenance plan." The article includes a robust market map highlighting many of the companies in the segment. Elsewhere, Alice Zheng, principal at RH Capital, discusses why the women's digital health sector has continued to grow and what's next for innovations. "We're at an exciting inflection point," she says, "where things are starting to change, and women's health is becoming more of a topic."

# Telehealth for behavioral health spiked 45-fold since Covid, as investments in the segment declined

**Behavioral health demand soared during the pandemic,** according to a new report from Trilliant Health.

**By the second quarter of 2022, behavioral health visit volumes were 18% higher than pre-pandemic levels.** Additionally, demand for these services grew faster than the national average in nine of the ten largest metropolitan areas.

**Prior to the pandemic, 1% of all behavioral health visits were performed via telehealth,** but as of Q2 2022, 33% of all visits were conducted through telehealth. This is a 45-fold increase.

**Simultaneously, behavioral healthcare began to account for higher shares of telehealth use over the course of the pandemic.**

**In Q2 2019, 34% of telehealth visits were related to behavioral healthcare.** By Q2 2022, that figure jumped to 64%, an increase of 30 percentage points.

**Among payers, traditional Medicare recorded the highest share of behavioral health services delivered via telehealth,** with these visits rising from less than 2% in the first quarter of 2019 to 49% in Q2 2022.

**Even as demand and use of behavioral health services grew,** investments in digital behavioral healthcare declined.

**Investments in the behavioral health sector, totaled $2.6 billion in 2022,** a 53% drop from 2021. In addition, the number of deals decreased from 354 in 2021 to 289 in 2022 (see graph below).

**DTC virtual behavioral health providers offer talk therapy at a lower price point** compared to the average blended charge amounts for both 60-minute telehealth ($180) and in-person ($178) psychotherapy.

## Annual digital health deals in behavioral health, by quarter

**CB**INSIGHTS

| 2018 | | | | 2019 | | | | 2020 | | | | 2021 | | | | 2022 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 45 | 53 | 37 | 35 | 56 | 48 | 68 | 49 | 50 | 70 | 75 | 69 | 78 | 92 | 93 | 91 | 84 | 74 | 74 | 57 |
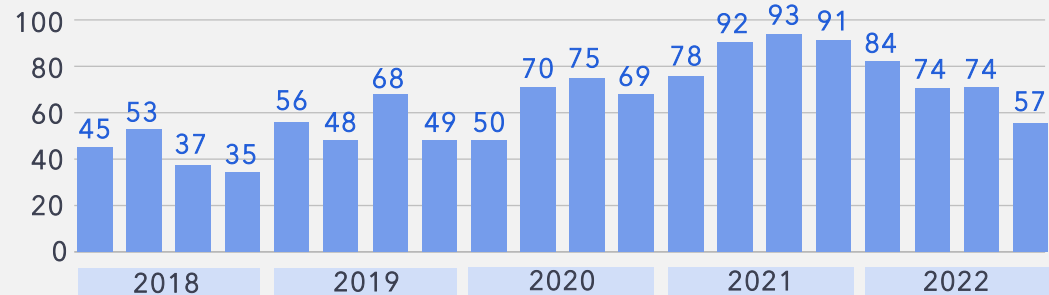
**Editorial:** Trilliant's 2023 Behavioral Health Report analyzed data from the company's proprietary all-payer claims database and various third-party resources, including individual health plan and company financial statements, the Health Resources & Services Administration Workforce Projections, and the Substance Abuse and Mental Health Services Administration. The full graphic-rich 60-page report is available for free at the link below.

# Sleep segments see funding for a pair of startups plus a large-scale study

## BetterNight raises $33 million growth round for virtual sleep care platform

BetterNight provides a full continuum of care for patients with sleep disorders, from consultation to diagnosis to treatment to long-term coaching

Focused on addressing obstructive sleep apnea (OSA) and insomnia to boost clinical outcomes, lower healthcare costs, and improve patient lives

Partners with physicians, health systems, clinics, and health plans to provide digital services in patient's homes

100k patients treated

$52.6 million raised

## Belgium-based home sleep apnea testing company raises $20 million

Sunrise's FDA-cleared sleep apnea technology works by placing a monitor on the patient's chin, then uses AI to analyze mandibular jaw movements, which can help calculate respiratory disturbance found in sleep apnea

It also evaluates airflow and oximetry during sleep to aid in diagnosing sleep-related breathing disorders and sleep apnea

Professional sleep apnea tests often involve overnight monitoring at a sleep center, but home testing companies have emerged that allow patients to test for this disorder at home

