# PitchBook

# 2021 Annual Enterprise Healthtech Report

VC trends and industry overview

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# Vertical overview

The healthcare industry faces mounting pressure to reduce costs while also improving patient outcomes. This incentive is driving key stakeholders—including patients, providers, payers, employers, and governments—to focus investments into technologies that seek to improve treatment discovery and delivery methods. In recent years, healthtech venture capital (VC) deal activity has spiked as healthcare organizations, clinical trial providers, employers, insurance providers, and policymakers are increasingly willing to adopt tech-oriented solutions.
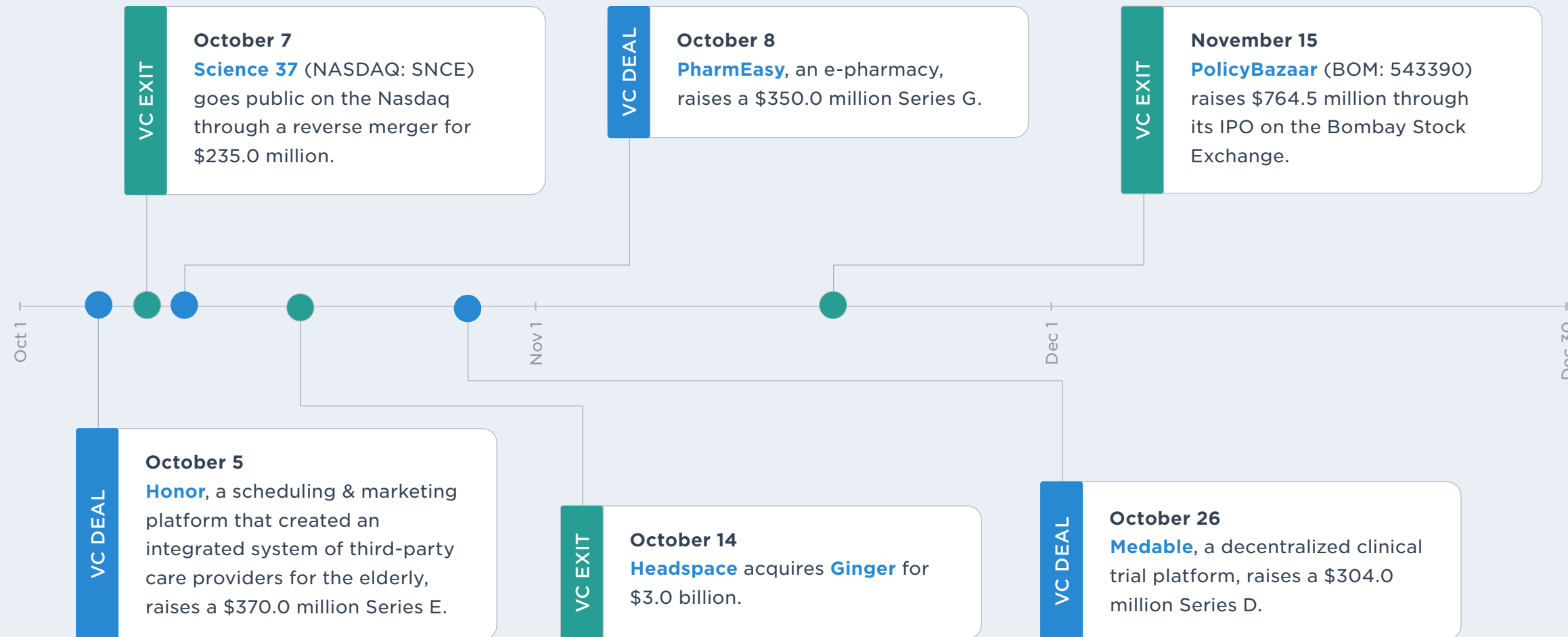
Key factors driving growth in this industry include:

- Technological innovation and the proliferation of mobile devices and apps, as well as the continued evolution of the Internet of Things (IoT) and artificial intelligence-related (AI) technologies
- Proactive measures taken by healthcare organizations, employers, and insurance providers to reduce the cost of care
- Growth in clinical trial research organizations and decentralized clinical trials resulting from the COVID-19 pandemic

- Expansion of real-world healthcare data derived from electronic health records (EHRs), remote patient monitoring, health applications, and so on, creating opportunities for analytic and patient management solutions
- Government initiatives to improve healthcare infrastructure, decrease healthcare costs, and improve patient safety and privacy

We segment the enterprise healthtech landscape into the following categories: prescription tech, customer acquisition tools, clinical trial tech, insurance tech, and operations & care management.

# Q4 2021 timeline

**VC EXIT**
**October 7**
**Science 37** (NASDAQ: SNCE) goes public on the Nasdaq through a reverse merger for $235.0 million.

**VC DEAL**
**October 8**
**PharmEasy**, an e-pharmacy, raises a $350.0 million Series G.

**VC EXIT**
**November 15**
**PolicyBazaar** (BOM: 543390) raises $764.5 million through its IPO on the Bombay Stock Exchange.

**VC DEAL**
**October 5**
**Honor**, a scheduling & marketing platform that created an integrated system of third-party care providers for the elderly, raises a $370.0 million Series E.

