

The Al-Powered Healthcare Experience

Mapping the Patient Journey



June 2024

Contents

5 Investment Landscape

9 The Patient Journey

14 Adoption

17 Authors & Acknowledgements





Executive Summary

Reshaping the Patient Journey

More than just the latest buzzword, artificial intelligence (AI) has captured the world's attention by demonstrating limitless possibilities and rapidly becoming part of everyday life. This fast-moving technology has garnered investment across industries and from the public sector. The White House recently committed over \$3B through the "Safe, Secure and Trustworthy Development and Use of Artificial Intelligence" executive order. Few sectors stand to benefit more than life science and healthcare. Advancements in AI are providing value in this industry from improvements in administrative efficiency to patient outcomes and drug discovery. With an eye toward the patient journey, we explore the various ways AI is reshaping healthcare.

Over the last five years, AI deal activity has grown faster in healthcare than in tech overall. Today, one in four dollars invested in healthcare companies is going to companies that are leveraging AI¹. While AI in drug discovery and therapeutics are garnering outsized attention, most of the investment is going toward other applications. Administrative and clinical use cases are seeing 60% of the total AI investment² in healthcare. Therefore, this report focuses on these emerging AI applications that are impacting patients from diagnosis to recovery.

The immense cost of developing generative AI is driving consolidation in the

industry toward tech giants who are, in turn, investing more into healthcare. Some startups are finding success partnering with big tech by using their compute resources and their ability to deploy AI at scale.

The success of any AI solution hinges on overcoming adoption challenges. On the product side, it starts with clean, quality, well-structured data. On the economics side, it often begins with payers who control the purse strings. We are seeing increasing adoption among payers who are employing AI across their healthcare stacks to create efficiencies and improve patient outcomes. Access to great data will likely play a major role for the winners in this space. Companies developing partnerships with clinicians and hospitals to leverage patient data can not only access quality data to train their AI models, but will also foster future customer relationships with these clinicians. Nevertheless, the education and training of healthcare professionals is lagging behind technological advancements, creating another hurdle to adoption.

The current and future impact AI will have on the patient journey has the potential to not only lower costs, but also improve patient outcomes. While companies may face challenges to adapt to an AI-enabled future, we have never been more optimistic about the innovations we see on the horizon.



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Notes: 1) US deals in Q1 2024. 2) 2021 to Q1 2024.

Source: PitchBook Data, Inc., SVB proprietary data and SVB analysis.

Four Themes Emerging from AI in the Patient Journey¹



Administrative AI is Low-Hanging Fruit

Since 2019, the growth in healthcare Al deals is twice that of tech overall. This initial wave of AI in healthcare is largely focused on streamlining administrative burdens that augment, as opposed to change, physician workflow. This includes tasks like managing revenue cycles, establishing data interoperability and scheduling patients. Administrative Al accounts for 27% of Al healthcare investment and 42% of deal volume so far in 2024. Clinical Al faces more scrutiny due to regulatory hurdles and more difficult adoption, often requiring a workflow change to implement. For providers and payers, it's still early days for their AI strategies. Many are targeting administrative Al first since it carries less risk and leads to clear efficiency gains.



Doing the Diligence

It's not enough for companies to be the "shiny Al object." Rather, near-term financial validation and access to quality input data are crucial. While AI deal activity is relatively resilient compared to the wider ecosystem, investors and buyers are critically evaluating new AI solutions by determining how readily they'll be adopted and how much business value they truly offer. Companies that can leverage a provider's existing infrastructure in their new product may find preference among venture capitalists (VCs). For example, 70% of US providers use EPIC for electronic health records (EHRs)2 and Al companies in the EHR space may find themselves with a leg up if they establish interoperability with the EPIC system.



Startups' Flexibility Delivers Value

Organizations often favor established players when purchasing AI solutions. To overcome this hurdle, startups must clearly articulate why they're the better choice compared to larger competitors that organizations may already have as partners. Startups' flexibility is their strength. First, massive adoption and margins are not as crucial for startups as they are for established big tech. Also, the bottom-up nature of startups makes them suitable for working closely with physicians. In order to access the necessary data, Al startups often find it beneficial to co-develop features with their customers.