$25 million raised

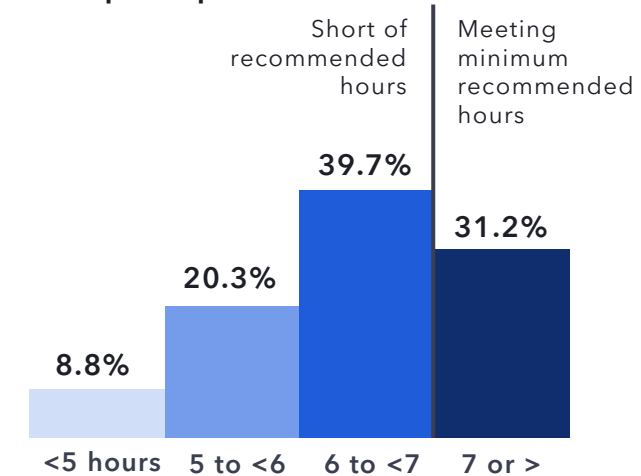## Apple Watch study reveals few are getting enough sleep

The study, run by Brigham and Women's Hospital using opt-in data from Apple Watch users, studied 42,000 people

It studied 2.9 million recorded nights of sleep and found that just 31.2% of people were getting the recommended seven hours of sleep per night (see chart at right)

Getting less than seven hours of sleep per night is linked to a host of negative health outcomes – and between seven and nine hours is recommended by the American Heart Association.

Data is part of the Apple Heart and Movement Study

**Sleep duration amongst study participants**

Short of recommended hours | Meeting minimum recommended hours



| <5 hours | 5 to <6 | 6 to <7 | 7 or > |
| 8.8% | 20.3% | 39.7% | 31.2% |

**Average time asleep:** 6 hours 27 minutes

**Editorial:** The sleep space is crowded, with most of the big wearable companies offering sleep tracking on their fitness trackers, but where segment-specific devices can offer a more robust feature set. Eight Sleep, Bryte, Sleepace and others offer on-the-bed solutions. In sleep-specific wearables, Dreem makes a head-worn device and Kokoon makes sleep-sensing headphones. Philips, Signifier Medical Technologies, and ResApp are focused on sleep apnea. Onera makes clinical- grade sleep-tracking wireless sensors. Sleepio (from Big Health) and Somryst (from Pear Therapeutics) are taking a different approach by offering CBT- focused insomnia programs. McKinsey estimates the sleep-health industry to be worth between $30b- $40b annually.

# The Medical Futurist lays out the landscape of skin-checking apps

**The most useful skin-checking apps allow users to take pictures of their suspicious skin lesions,** upload the pictures to a server, with images first evaluated by an AI algorithm and results later validated by a dermatologist.

**These solutions are an emerging trend,** as they address an existing demand, rely on already existing infrastructure from the patients' side, allow fast and reliable evaluation of skin lesions, eliminate unnecessary medical visits, and assist dermatologists, who can check significantly more cases in a given amount of time.

**The need for such applications is obvious:** Skin cancer is one of the most common cancer types worldwide: one in five people in the US is expected to receive a skin cancer diagnosis during their lifetime.

**Some apps are purely for self-tracking,** allowing users to take pictures of moles and tracking changes over time (**MoleMapper**, **UMSkinCheck**).

**Others do the same but are AI-backed,** where the algorithm will compare if there is a change in the moles (**Miiskin**, **CUBE**).

**There are also differences in what kind of skin problems various apps analyze,** with many are only interested in skin cancer (like **SkinVision**), while others can diagnose a wide variety of skin conditions (like **aysa** or **Skinive**).

**Yet another difference is if they offer an evaluation by a human dermatologist,** which some do (**Scanoma**, **SkinIO** or **DermaDetect** for example), but most apps don't. Note that although the apps offering this service can be downloaded for free, the actual consultation with a licensed dermatologist always comes with a price tag.

| App | iOS/Android |
|---|---|
| aysa | Both |
| MoleMapper | iOS |
| UMSkinCheck | Both |
| Snapmole | iOS |
| Skin-Check | iOS |
| Scanoma | Both |
| CUBE | iOS |
| SkinIO | Both |
| SkinVision | Both |
| MiiSkin | Both |
| AI Dermatologist | Both |
| MySkinPal | iOS |
| SkinScreener | Both |
| DermaDetect | Both |
| Skinive | Both |

**Editorial:** The Medical Futurist believes skin checking apps are on the shortlist of possible AI pioneers penetrating healthcare. To do so, they believe solutions must meet four criteria: (1) Has to offer low-hanging fruits; (2) Needs to provide definitive answers to specific medical questions; (3) Can be efficiently used without years of special training; (4) Can be fairly easily regulated.