**VC EXIT**
**October 14**
**Headspace** acquires **Ginger** for $3.0 billion.

**VC DEAL**
**October 26**
**Medable**, a decentralized clinical trial platform, raises a $304.0 million Series D.

Oct 1   Nov 1   Dec 1   Dec 30

## Q4 VC DEAL COUNT SUMMARY

**72**
total deals

**377**
YTD total deals

**-22%**
YoY growth

**-19%**
YTD growth

## Q4 VC DEAL VALUE SUMMARY

**$3.6B**
total value
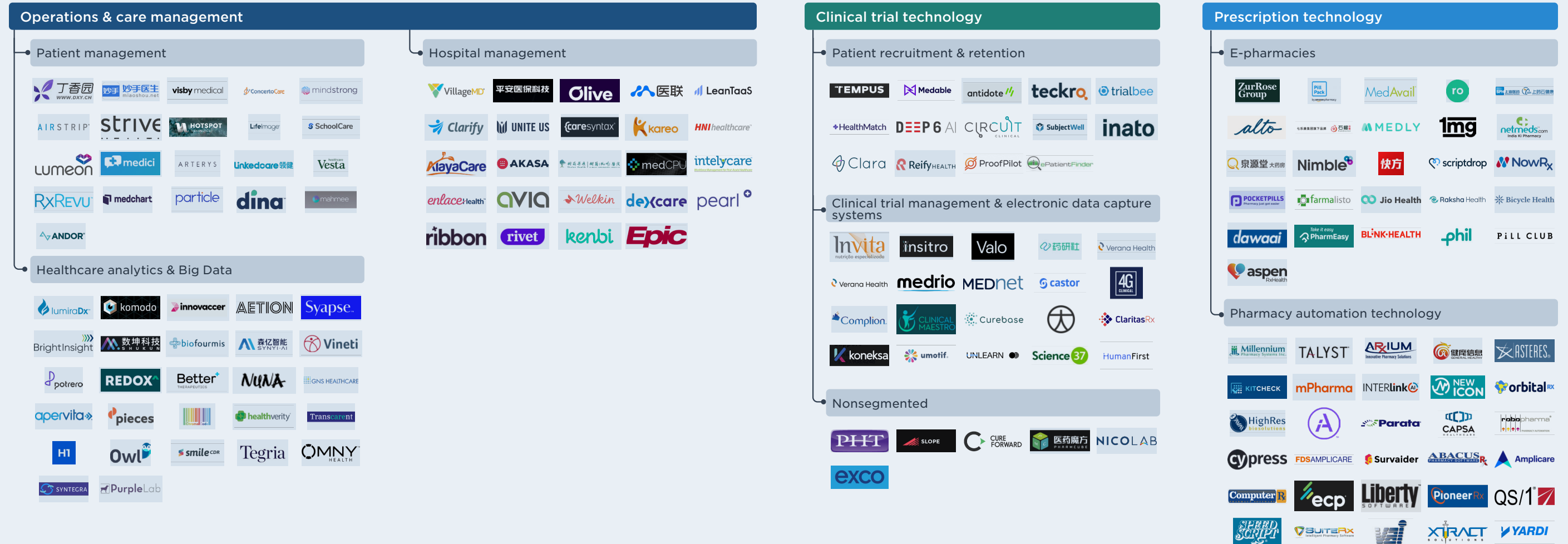
**$20.2B**
YTD total value

**-30%**
YoY growth

**67%**
YTD growth

# Enterprise healthtech VC ecosystem market map

Click to view interactive market map on the PitchBook Platform.

Market map is a representative overview of venture-backed or growth-stage providers in each segment. Companies listed have received venture capital or other notable private investments.

## Operations & care management

### Patient management



### Healthcare analytics & Big Data



### Hospital management



## Clinical trial technology

### Patient recruitment & retention



### Clinical trial management & electronic data capture systems



### Nonsegmented



## Prescription technology

### E-pharmacies



### Pharmacy automation technology

# Enterprise healthtech VC ecosystem market map

**Click to view interactive market map on the PitchBook Platform.**

Market map is a representative overview of venture-backed or growth-stage providers in each segment. Companies listed have received venture capital or other notable private investments.

## Prescription technology (cont.)

### E-prescriptions



## Customer acquisition tools

### Scheduling & marketing platforms



### Corporate distribution



## Insurtech

### Operations technology



### Insurance providers



### Marketplace & benefits platforms

# VC activity

The enterprise healthtech space generated $20.2 billion across 377 VC deals in 2021, compared with 2020's deal value of $12.1 billion across 463 deals, indicating industry maturity. Total deal value on a quarterly basis declined each quarter from $6.4 billion in Q1 to $3.8 billion in Q4. Among our segmented areas of the industry, we recorded the highest deal value activity in operations & care management startups ($6.5 billion), followed by insurtech startups ($4.7 billion) and customer acquisition tool startups ($4.4 billion). The operations & care management segment continues to benefit from an increase in patient data and the adoption of value-based care (VBC), while the insurtech segment took off as insurance provider startups adopted VBC initiatives at a faster rate than incumbents, which are traditionally slow to adapt. Prescription technology startups experienced a relatively lower step-up, 1.72x, compared with the entire enterprise healthtech industry, despite a record-breaking median deal size of $25.0 million. We believe prescription technologies face more competition, as nonhealthtech-focused companies such as **Amazon** enter the e-pharmacies space and EHR platform providers develop integrated e-prescribing tools.

Relative to 2020, angel and early-stage deal count and capital raised were lower in 2021, while late-stage deal count and capital raised were higher. We believe this reflects the relative ease with which late-stage deals have been completed during the pandemic, whereas early-stage startups may have found it comparatively more difficult to raise funds. Many late-stage startups in the prescription technology industry likely benefited from increased consumer adoption of e-pharmacies, while corporate distribution-focused startups benefited from increased employer investment toward employee benefits.