Patient Diagnostics Face Challenges

Especially with Al-driven diagnostic tests, companies may have a difficult time showing the "juice is worth the squeeze." Challenges abound, from navigating regulatory hoops to managing high costs and securing quality data. For startups, being nimble is important for finding alternative paths, such as risk sharing, monetization and profitability. We believe the short-term path forward is for companies to understand who is writing the check and where payers define value.

Demonstrating the cost savings for payers may help companies get the revenue to justify costs until payers broaden their perspective on paying for diagnostics.





Investment Landscape

Mapping Al in Healthcare¹

This report focuses on AI in the patient journey, which is AI or AI enablement related to patient care and/or provider operations.

Since 2021, patient journey use cases account for 60% of healthcare AI investment while therapeutics and research account for 40%.

Patient Journey	Indications
-----------------	-------------

Administrative	Total VC Investment ² in Administrative AI Since 2021	\$6.6B
What These Companies Are Working On	Notable Companies	VC Investment Since 2021
Virtual Assistants Focus on patient engagement, intake, scheduling and medication adherence. They may even help with post-visit follow up. They often take the form of a chatbot or generative AI nurse.	innovaccer MEMORA Mealth Woebot Health Pager Hippocratic Al Do No Harm — UnitelyCare NOOM	\$2.6B
Notetaking and EHR Documentation Transform patient-clinician conversations into clinical notes to assuage the burden of notetaking during clinical encounters.	SpectrumAi abridge ▼ TRUVETA	\$1.6B
Revenue Cycle Operations Facilitate billing, coding, prior authorization or other revenue cycle use cases. These solutions can be leveraged by payers and/or providers.	Co:helm FATHOM notable Cohere rotable Cohere Addisorrange Addisorrange Cohere Addisorrange Cohere Addisorrange Cohere Cohere Addisorrange Cohere Coher	\$1.7B
Data Structure, Analytics and Interoperability Connect, clean, standardize and structure data from many disparate systems like medical documents and claims. This enables users to leverage data to drive healthcare outcomes.	Clarify SPARTASCIENCE ScienceIO Ferrum L1 Zus health	\$677M

Clinical	Clinical Clinical Al Since 2021		
What These Companies Are Working On	Notable Companies	VC Investment Since 2021	
Patient Stratification Perform patient risk assessment and identify potential care needs for patients. They may also triage patients based on a risk assessment to provide the right level of care.	Health CLINIC M ScriptChain M monogram health	\$687M	
Patient Diagnostics: Analytics and Tests Focus on diagnostic tests, diagnostic analytics and personalized medicine. In addition, these companies may deliver treatment plans, risk screenings, diagnoses based on EHR and other clinical decision support tools requiring FDA approval.	TEMPUS OINTERVENN	\$5.3B	
Patient Diagnostics: Imaging Concentrate on imaging and imaging analysis. Some of these companies are also, based on the imaging, giving an analysis of patient risk. This is leading to more targeted treatment for patients.	ITERATIVE HeartFlow Ezra Al Optics Gearly ACTIV SURGICAL ISONO WIDEA HEALTH HEALTH HEALTH	\$1.4B	
Remote Monitoring Engage in monitoring patient biomarkers or treatment- related variables outside of the clinic.	Biofourmis sword CarePredict	\$1.3B	



Therapeutics and Research

Therapeutics and Drug Discovery

Biopharma use cases that focus on drug discovery and development.

Clinical Trial Enablement

Includes companies that are leveraging AI for patient recruitment, workflow operations for clinical trials and mobile trials.

R&D Tools

Any AI used to assist with life science research and development.