# **Recent FDA approvals include** a focus on migraines, PTSD, Parkinson's monitoring on Apple Watch, and more

## NeuroRPM
### Parkinson's monitoring
NeuroRPM scored clearance for its AI-enabled remote monitoring app that utilizes an Apple Watch to track common Parkinson's symptoms such as bradykinesia, tremor and dyskinesia; algorithms continuously scan the wearable's data to monitor symptoms and health metrics

## tytocare™
### Wheeze detection
Clearance adds AI lung sound analysis algorithms to TytoCare's database of lung sounds – the largest of its kind across the globe; designed to aid in the clinical assessment of lung sound data, enabling clinicians to accurately diagnose respiratory conditions remotely

## theranica
### Migraine prevention device
Prescription DTx developer Theranica announced it received clearance to use its Nerivio device for migraine prevention in patients 12 and older; wearable is worn around the upper arm and delivers electrical pulses to stimulate small peripheral nerves

## Dexcom
### Continuous glucose monitoring
The clearance is for Dexcom's G7 integrated continuous glucose monitor, which includes real-time connectivity that can drive integrated insulin delivery systems, connect with wearables like the Apple Watch and integrate with popular digital health apps

## GARMIN.
### ECG monitoring
Garmin has received FDA approval for its electrocardiogram feature but details for how it will be used are unclear; presumably, the function will be used for Afib detection, as seen on Fitbit, Apple Watch, and Samsung smartwatches

## Click Therapeutics
### Migraine DTx
Click Therapeutics received Breakthrough Device Designation for CT-132, Click's prescription digital therapeutic, which is under development as an adjunctive preventive treatment for episodic migraine in patients aged 18 years and older

## Polso
### RPM wearable
Israeli company ChroniSense Medical received clearance for its Polso wrist-worn wearable that enables clinicians to monitor patients' vitals, including blood oxygen saturation, pulse rate and respiration rate; watch is being marketed for RPM and use in decentralized clinical trials

## GrayMatters Health
### PTSD neuromodulation device
GrayMatters Health received clearance to market its flagship product, which is a self-neuromodulation digital therapy for PTSD; uses neurofeedback on specific biomarkers to help patients identify and utilize their own mental strategy for lowering their emotional response

**Editorial:** The approvals above run from from December through March and include two focused on migraines (Theranica, Click Therapeutics), several focused on monitoring for various conditions (NeuroRPM, Polso, Garmin), detecting wheezing (TytoCare), continuous glucose monitoring (Dexcom), and lowering PTSD response (GrayMatters Health).

# Digital health solutions need a **framework for tallying clinical robustness**

**Most digital health companies lack clinical robustness;** 44% of companies in a Rock Health cross-sectional observational analysis had a clinical robustness score of 0.

**As clinical risk increases, so does the necessity of clinical validation studies,** but the validation process can be expensive, a challenge for many digital health companies.

**While financial outcomes are not always tied to clinical outcomes and vice versa,** a successful digital health startup must be able to demonstrate both.

**There needs to be a balance between the speed at which digital health solutions are hitting the market** and the technical, clinical, and system utility of such solutions.

**A potential framework healthcare stakeholders can use to evaluate the robustness of digital health solutions is the Digital Health Score Card,** which is an objective, transparent, and standards-based evaluation of digital health solutions; aggregate scores within each domain would be used to create a global composite score, much like a FICO credit score.

**Patients, physicians, employers, and payers could use the Digital Health Score Card** to evaluate and compare digital health solutions to ensure they're making a sound investment in a solution with the greatest return on investment.

## Potential framework for a digital health score card

| Technical | Clinical | Usability | Costs |
|---|---|---|---|
| Assessment of performance when compared to technical gold standard (e.g., manual blood pressure cuff reading) | Clinical appraisal of evidence supporting whether solution has impact on defined clinical outcome | Assessment using standardized usability framework evaluation performance across basic characteristics like helpful, effective, learnable, likable | Purchase price |
| | | | Resources including time required for training, set-up, implementation, and management of solution |
| Testing of security features | Comparison to existing clinical gold standard | | |
| | | | Anticipated cost impact on clinical outcome of interest |
| Testing of interoperability features | Real world testing or simulation performance in a target population | | |

**Assessment of satisfying stakeholder defined requirements**

**Global Digital Health Score**

npj

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**Editorial:** Gastroenterology startup Oshi Health is a prime example of a digital health company gathering evidence that their solutions are clinically effective. They performed a prospective clinical trial to evaluate the effectiveness of their nine-month multidisciplinary GI care program. 332 participants with IBD, IBS, and FGID enrolled. The study found significantly higher levels of patient engagement, satisfaction, and symptom control, while also significant reductions in GI-related costs per patient.

# Neurotech startups raise over $100 million as others launch, partner

**Hopper health**

## Hopper Health launches to offer primary care for neurodivergent adults

The startup's digital-first platform connects adults with conditions like autism, ADHD, OCD or Tourette's with care teams trained to help with their specific needs

Patients will have access to healthcare providers trained in the communication and sensory needs of the neurodivergent population

New York-based platform is directly available to consumers in their home state and in California via a $99 monthly membership

One in five adults in the US is neurodivergent

**rune labs**

## Rune Labs partners with biopharma company for Parkinson's research

BlueRock Therapeutics, a clinical-stage biopharmaceutical company and subsidiary of Bayer AG, will utilize Rune Labs' clinical development platform, StriveStudy, for clinical trial enrollment, real-world evidence data generation and monitoring patient compliance in a study of patients with Parkinson's