Figure 1. ENTERPRISE HEALTHTECH VC DEAL ACTIVITY
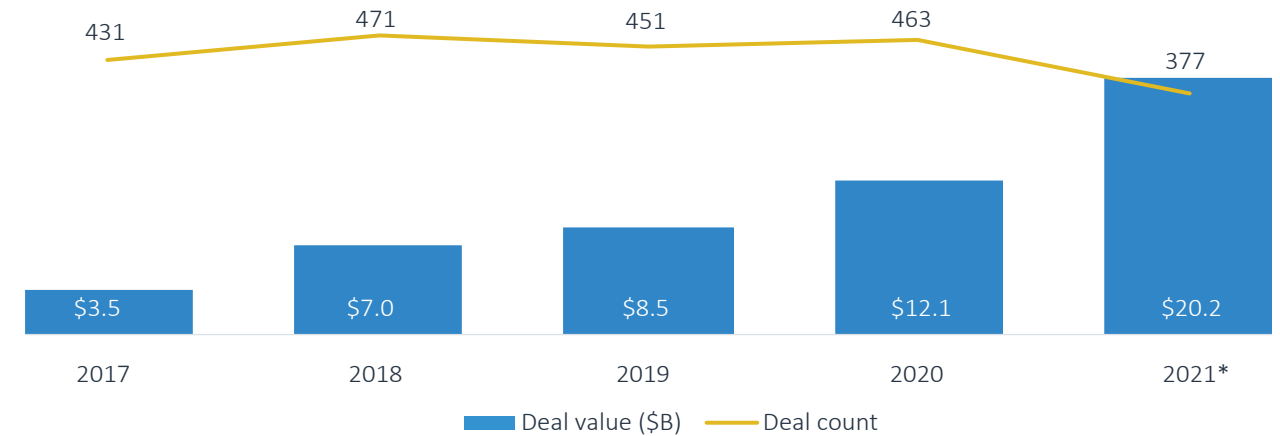
Source: PitchBook | Geography: Global | *As of December 31, 2021



Figure 2. ENTERPRISE HEALTHTECH VC EXIT ACTIVITY
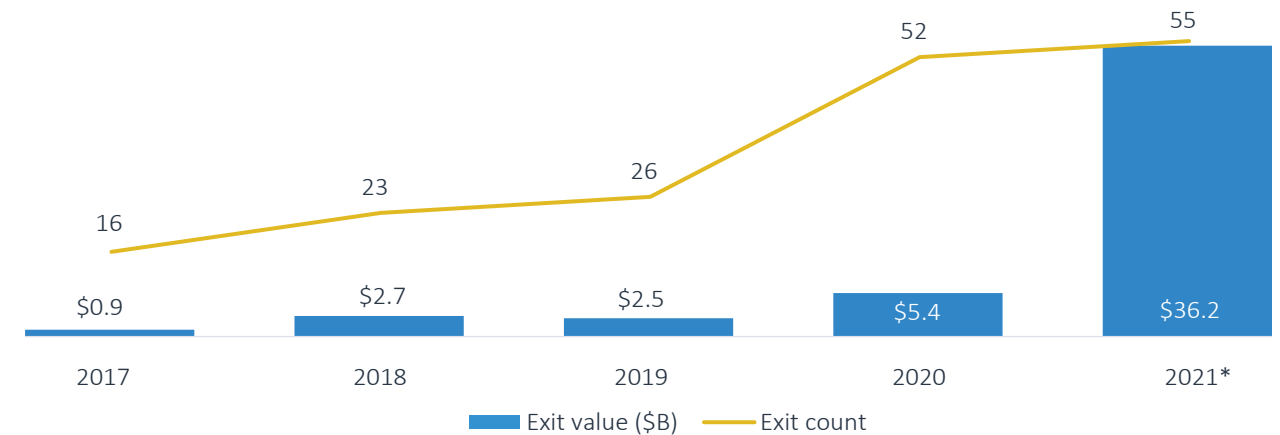
Source: PitchBook | Geography: Global | *As of December 31, 2021

## VC ACTIVITY

Exit value skyrocketed in 2021 with $36.2 billion in exit value tracked across 55 deals, compared with $5.4 billion across 52 deals in 2020. This surge was driven primarily by strong IPO activity within the insurtech segment. Top insurtech exits included **Bright Health Group** (NYSE: BHG) at $10.2 billion in exit value, **Oscar** (NYSE: OSCR) at $6.5 billion, **PolicyBazaar** at $5.4 billion, **Shuidi** (NYSE: WDH) at $4.4 billion, and **Clover Health** (NASDAQ: CLOV) at $3.3 billion. In 2021, we tracked 16 LBOs and 24 acquisitions of VC-backed startups in this industry. The largest recorded M&A was VC-backed meditation app **Headspace**'s acquisition of on-demand mental health service **Ginger** for $3.0 billion. **Nanox.AI** (formerly **Zebra Medical Vision**) was acquired by Nanox (NASDAQ: NNOX) for $110.0 million; the merger is anticipated to fuel the shared goal of forming the next generation of AI-enabled medical hardware and software devices, which is expected to set a new standard in the medical technology sector.



Figure 3. ENTERPRISE HEALTHTECH VC DEAL ACTIVITY BY SEGMENT

Source: PitchBook | Geography: Global | *As of December 31, 2021

# Segment overview

## Prescription tech

Increased use of telemedicine drives opportunity for e-pharmacies.