\$12.9B³

VC Investment Since 2021



A Bird's-Al View

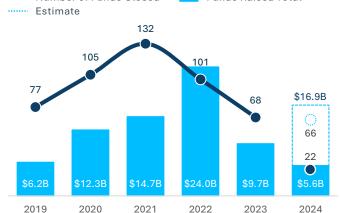
2024 is shaping up to be a big year for healthcare companies leveraging Al. However, in this era of slow VC investment and more realistic valuations, it's not enough to be a "shiny Al object." Investors and buyers are critically evaluating new AI solutions by how readily they'll be adopted and how much business value they really offer. No matter how good your Al model is, it can fail without broad distribution and profitable monetization. Companies also need to be aware of and navigate buyers' upgrading challenges for legacy systems to facilitate adoption. In addition, many Al companies are leveraging big tech enabled opensource solutions. As of now, this can save a startup hundreds of millions of dollars. However, if the opensource climate were to change, that same startup could be thoroughly disrupted.

Investors are placing higher-than-typical scrutiny on Al companies when it comes to data privacy and security. Often created as a "black box" with potential for life-impacting influence, AI security is still in its infancy, and investors are keenly aware of FDA regulators' hesitancy with approving these technologies. On the other side of the coin, many fear having transparent, open-source AI is akin to giving up advantage in a competitive market, creating the potential for copycat technologies.

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Strong Start to 2024 VC Fund Raising

Global VC Funds Closed with a Focus on Healthcare and Al



Ramping Up: Al Investment on the Rise

US VC Dollars Invested in Healthcare Companies Leveraging Al

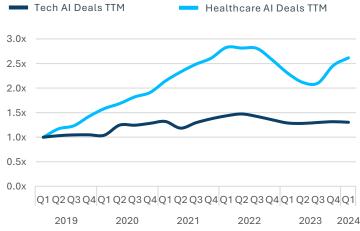
Percent of Total US VC Healthcare Investment

----- Estimate



Healthcare AI Deal Activity Accelerating

Index: Tech vs. Healthcare AI Deal Activity Growth¹



Al Is Hot, Valuation Premiums Are Warm

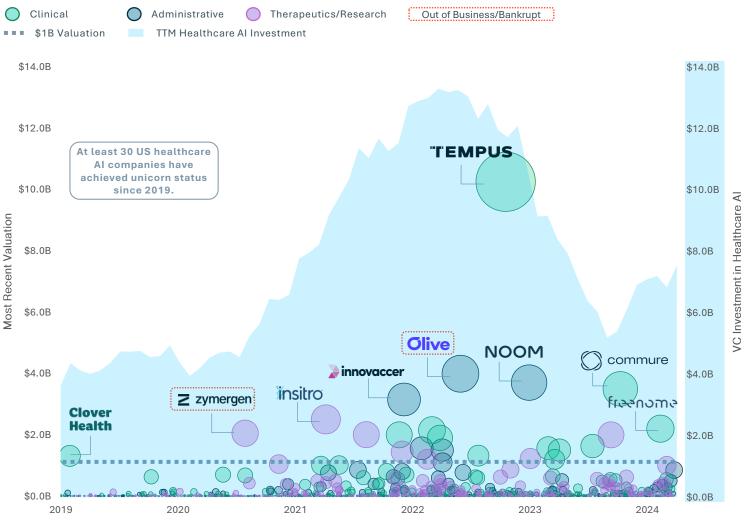
Seed/Series A² Pre-Money Valuations



Notes: 1) Growth in number of deals. Unless otherwise stated, all charts and metrics are referencing VC-backed, US healthcare companies, and the data is up to date through Q1 2024. 2) Seed/Series A includes first-time investments from institutional or corporate venture investment in the US and any first-round investments equal to or greater than \$2M, regardless of investor. Dates of financing rounds are subject to change based on add-on investments.

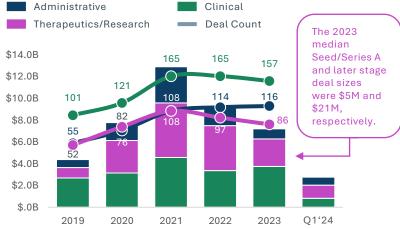
Healthcare Al Investment Landscape

VC Investment in Healthcare AI Companies and Largest Post-Money Valuations¹



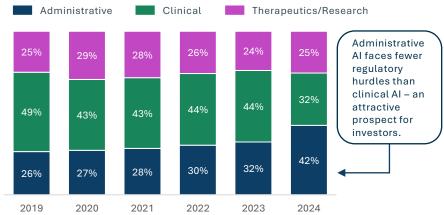
Resilient Activity Amidst Macro Headwinds





Administrative Use Cases: Low-Hanging Fruit

Proportion of Al Healthcare Deals for Each Indication²





Notes: 1) As of Q1 2024. 2) Numbers don't sum to 100% due to rounding. Source: PitchBook Data, Inc., SVB proprietary data and SVB analysis.