BlueRock will jointly use Rune Labs' Apple Watch-enabled data-collection and remote patient monitoring tool StrivePD, which uses Apple's Movement Disorder API to track tremors and dyskinesia

App received FDA 510(k) clearance last year

## Neuro-related funding

| Company | Funding round | What They Do |
|---|---|---|
| Cognito Therapeutics | $73m Series B | Sensory stimulation to evoke gamma oscillations, believed to play a part in memory operations in Alzheimer's |
| SpectrumAI | $20m Series A | Tools to improve communication, social and learning skills for those with conditions like autism |
| Apollo Behavior Services | $4.2m Series unknown | Applied Behavior Analysis (ABA) via center-based, in-home and telehealth services for patients with autism |
| ABS Kids | $3.5m Series unknown | ABA, psychological assessments, and community integration services for children with autism |
| Beaming Health | $2m Series unknown | Marketplace for those seeking treatment for pediatric autism and other neurodiverse conditions |

**Editorial:** The New York Times reports that the prevalence of autism in American children rose between 2018 and 2020. The month's funding of four separate startups focused on autism drives home that there is a gap in the marketplace. Whereas platforms for diagnosing or managing Alzheimer's and Parkinson's are growing sub-segments within the neuro umbrella, autism is quickly growing into its own segment. Other digital health companies working to improve health options for neurodivergent individuals are VR behavioral therapy platform Floreo, OCD identification and management platform NOCD, and UK-based Inflow, which provides a science-based app that enables ADHD patients to self-manage their disease using cognitive behavioral therapy strategies.

# Acquisitions in **consumer health segments**

### WeightWatchers moves into the Ozempic market with $106 million Sequence purchase

Weight-management company is buying Sequence, which is a subscription service that offers telehealth visits with doctors who can prescribe obesity drugs for $99/month; Sequence has about 24,000 members and also offers an app to track weight loss and meetings with dietitians and fitness coaches

### Maven Clinic acquires Naytal, a UK-based virtual clinic focused on maternal health

Maven, the world's largest virtual clinic for women's and family health, acquired London-based Naytal, which provides on-demand access to women's and family health experts; the UK is Maven's largest market outside of the US, with more than 70 employer clients

### Transcarent acquires portions of virtual care company 98point6 for up to $100 million

Transcarent is buying 98point6's virtual care platform and clinical customer base of 3.5 million people; sale price will reach $100 million if 98point's customer-related targets are met; Transcarent will make a separate investment in 98point6's streamlined technologies business

### Cosmos Health acquires telemedicine platform ZipDoctor

Cosmos Health, which offers a proprietary line of nutraceuticals, branded generics, OTC medications, and medical devices, will acquire ZipDoctor, a direct-to-consumer subscription-based telemedicine platform, offering 24/7 access to physicians and therapists

### Digital mental health company SonderMind buys Mindstrong's remaining tech assets

Mindstrong's app allows patients to communicate with therapists through text and phone; company stopped providing service on March 10 and the deal ends Mindstrong's six-year run in which it raised $160 million; Sondermind will hire 20 of Mindstrong's 120 employees

### Startup from Whole Foods founder buys virtual service focused on healthy living

Love.Life, focused on the convergence of food, medicine, and wellness therapies founded by Whole Foods founder John Mackey, acquired Plant Based TeleHealth, a service focused on the prevention and reversal of chronic disease utilizing a plant-based diet

**Editorial:** Of note is the collapse of Mindstrong, a high-profile mental health solution that aimed to scan a user's text conversations for digital biomarkers, like errors and typing and scrolling speed to predict the onset of mental illness. But former clinicians and product designers told STAT that the function was never fully developed. Mindstrong laid off most of its employees and reportedly stopped treating patients in early March. Also notable is WeightWatchers' purchase of Sequence, a telehealth provider of weight loss drugs. Some digital health companies have come under fire for promoting the drugs as a quick weight-loss approach for people who aren't obese and don't have diabetes. WW says it sees the new obesity and diabetes medications as an adjunct to its existing offerings.