## Customer acquisition tools

COVID-19 drives employers to increase corporate wellness initiatives that foster opportunity.

## Clinical trial tech

Opportunity rises as clinical trials become decentralized.

## Insurtech

Health insurance providers experience a surge in exit activity with five companies going public in 2021.

## Operations & care management

Rise of real-world data drives Big Data and analytic opportunities.

# Prescription tech

## Overview

The prescription tech market is categorized into three subsegments: e-pharmacies, e-prescriptions, and pharmacy automation technology. Players in this space are working to revamp the value chain of prescription receipt (as shown in Figures 5 and 6). This industry's growth is mainly driven by improved digital infrastructure, the need to reduce medication error, and consumer and hospital demand.

- **E-pharmacies:** E-commerce sites that sell and deliver over-the-counter (OTC) and prescription medicines to consumers. E-pharmacies are gaining popularity for their convenience, wider array of drug availability, and often-lower prices. The COVID-19 pandemic accelerated consumer adoption of e-pharmacies, as consumers avoided brick-and-mortar retail pharmacies.

- **E-prescriptions:** Providers that enable medical practitioners to electronically generate and send prescriptions directly to pharmacies. E-prescription systems can be standalone or part of an integrated EHR system. Integrated e-prescription systems generally grant access to patient health data, while standalone systems do not.

- **Pharmacy automation tech:** Includes both pharmacy automation devices and pharmacy management software, which automates routine processes in pharmacy operations such as billing, customer management, medical claims management, prescription processing, and inventory management. Pharmacy automation generally refers to a range of physical products—such as counting scales, table counting tools, cabinet dispensers, dispensing robots, and packaging robots—that automate the dispensing, packaging, and labeling of medicines.



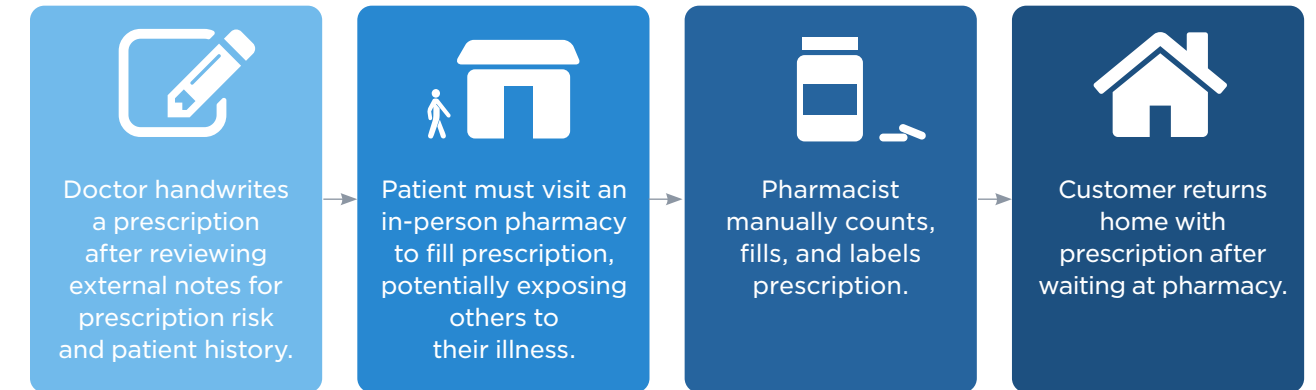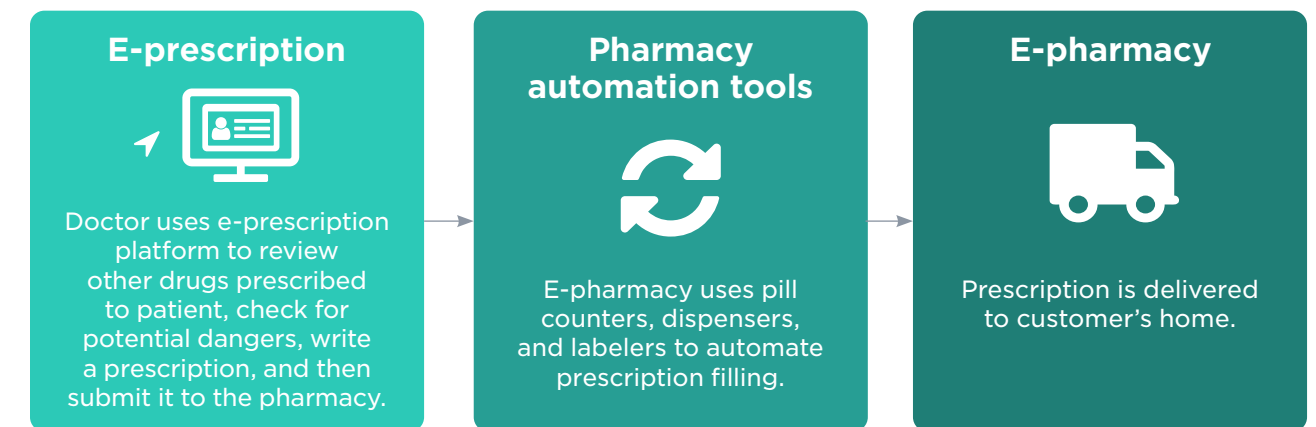Figure 4. LEGACY VALUE CHAIN OF PRESCRIPTION RECEIPT

Doctor handwrites a prescription after reviewing external notes for prescription risk and patient history.