The Patient Journey

Al in the Patient Journey

Let's take a look at Jim, a patient who isn't feeling well. His feet are often numb, and he decides to seek help:





Patient Triage

Jim reaches out to his provider, who uses AI to determine his level of risk. Given Jim's risk profile is high, he is referred to a specialist.



Scheduling

Behind the scenes, the provider's administrative AI tool determines scheduling that suits the needs of Jim and the clinician.



Clinical Encounter

Jim shows up to his appointment. Instead of taking notes, Jim's doctor uses speech-to-text AI to input notes into the EHR.



Data Structure

The data from Jim's visit is structured to facilitate leveraging the data down the road for other use cases like diagnostics and coding.

Virtual Assistant

Back home, Jim receives communications from his GenAl nurse, which ensures he is following his pre-surgery regimen.



Patient Stratification

Al is used to assess Jim's medical history and imaging results to suggest the form of treatment most likely to succeed. Jim is scheduled for surgery.



Imaging

The CT scan taken of Jim's heart uses AI to analyze the image and suggest a diagnosis.



test and it suggests Jim could have a heart condition.



Diagnostic Test

Jim gets an Al-enabled blood



Surgical Robot

During surgery, an Alenabled robot provides unprecedented precision for the surgeon.



Revenue Cycle

The coding and billing for Jim's treatment are automated and optimized using AI, improving speed and accuracy.



Remote Monitoring

After successful treatment, Jim is given a device to take home that uses AI to monitor biomarkers and automatically adjust prescription dosages.





Source: SVB analysis.

Let's Get Clinical – Patient Diagnostics

Developing AI that can diagnose not only holds immense potential, but also great challenges. Foundationally, there is a significant gap in access to the quality data and compute power needed to train a model to the point where it can accurately diagnose. Physicians need to trust these Al models enough to use them in their workflow. Many clinical decision support tools must also obtain FDA approval, adding to the upfront costs. Regardless of the amazing breakthroughs AI in diagnostics can achieve, there is concern that payers will simply reimburse the product as any other test without attributing any incremental value to the AI used to improve the tests' quality and insights. This begs the question: Is it worth the effort? Many appear to think so. Al patient diagnostics accounts for 52% of the total AI investment in clinical solutions. For the economics to make sense in the near term, companies must demonstrate their diagnostics will save payers money.

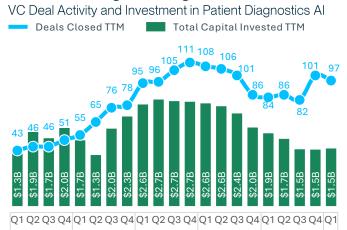
Among patient diagnostics AI companies, those focused on imaging have seen impressive investment growth. TTM¹ investment is still nearly double Q1 2021 levels despite a recent slowdown. During that time, 41% of clinical decision support AI imaging investment has been focused on cardiovascular disease solutions, while non-imaging AI companies are more inclined to be platform² (43%).