*Source: Storylines are linked to text boxes, logos to company websites*

# Additional funding in consumer health segments

| Company | Segment | Round/Total | What they do |
|---|---|---|---|
| **Gravie** | Insurance | $179m Series F / $343m | Third-party administrator for certain health insurance benefits. It doesn't have a network of providers of its own, so it "rents" networks from big health insurers like Aetna and Cigna. |
| **Artera** | Prostate cancer | $90m Venture / $90m | ArteraAI Prostate Test is the company's flagship offering. The AI-powered tool is used to help determine what therapies will prove most effective in prostate cancer. |
| **Assured Allies** | Aging/insurance | $42.5m Series B / $65m | Platform combines machine learning and predictive analytics with the latest science of aging to offer aging programs, retirement products, and support aging at home. |
| **Clever Care** | Medicare Advantage | $41m Series C / $139m | Culturally sensitive Medicare options combining the healing therapies of Eastern medicine with the innovative practices of Western medicine. |
| **Bend Health** | Pediatric behavioral health | $32m Series A / $32m | Provides telemental health services to children and young people up to age 17. Clinicians available in all 50 states and Washington DC. |
| **Fire1 (Ireland)** | Cardiac monitoring | $25m Venture / $82m | Pen cap-sized implanted sensor for remote monitoring of heart failure patients. Implanted inside the inferior vena cava (IVC) in the abdomen, it gives off an alert when it senses fluid buildup. |
| **Maribel Health** | Hospital at home | $25m Series A / $25m | Designs, builds, and operates turnkey advanced home and community care models for health systems facing staffing and capacity constraints. |
| **Vital** | Communications | $24.7m Series B / $46m | Using artificial intelligence and natural language processing, the company educates patients during their emergency department and inpatient visit. |
| **HelloSelf (UK)** | Mental health | $20m Series B / $31m | Digital therapy platform combines data, outcomes, and feedback to create tailored psychological self-care plans for its members. |
| **OpenLoop** | Telehealth | $15m Series A / $27m | White label telehealth solution with 6000+ clinicians in all 50 states, in 30+ digital health specialties and 15 different languages; 250m covered lives. |

**Editorial:** Other funding for the month includes  $12m Series A for Mindset Health (DTx apps for anxiety, sleep, and chronic pain), $12m Series A for Fount (personalize performance optimization), $11.5m Seed for Zorro (health benefits), $8m Seed for Aiberry (AI for mental health screening), $8m Series A for Safkan Health (earwax removal device), $6.5m Series A for Ryse Health (diabetes), $6m Seed for Wave Life (mental health for Gen Z), and $5m Series A ext for Mantra Health (digital mental health for colleges and universities), $4.3m Series A for Fort Health (virtual mental health clinic for kids), $3.6m Seed for Healium (VR/AR for anxiety), $3.5m Seed for Alermi (DTC telehealth for allergy care), $3.2m Seed for Sensate (relaxation device), and $3.2m pre-Series A for VisionHealth (inhaler support).

# Et
# Cetera

# Drop in Chinese investments brought down digital health VC funding in APAC in 2022

**2022 saw VC funding in Asia-Pacific (APAC) decline by 41% compared to 2021.** The decline was largely due to a fall in China's investment by 66% year-on-year – a five-year low – amid the pandemic.

**APAC is home to 27% of the digital health ventures in the world,** making it the second-largest ecosystem.

**Funding for Northeast Asia (including South Korea and Japan) doubled to $1.9b however,** surpassing China and South Asia, which dropped by 30% compared to 2021.

**M&A activity in the region decreased by 33% year on year.** Still, there were some notable acquisitions, including ResApp (Australia) by Pfizer, Total Brain (Australia) by Sondermind, 3Sunny (Japan) by Teijin Pharma, and Medo (Singapore) by Exo.

**Top funding areas for 2022** were research solutions ($1.97b), online marketplace ($883m), medical diagnostics ($804m), patient solutions ($725m), and health management solutions ($285m).

**The region's digital health landscape still saw some significant flow in investment, particularly in India and Singapore.** Largest deals included Insilico Medicine ($1.2b), Biofourmis ($300m), PharmEasy ($250m) and WeDoctor ($149m).

## 2022 APAC funding distribution

| Country | % of funding | Total funding | YoY % change |
|---|---|---|---|
| China | 30.6% | $1.77b | ⬇ |
| India | 23.7% | $1.26b | ⬇ |
| Hong Kong (SAR) | 21.3% | $1.32b | ⬆ ⬆ |
| Singapore | 9.5% | $537m | ⬆ |
| Japan | 5.1% | $296m | ⬆ |
| South Korea | 4.8% | $279m | ⬇ |
| Australia | 3.5% | $202m | ⬇ |
| Vietnam | 0.4% | $25m | ⬆ |
| Indonesia | 0.4% | $23m | ⬇ ⬇ |

| ⬆ ⬆ | ⬆ | ⬇ | ⬇ ⬇ |
|---|---|---|---|
| Increase of > +100% | Increase between +5% to +100% | Decrease of 5% to 75% | Decrease of > -75% |

**Editorial:** At the end of 2022, there were 2,305 private and active ventures founded in Asia Pacific. Over the past five years, the ecosystem has been expanding at a CAGR of 4%. Digital health ventures in APAC mainly partnered with pharmaceutical, biotech, and genomics companies, followed by academic institutions. The report, from Galen Growth and FINN Partners, available for free below, examines major shifts and outlines best practices in investment strategies comparing Asia to the world scene via 250 million data points and over 14,000 ventures.

# Digital health investments in Europe remained more stable than the US in 2022

**European digital health startups raised nearly €4.86 billion in 2022.** The level of European investment has therefore continued to grow in 2022, albeit in a more measured way than between 2020 and 2021.