Patient must visit an in-person pharmacy to fill prescription, potentially exposing others to their illness.

Pharmacist manually counts, fills, and labels prescription.

Customer returns home with prescription after waiting at pharmacy.



Figure 5. REVAMPED VALUE CHAIN OF PRESCRIPTION RECEIPT

**E-prescription**

Doctor uses e-prescription platform to review other drugs prescribed to patient, check for potential dangers, write a prescription, and then submit it to the pharmacy.

**Pharmacy automation tools**

E-pharmacy uses pill counters, dispensers, and labelers to automate prescription filling.

**E-pharmacy**

Prescription is delivered to customer's home.

These tools increase efficiency, decrease dispensing errors—thereby ensuring patient safety—and have lower operating costs than technicians and pharmacists. Chain pharmacies and health system pharmacies were early adopters of pharmacy robots, though hospitals and independent pharmacies have been expanding their use as well. Both hospitals and independent pharmacies seek to optimize shared service centers using central fill operations.

## Industry drivers

E-pharmacy growth is attributed to the COVID-19 pandemic, augmented access to online and web-based services, and the rising implementation of e-prescribers.

- While consumers may have previously avoided transitioning to e-pharmacies due to old habits, difficulties transferring prescriptions, and concerns regarding online drug purchase safety, COVID-19 drove e-pharmacy adoption as patients sought to avoid visiting pharmacies in person. **PharmEasy**, an example of shifting consumer sentiments, reported a 200% increase in demand.[1] Furthermore, in-person doctor visits were replaced with virtual teleconsultations.

- The rise of telemedicine and e-prescribers that can send prescriptions directly to e-pharmacies further facilitates their use.

E-prescription growth is attributed to efforts in reducing medication error and increasing adoption of EHR solutions.

- Medication and dispensing errors are recognized as leading causes of hospital readmissions across the globe. E-prescribers decrease medical errors by eliminating handwritten prescriptions, providing decision support tools, and reducing fraud and abuse in the prescriptions of controlled substances. Because these tools have demonstrated the ability to reduce medication errors, they have drawn support from governments and healthcare professionals globally. Beginning January 1, 2021, all Medicare Part D providers must electronically prescribe controlled substances.[2] In 2017, only 32% of office-based physicians that prescribed controlled substances did so electronically.[3] Similar legislation is taking effect internationally. In 2018, the United Arab Emirates' Ministry of Health and Prevention banned handwritten medical prescriptions.[4] England's National Health Service (NHS) is currently investing €16 million to eliminate paper prescribing in hospitals and aims to introduce digital prescribing across the entire NHS by 2024.[5]

- Before the passage of the Health Information Technology for Economic and Clinical Health (HITECH) Act in 2008, fewer than 7% of doctors e-prescribed medications through an EHR.[6] Now, most doctors e-prescribe through an EHR. When e-prescribing is part of an EHR system, providers can access all patient information, such as clinical notes, laboratory orders and results, and clinical decision support functions.

Pharmacy automation tech growth can also be attributed to the shift toward reducing medication error, as well as decentralized pharmacies and nurse and pharmacist labor shortages.

1: "How PharmEasy Transformed to Manage a 200 pc Surge in Support Volumes," *Indian Retailer*, July 16, 2021.
2: "Don't Panic Over Mandated E-Prescribing of Controlled Substances Laws," Academy of General Dentistry, Helen Jameson, August 10, 2020.
3: "Electronic Prescribing of Controlled Substances Among Office-Based Physicians, 2017," Office of the National Coordinator for Health Information Technology, Sonal Parasrampuria, Martin Blanco, and Wesley Barket, September 2019.

4: "UAE Bans Handwritten Medical Prescriptions," *Khaleej Times*, March 7, 2018.
5: "£16 Million to Introduce Digital Prescribing in Hospitals," Department of Health and Social Care, November 18, 2020.
6: "Electronic Health Record Adoption and Electronic Prescribing," Office of the National Coordinator for Health Information Technology, April 2014.

## PRESCRIPTION TECH

- The implementation of automated dispensing cabinets and automated dispensing machines in hospitals has led to a significant drop in the number of dispensing and medication errors in hospitals.

- In a decentralized pharmacy, a pharmacist positioned on a particular hospital ward performs both clinical and distribution services. As a result, more medications are kept within the medication room than in a centralized pharmacy, which typically stores only a few PRN (pro re nata—or, as needed) drugs. Centralized pharmacies typically only require a single half-size automatic medication dispenser and half-size refrigerator, as nurses themselves dispense the medications. Hospitals are adopting decentralized pharmacies to increase patient safety and care, reduce costs, and optimize nursing workflow. However, studies show that automation tools are also required to decrease the amount of work for the pharmacy itself.[7]

- In the UK, pharmacists were added to the Home Office's shortage occupation list.[8] A US national study shows pharmacies have been experiencing personnel shortages.[9] Additionally, global nursing shortages have been occurring for years.[10] Pharmacy automation tools reduce nursing and pharmacy staff workloads.