Tides Turning for Diagnostics

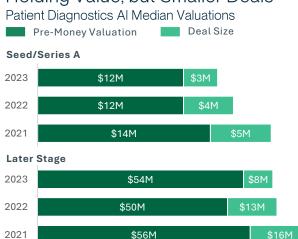
2020

2019



2021

Holding Value, but Smaller Deals

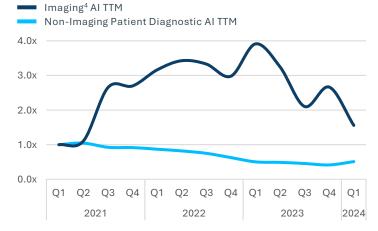


Imaging: A Darling of Patient Diagnostics Al

2022

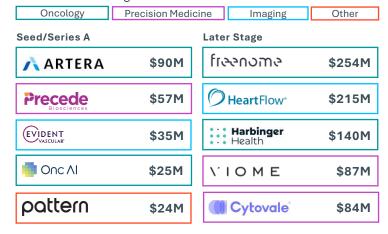
2023

Index: VC Investment in Al Imaging vs. Non-Imaging³ Use Cases



Oncology Leading the Way

Notable Patient Diagnostics Al Deals 2023-Q1 2024



Notes: 1) Trailing 12 months. 2) Platform companies target a combination of conditions. 3) VC investment in Al imaging and non-imaging patient diagnostics use cases. 4) Imaging used for clinical decision support.

Source: PitchBook Data, Inc., SVB proprietary data and SVB analysis.

Living in a Virtual World

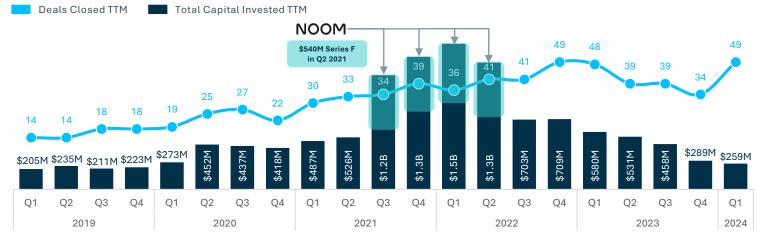
Virtual assistants (e.g., patient-facing GenAl nurses, chatbots) and administrative tasks are generally the low-hanging fruit for Al in healthcare ripe for an immediate impact. Administrative tasks that do not require regulation or a change to clinicians' workflows likely have a clearer adoption path. Al has the potential to revolutionize healthcare with early disease detection and prediction, but there's a big gap between research and real-world use. Regulatory hurdles, clinician adoption and integration challenges slow down clinical Al implementation. In contrast, administrative Al can quickly streamline workflows and reduce healthcare costs. It also doesn't face the same barriers as clinical Al.

The growing shortage of healthcare providers and physician burnout are creating a strong push for innovation in administrative workflows. The hours that clinicians typically spend on paperwork can now be saved with speech-to-text notetaking that is used during clinical encounters. The word is out for this need for efficiency as investment in EHR documentation companies leveraging AI is on pace in 2024 to blow every other year out of the water. In Q1 of this year, there has already been \$300M+ invested in EHR documentation AI companies.

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Reaching Virtually Uncharted Levels of Deal Activity

TTM Virtual Assistant Al Deal Activity and Investment



Improving Workflow and Outcomes

Virtual Assistant Al Notable Indications in 2023

Niche	Total Invested (Deals)		Number of \$10M+ Deals ¹	
Workflow Optimization	\$142M (17)	4	Hippocratic AI — Do No Harm —	
Health & Wellness	\$84M (16)	3	Frontera Health	
Platform	\$24M (6)	1	probably genetic	
Neurology	\$10M (3)	0	(APOLLO	
Metabolic	\$20M (1)	1	SIGNOS	

Take a Note...and a Check

Notable Virtual Assistant Al Deals 2023-Q1 2024

Seed/Series A		Later Stage	
Hippocratic AI — Do No Harm —	\$50M	FABRIC health	\$60M
probably genetic	\$11M	Hippocratic AI — Do No Harm —	\$55M
CUEZEN	\$7M	Artisight	\$42M
Rejoy health	\$5M	C MEMORA HEALTH	\$30M
RaaS	\$5M	Frontera Health	\$22M

¹⁾ The logos are from the company with the largest deal in the niche. Source: PitchBook Data, Inc., SVB proprietary data and SVB analysis.