**301 deals were closed, representing a 22% YoY increase in total financing** with 1000+ companies active in digital health across Europe today.

**The average funding amount increased** from €20m in 2022 compared to €17m in 2021.

**52% of the funds active in digital health are investing in early stage;** most of the new funds that joined in 2022 are investing in seed stage.

**Countries with the most funds were France (28%), UK (20%), and Germany (20%),** followed by the Netherlands.

**France has overtaken the UK as the leading European country** with a +38% YoY growth in cumulative amounts raised, reaching €1.79 billion in funding; The largest financing rounds in 2022 were all French companies: Doctolib, Alan, and DNA Script.

**While there were no IPOs in the European digital health ecosystem in 2022,** M&A activity increased by 1.7x during the year.

## Dedicated European healthcare VC funds



**Editorial:** French VC firm Karista published its third edition of the European mapping of digital health funds. Based on public information, Karista selected all the funds that invested in at least three companies belonging to the digital health sector in Europe. In addition to the mapping above, the article includes graphics focused on investment stage, country, and backing, as well as a look at super investors, firms that have invested in more than 10 digital health companies.

# Why UnitedHealth Group may be the future of US healthcare

*Technology is becoming a bigger part of UHG's value proposition and growth strategy. Its tech-forward health services subsidiary Optum accounts for over 56% of UHG's total revenue.*
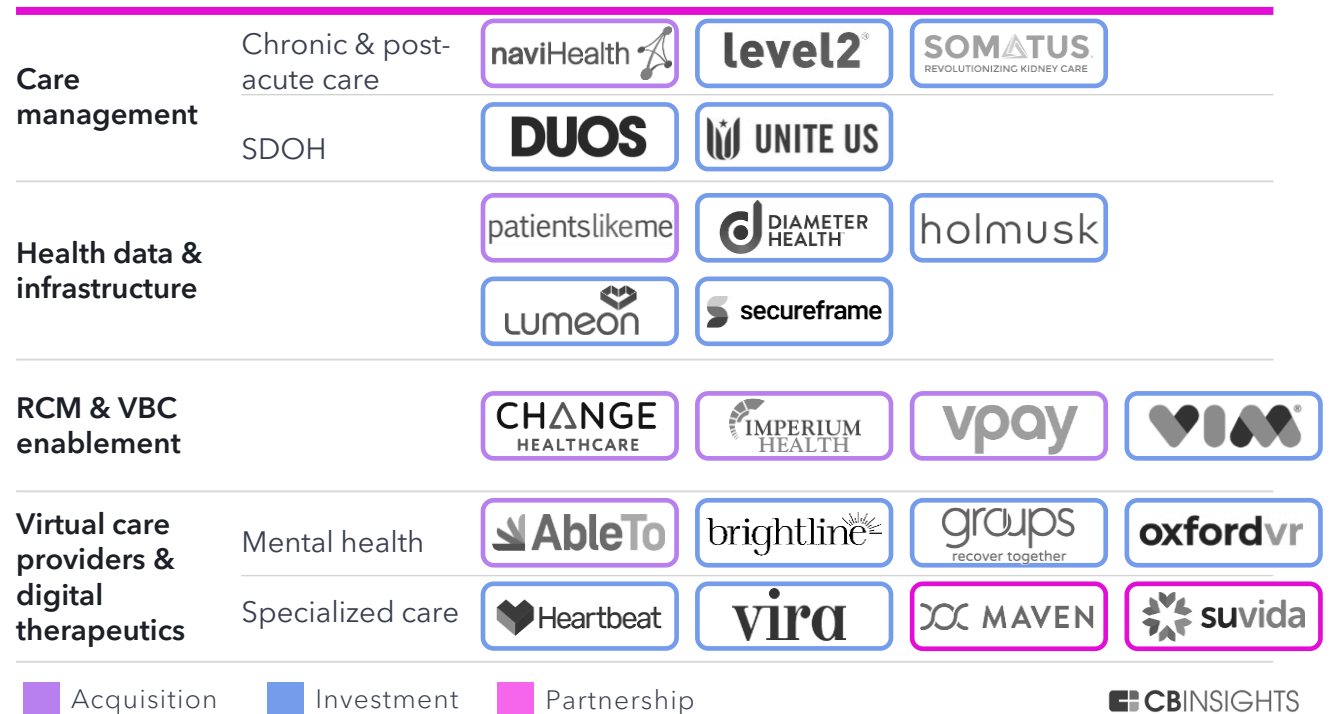
**UHG has tapped into many of the critical healthcare profit pools in McKinsey's future of healthcare report:** payer (United Healthcare), provider (Optum Health), services and technology (Optum Insights), and pharmacy (Optum Rx).

**UHG has consistently beaten its competitors regarding profits, taking in $20.6 billion in profit last year.** Its biggest competitor, Cigna, posted $6.7 billion.