### Figure 6. COMMON PRESCRIPTION TECH KPIS

- Revenue growth
- Customer acquisition cost
- Net promoter score
- Pharmacy automation technology hardware: per-unit manufacturing cost, gross profit margin, cost of goods sold/unit sales
- E-pharmacy: number of hospital, biopharma, and insurance partnerships

- Monthly recurring revenue
- Churn rate
- Viability ratio (LTV/CAC)
- Users under license
- Market penetration proportion

7: "Impact of Decentralized Pharmacy Technicians on Medication Delivery and Nursing Satisfaction," *American Journal of Experimental and Clinical Research*, Vol 5, No 1, Gwen J Seamon, Megan Bereda, and Raoof Abdellatif, January 2018.
8: "Pharmacists Added to Government's List of Occupations Facing National Shortage," *The Pharmaceutical Journal*, Carolyn Wickware, March 9, 2021.
9: "The Latest Worker Shortage May Affect Your Health: Pharmacies Don't Have Enough Staff to Keep Up With Prescriptions," *NBC News*, Adiel Kaplan, Samantha Springer, and Vicky Nguyen, December 28, 2021.
10: "Migration of Nurses: A Latin American Perspective," *The Online Journal of Issues in Nursing*, Vol. 13, No. 2., Mary Lou de Leon Siantz and Silvina Malvárez, May 2, 2008.

PRESCRIPTION TECH

## Business model

**Pharmacy automation tech:** Prescription management solution providers generate revenue through a software-as-a-service (SaaS) business model. Makers of prescription automation tools generate revenue from selling or leasing their devices. They can generate additional revenue from services related to maintenance and software upgrades.

**E-prescriptions:** These solutions are delivered through on-premises (though this is becoming less common), web-based, and cloud-based systems to hospitals and office-based physicians. E-prescriptions enable the prescriber to use a computer or handheld device to write and send a prescription. Companies in this space generate revenue through a SaaS business model, and services may be sold as an add-on to EHR systems. MDToolbox charges $38 a month per provider for its e-prescribing solution for noncontrolled and controlled substances.

**E-pharmacies:** These sell both OTC and prescription drugs and can be provider facing and/or consumer facing, though most are the latter. We note two main business models among consumer-facing providers: a marketplace model and an inventory model. E-pharmacies operating on a marketplace model serve as a link between brick-and-mortar pharmacies and consumers, often through a mobile application. Inventory model e-pharmacies stock medicines and supply them via electronic orders. Some providers operate solely online, while others operate both brick-and-mortar and online pharmacies. Revenue is generated via sponsored listing, advertisements, and sale commissions. Commission-based revenues are the most common model. Most inventory-based e-pharmacies source medicine directly from manufacturers, which enables them to sell at a lower price while still earning a sizable commission. However, some e-pharmacies, such as **Yodawy**, source from partner pharmacies. E-pharmacies are generally able to offer lower prices due to scale efficiencies, including higher sales volume, which results in drugs expiring less frequently; large, centralized locations, which reduce real estate costs; and broader automation of processes, which reduces staffing costs.
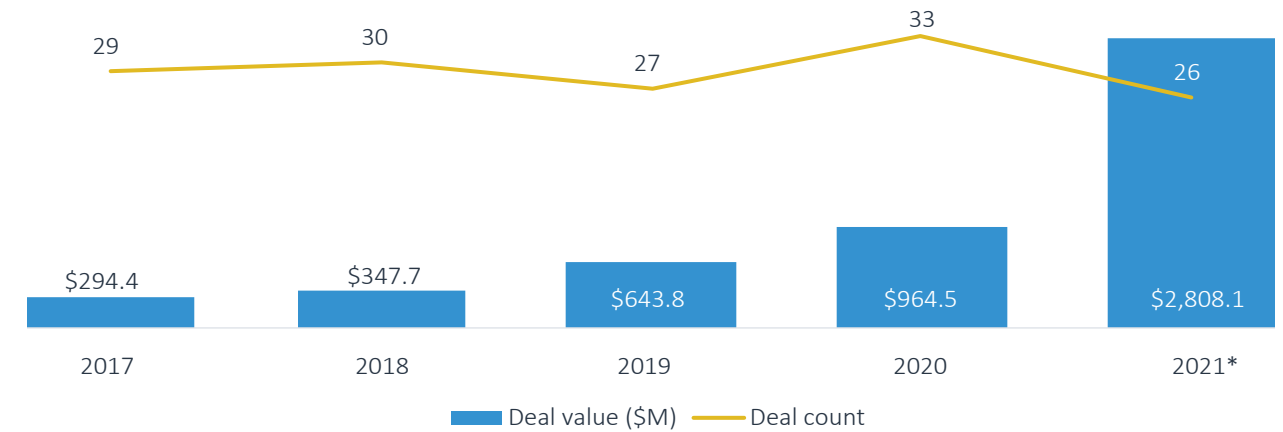
2021 Annual Enterprise Healthtech Update                    CONFIDENTIAL. NOT FOR REDISTRIBUTION.  PG 13