Focused View on Revenue

Revenue cycle operations companies leveraging AI for billing, coding and prior-authorization are not just filling an efficiency need; they're also serving as a low-risk stepping stone for gaining exposure to AI in healthcare. Many providers, payers and investors have said that their AI strategies are still young and that they will start with administrative tasks because they don't have an appetite yet for clinical use cases. Administrative products may feel safer to providers, payers and investors. Factors like physician burnout and the rise of value-based care (VBC) emphasize the need for efficiency. While direct patient-facing solutions hold promise, initial Al adoption may be faster for clinician-focused tools due to simpler implementation. This focus on administrative tasks is a common starting point for many healthcare organizations hesitant to jump straight into clinical applications.

The efficiency gains served up by AI companies specializing in revenue cycle operations are supplemented by the cost-savings derived from value-based and preventative care. The symbiosis between VBC necessitating data to measure outcomes and AI's ability to predict a path to those positive outcomes makes revenue cycle operations AI an interesting space to keep an eye on this year.

Oiling up the Revenue Cycle

TTM Revenue Cycle Operations Al Deal Activity and Investment



Improving Outcomes to Improve Revenue Notable VBC Enablement Al Deals

Company	Most Recent Deal Size	Area of Focus
cohere	\$50M (2024)	Prior Authorization
covera health	\$50M (2023)	Radiology
HiLabs ⁻	\$39M (2024)	Data Structure
MEMORA HEALTH	\$30M (2023)	Virtual Assistant
viecure	\$25M (2021)	Oncology
CARTA HEALTHCARE	\$20M (2022)	Virtual Assistant

Top of the Cycle

Notable Revenue Cycle Operations Al Deals 2023-Q1 2024

Coding Claims	Prior Auth.	Platform Billing VBC
Seed/Series A		Later Stage
CODAMETRIX	\$54M	cohere WBC \$50M
⊞ Outbound Al	\$16M	✓ JANUS \$45M
<i></i> =Plenful	\$8M	CODAMETRIX \$40M
V ve∪∪	\$5M	Ocollectly \$29M
Synaptec Health	\$4M	foresee \$40M



Source: PitchBook Data, Inc., SVB proprietary data and SVB analysis.

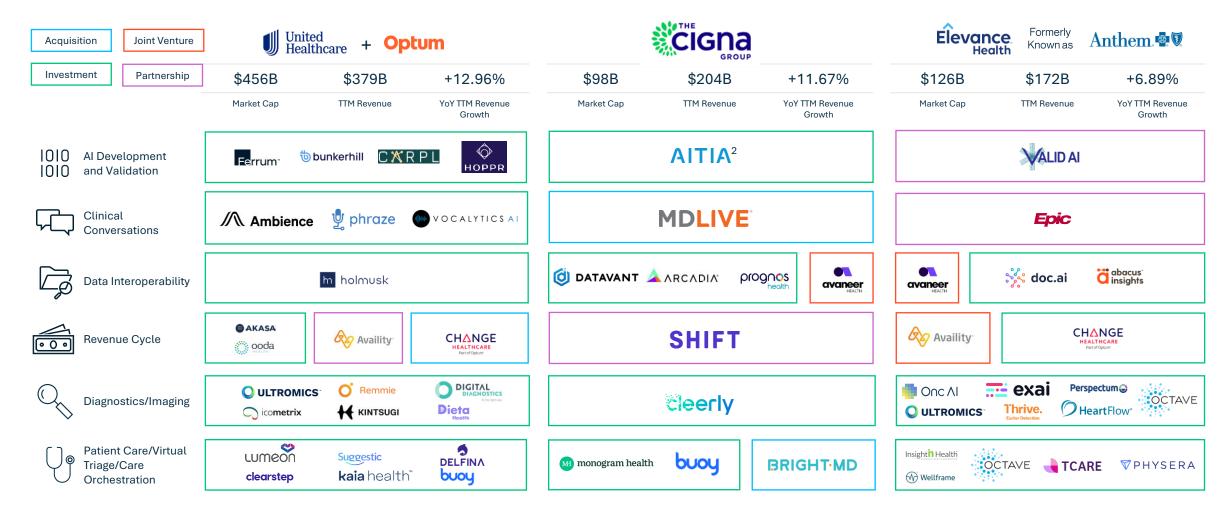


Adoption

Adoption and Healthcare Al Strategy for Payers¹: Notable Deals and Partnerships

Payers' AI buy-in may facilitate adoption across the wider healthcare industry. While specific details about their AI strategies might be under wraps, all three major health insurers – UnitedHealthcare, Cigna, and Elevance Health – are increasingly using AI for labor-intensive tasks like processing claims

and approvals. The sheer scale at which insurance giants operate means that even incremental operational improvements can translate to massive improvements on the patient experience and provider/employer operations.