**CVS is following UHGs playbook.** CVS has Aetna (payer), Caremark (PBM), CVSspecialty (specialty pharmacy), CVS pharmacy (regular pharmacy), Oak Street Health (health provider), Signify Health (home health).

**Humana is also following the playbook,** however they are exiting the commercial insurance market.

## UnitedHealth Group strategy map

| Care management | Chronic & post-acute care | naviHealth | level2 | SOMATUS REVOLUTIONIZING KIDNEY CARE |
| | SDOH | DUOS | UNITE US | |
| Health data & infrastructure | | patientslikeme | DIAMETER HEALTH | holmusk |
| | | lumeon | secureframe | |
| RCM & VBC enablement | | CHANGE HEALTHCARE | IMPERIUM HEALTH | vpay | VIM |
| Virtual care providers & digital therapeutics | Mental health | AbleTo | brightline | groups recover together | oxfordvr |
| | Specialized care | Heartbeat | vira | MAVEN | suvida |

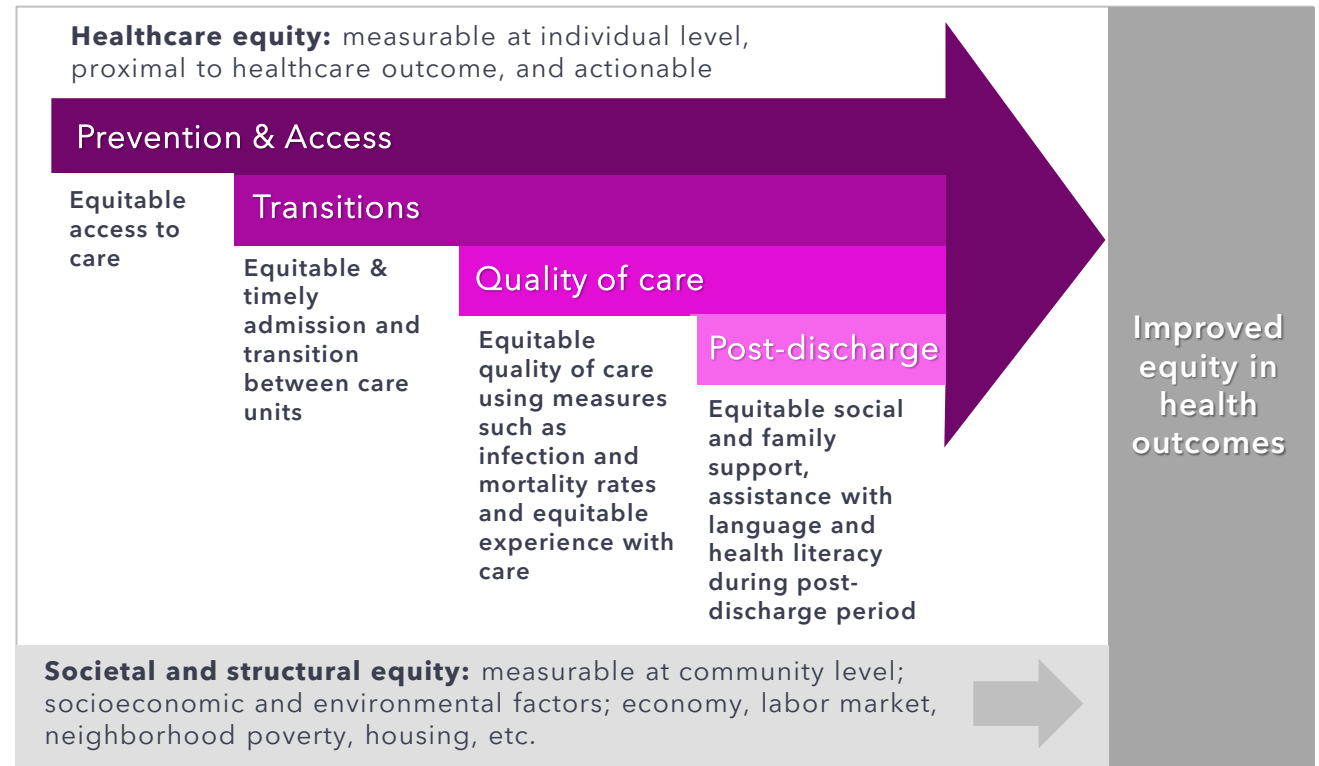Acquisition    Investment    Partnership

CB INSIGHTS

# A framework for distinguishing **health equity and healthcare equity**

**Access to care:** Readmission rates are influenced by unequal access to preventive care or timely, nonemergent surgical intervention. Racial disparities in readmission rates therefore could be a result of unequal access to preventive and routine care. Traditionally marginalized patients are more likely to be covered by Medicaid or underinsured, and many studies have shown that patients with such coverage have less access to care.

**Care transitions:** We can examine whether patients receive appropriate procedures. For example, despite practice guidelines, Black and Asian patients with gallstone pancreatitis receive fewer cholecystectomies than white patients.