# PRESCRIPTION TECH

## VC activity

In 2021, the prescription technology segment generated $2.8 billion in VC financing across 26 deals, a significant increase in terms of deal value from $964.5 million in 2020 across 33 deals. Several large deals drove this growth, including a $500.0 million Series D for Roman Health; a $350.0 million Series G for **PharmEasy**, which plans to go public in 2022; a $225.0 million Series C for Medly pharmacy; and a $158.0 million Series B for **SPH Health Commerce**. In addition to these VC mega-deals (sized $100 million or higher), 2021 saw several other sizable deals, as the market for e-pharmacies benefited from pandemic-related demand due to an increase in telemedicine use and consumers who avoided visiting in-person pharmacies.
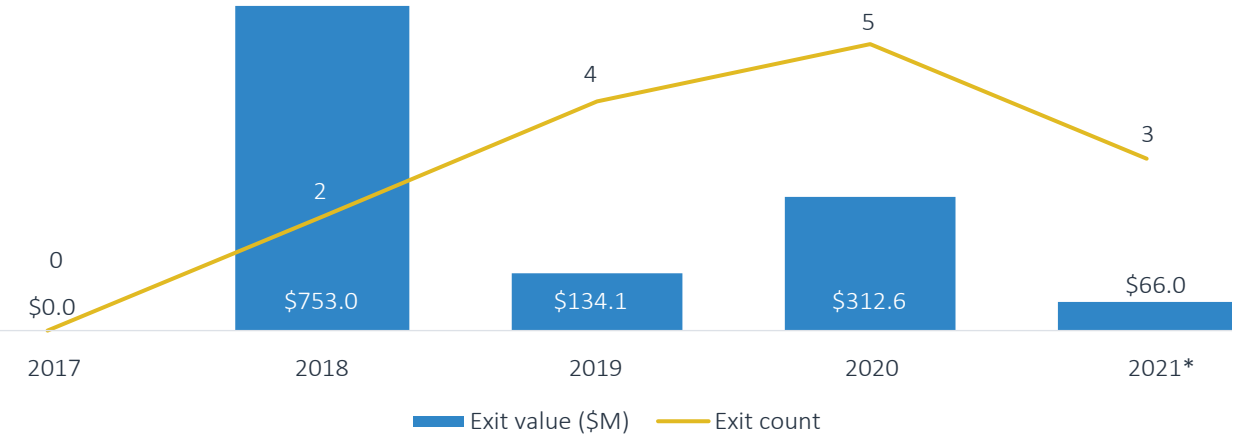
We tracked three exits in 2021, compared with five in 2020 and four in 2019. Notable deals included the acquisition of e-prescribing platform provider **Memed** by DNA Capital's investor subsidiary for $53.5 million and the acquisition of e-pharmacy **Honeybee Health** by **INW Innovations in Nutrition + Wellness**, through a $53.5 million LBO via its financial sponsor Rosewood Private Investments. We believe this segment could experience more M&A in the coming year.

### Figure 7. PRESCRIPTION TECH VC DEAL ACTIVITY

Deal count: 2017: 29, 2018: 30, 2019: 27, 2020: 33, 2021*: 26
Deal value ($M): 2017: $294.4, 2018: $347.7, 2019: $643.8, 2020: $964.5, 2021*: $2,808.1

Legend: Deal value ($M) — Deal count

Source: PitchBook | Geography: Global | *As of December 31, 2021

### Figure 8. PRESCRIPTION TECH VC EXIT ACTIVITY

Exit count: 2017: 0, 2018: 2, 2019: 4, 2020: 5, 2021*: 3
Exit value ($M): 2017: $0.0, 2018: $753.0, 2019: $134.1, 2020: $312.6, 2021*: $66.0

Legend: Exit value ($M) — Exit count

Source: PitchBook | Geography: Global | *As of December 31, 2021

# PRESCRIPTION TECH

## Key prescription tech VC deals over the past year*

| COMPANY | CLOSE DATE | SUBSEGMENT | STAGE | DEAL SIZE ($M) | VALUATION STEP-UP |
|---|---|---|---|---|---|
| **PharmEasy** | October 18, 2021 | E-pharmacies | Late-stage VC | $350.0 | 1.31x |
| **NowRx** | October 1, 2021 | E-pharmacies | Late-stage VC | $74.0 | 3.15x |
| **Alto** | November 2, 2021 | E-pharmacies | Late-stage VC | $36.4 | N/A |
| **EirSystems** | November 8, 2021 | E-prescriptions | Early-stage VC | $0.6 | N/A |
| **Spring Health** | October 1, 2021 | E-pharmacies | Early-stage VC | N/A | N/A |

Source: PitchBook | Geography: Global | *As of December 31, 2021

# PRESCRIPTION TECH

## Key prescription tech VC exits over the past year*

| COMPANY | CLOSE DATE | SUBSEGMENT | EXIT SIZE ($M) | EXIT TYPE | ACQUIRER(S)/INDEX | VALUATION STEP-UP |
|---|---|---|---|---|---|---|
| **PillPack** | September 11, 2018 | E-pharmacies | $753.0 | Acquisition | Amazon.com | N/A |
| **Medlife** | September 23, 2020 | E-pharmacies | $230.0 | Acquisition | PharmEasy | N/A |
| **Digital Pharmacist** | March 11, 2019 | E-pharmacies | $125.0 | Buyout | Vistria Group, K1 Investment Management | N/A |
| **Netmeds.com** | August 19, 2020 | E-pharmacies | $82.6 | Acquisition | N/A | N/A |
| **Memed** | April 29, 2021 | E-prescriptions | $53.5 | Acquisition | DNA Capital | N/A |
| **Millennium Pharmacy Systems** | September 26, 2014 | Pharmacy automation technology | $42.0 | Acquisition | PharMerica | N/A |
| **Cretem** | November 26, 2015 | Pharmacy automation technology | $28.3 | Acquisition | DIH Technologies | N/A |
| **Honeybee Health** | March 25, 2021 | E-pharmacies | $12.5 | Buyout | INW Innovations in Nutrition + Wellness, Rosewood Private Investments | 0.47x |
| **1001Pharmacies** | February 4, 2019 | E-pharmacies | $9.1 | Acquisition | Pharmasimple | N/A |
| **MedAvail** | November 18, 2020 | E-pharmacies | N/A | Public listing | MYOS RENS Technology | N/A |