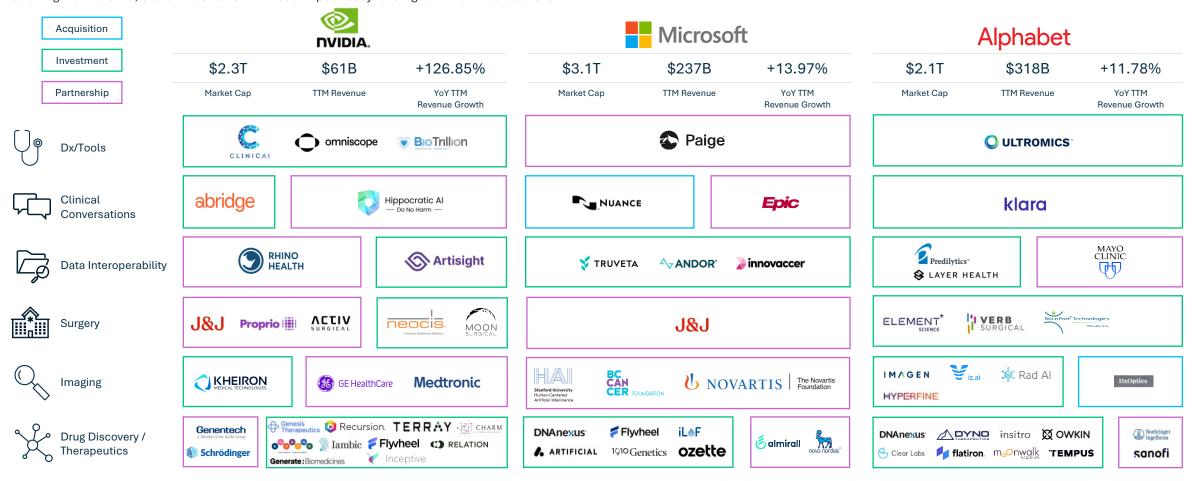
Note: List is not exhaustive, select companies represented.

¹⁾ Companies listed under each organizations include investments made by affiliated corporate venture arms. 2) Aitia develops Al-based technology for drug developers. Source: PitchBook Data, Inc., SVB proprietary data and SVB analysis.

Healthcare Al Strategy for Tech Giants¹: Notable Deals and Partnerships

NVIDIA, Microsoft and Alphabet (through Google) are vying to make their mark on healthcare through AI, but their approaches have distinct strengths. NVIDIA straddles the hardware and software divide. It provides the powerful graphics processing units (GPUs) that accelerate AI computations and offer cloud-based platforms like Clara and BioNeMo. These platforms act as toolkits for researchers, allowing them to build, customize and train AI models specifically for drug R&D. Both Microsoft and

Google remain focused on the cloud infrastructure, offering Azure and Google Cloud Healthcare, respectively, to power and democratize AI for healthcare professionals. Alphabet has a bigger appetite for AI-enabled revenue cycle and services/care delivery opportunities, marked by their investments in Fathom, Infinitus Systems, Sensorum Health and Viz.ai.





Note: List is not exhaustive, select companies represented.

¹⁾ Companies listed under each organizations include investments made by affiliated corporate venture arms. Source: PitchBook Data, Inc., SVB proprietary data and SVB analysis.

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Our 13th Healthcare Investments and Exits report examines how fundraising, investment and exit trends are affecting the VC-backed healthcare ecosystem. This edition unlocks new insights through our first-ever analyses around generative AI, spoon-fed deals and the occurrences of down, flat and up rounds.



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