**Quality of care:** Previous studies have suggested that hospital cultural competency is associated with better experience of care, especially among minority patients, and that better experience of care is, in turn, associated with lower readmission rates.

**Post-discharge period:** Addressing health-related social needs can affect readmission rates. For example, The Maine Medical Center partnered with the Southern Maine Agency on Aging to offer a specialized meal delivery program to Medicare patients at high risk for readmission.

**Healthcare equity:** measurable at individual level, proximal to healthcare outcome, and actionable

**Prevention & Access**

Equitable access to care

**Transitions**

Equitable & timely admission and transition between care units

**Quality of care**

Equitable quality of care using measures such as infection and mortality rates and equitable experience with care

**Post-discharge**

Equitable social and family support, assistance with language and health literacy during post-discharge period

**Improved equity in health outcomes**

**Societal and structural equity:** measurable at community level; socioeconomic and environmental factors; economy, labor market, neighborhood poverty, housing, etc.

NEJM Catalyst

**Editorial:** To address inequities, healthcare orgs need validated tools that are (1) measurable at the individual level, (2) proximal to healthcare outcomes, and (3) actionable. As a first step, orgs must distinguish between health equity and healthcare equity. Health equity means that everyone has a fair and just opportunity to attain their highest level of health. Healthcare equity more narrowly describes equity in the experience of accessing and interacting with the healthcare system and its organizations. Healthcare equity more directly examines whether patients have equitable access, receive equitable care, and have equitable experiences. Separating the two sources of inequity may better inform how to use measurement and address attribution and accountability accordingly.

# Companies mentioned in this report

| | | | | | | |
|---|---|---|---|---|---|---|
| 3M | Bend Health | DeliverHealth | Solutions | Mantra Health | OpenLoop | Ryse Health | Tandem AI |
| 98point6 | Best Buy | DermaDetect | Getinge | Maribel Health | OptimizeRx | Safkan Health | Tempus |
| Abridge | BetterHelp | Dexcom | GoodRx | Marker Learning | Optum | Samsung | Theranica |
| ABS Kids | BetterNight | DIH | Gravie | Mate | Oracle Health | Scanoma | Therapixel |
| Advantus Health | Bicycle Health | DiRx | GrayMatters Health | Maven | Oshi Health | ScribeEMR | Transcarent |
| Partners | boAt | Doctorly | Greenway Health | MEDHOST | Oula | Sensate | TytoCare |
| Agilon Health | Cano Health | Dolbey | Gynoveda | MEDITECH | Overjet | Sequence | UMSkinCheck |
| AI Dermatologist | Carle Health | DrFirst | H1 | Medwing | Owkin | ShareWell | UnitedHealth Group |
| Aiberry | Cerebral | Droplet Biosciences | Hangzhou Diyinga | Mend | Paige.ai | SinfoniaRx | Veradigm |
| Aiforia | ChroniSense Medical | eClinicalWorks | Hazel Health | Microsoft | PathAI | Skin-Check | VillageMD |
| AIMS | Cigna | Elation Health | Healium | MiiSkin | Patient Pattern | SkinIO | VisionHealth |
| Alermi | Cityblock Health | Elevance | Health Catalyst | Mindset Health | PatientPoint | Skinive | Vital |
| Allscripts | Clever Care | Emulait | HelloSelf | Mindstrong | Perspectum | SkinScreener | Viz.ai |
| Altera | Clevermed | Epic | Hopper Health | ModMed | Phreesia | SkinVision | Volastra |
| Answers Now | Click Therapeutics | Fire-Boltt | Huawei | MoleMapper | Plant Based TeleHealth | Snapmole | Walgreens |
| Apollo Behavior | Codametrix | Fire1 | Humana | mphrX | PocDoc | SonderMind | Walmart |
| Services | Cognito Therapeutics | Firsthand | Ibex Medical Analytics | MySkinPal | PointClickCare | Spectrum.Life | Wave Life |
| Apple | ConnectiveRx | Fitbit | Iktos | Naytal | Populus | SpectrumAI | WeightWatchers |
| AQuity | Cosmos Health | Folx Health | Iodine | NeuroRPM | Proscia | Strateos | Wellvana |
| Artera | CPa Medical Billing | Fort Health | Iron Health | NextGen | Protai | Sunrise | Wisp |
| Ascertain | CPSI | Fount | Janus | NOCD | Pulse Health | Swoop | ZipDoctor |
| Assured Allies | CUBE | Garmin | Kindbody | Noise | PulsePoint | Syndi Health | Zorro |
| athenahealth | Cureatr | Garmin | Labviva | Nuance | Qure.ai | System C Healthcare | Zus |
| aysa | CVS | GE HealthCare | Level Ex | Nucle.ai | Relevate Health | Tabula Rasa Healthcare | |
| Beaming Health | DeepIntent | GeBBS Healthcare | LS CancerDiag | OpenAI | Rune Labs | Talis Clinical | |

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