Source: PitchBook  |  Geography: Global  |  *As of December 31, 2021

# PRESCRIPTION TECH

## Key prescription tech incumbents*

| COMPANY | SUBSEGMENT | LAST KNOWN VALUATION ($M) | YEAR FOUNDED | FINANCING STATUS |
|---|---|---|---|---|
| **Medly Pharmacy** | E-pharmacies | $975.0 | 2017 | PE-backed |
| **Zur Rose Group** | E-pharmacies | $865.9 | 1993 | Corporation |
| **PillPack** | E-pharmacies | $753.0 | 2013 | Formerly VC-backed |
| **Innovation Associates** | Pharmacy automation technology | $451.0 | 1972 | Formerly PE-backed |
| **7LeKang** | E-pharmacies | $399.7 | 2010 | PE-backed |

Source: PitchBook | Geography: Global | *As of December 31, 2021

## Opportunities

**EHR-integrated e-prescribers:** Standalone prescription software solutions represented the majority of the market in 2018. However, integrated solutions are taking share, due to favorable government initiatives meant to increase their use, as well as standalone systems' failure to fully meet meaningful use criteria.[11] Integrated prescription systems—that is, software connected to EHR systems—can gain access to historical patient data, helping doctors avoid dangerous mistakes such as prescribing medicine a patient is allergic to or over-prescribing opioids.

**Real-time prescription price transparency tools:** Customers often do not know how much a medication will cost under their insurance until they purchase it. E-prescribers with real-time price transparency would enable doctors and patients to ensure, at the time of prescribing, that medications are covered under patients' insurance and prescribe alternatives if needed. Beginning January 2021, new Medicare and Medicaid regulations required that Medicare Part D health plans include real-time benefit tools (RTBT) that can integrate with at least one prescriber's e-prescribing or EHR system. These RTBTs must offer price transparency to consumers and inform prescribers when lower-cost alternative therapies are available under the beneficiary's prescription drug benefit. These rules create opportunities for tech providers that can supply RTBT capabilities. Startups that may be positively exposed to this opportunity include QuickScripts and Rivet, though Surescripts is currently the market leader.

**Consolidation of e-prescribers:** Healthcare providers are seeking holistic, end-to-end solutions to manage their practice and patients, as well as provide virtual care offerings and

sophisticated analytics for enhanced business intelligence. Healthcare IT providers are actively acquiring e-prescribing platforms. Examples of recent M&A include **Jack Nathan Health** (TSX: JNH), a Canadian healthcare network offering telehealth services, acquiring **Writi**, a cloud-based e-prescribing software platform; **Therapy Brands**, a mental and behavioral health practice management software, acquiring **NewCrop**, an integrated e-prescribing service platform; and Allscripts' (NASDAQ: MDRX) acquisition of **CareMetx**, a specialty drug e-prescribing solution, to diversify its business outside of EHRs and to bolster its Veradigm e-prescribing business.

**E-pharmacies expanding reach across the drug distribution ecosystem:** We expect incumbent pharmacies to pursue a broad range of strategies to strengthen their position within the drug distribution ecosystem. These include partnering with, building, or acquiring telemedicine platforms, pharmacy automation tech, in-store pharmacies, pharmacy benefit managers, and mobile applications.

**Telehealth partnerships with large incumbent pharmacies:** We have seen numerous partnerships between large pharmacies and telehealth providers. For example, **TelaDoc** partnered with **CVS Health** (NYSE: CVS), and **Walgreens Boots Alliance** (NASDAQ: WBA) partnered with **MDLive**. We have yet to see many partnerships among VC-backed companies but anticipate many will form to increase customer bases. Several natural synergies exist between the telehealth and e-pharmacy industries. In fact, 72% of patient-doctor interactions include prescribing medication, which provides an opportunity for doctors to give patients an end-to-end health experience by integrating prescription delivery with treatment. To that end, in December 2020, **Ro** acquired Workpath, an in-home healthcare diagnostics platform.

11: "Differences Between Integrated and Standalone E-Prescribing Systems Have Implications for Future Use," *Health Affairs*, Vol 29, No 12, Catherine M. DesRoches, et al., December 2010.

**Partnerships among e-pharmacies and prescription automation tech providers:** E-pharmacies are better suited to implement prescription automation tech than traditional pharmacies, given pooled demand from large geographical areas and the use of individual fulfillment centers, which can support high implementation costs. For example, **NowRx** developed a pharmacy management solution that runs an entire pharmacy—from tracking inventory to receiving prescriptions and communicating with insurers to clear claims. The company says the technology enables it to dispense at a cost half of the industry's average.

## Risks & considerations

**High cost of pharmacy automation tools limits market growth:** Pharmacy automation tools, such as dispensing robots and automatic pill counters, have high upfront costs and require regular maintenance to ensure the software is running properly. As any small software error could result in a patient's fatality, several states have strict regulations controlling the application of pharmacy automation tools. Colorado, for example, prohibits controlled substances in dispensing robots.[12]

**Lack of e-pharmacy regulation in low-income countries:** E-pharmacies are growing rapidly in low-income countries. For example, India's share of the global market is $9.3 billion and growing at a CAGR of 18%. However, this rapid expansion has been largely uncontrolled. A lack of regulation can result in medications being prescribed without a prescription, improper storing and handling of medications, and patient data not being properly secured.

**Pharmacy benefit manager agreements give incumbents the upper hand:** In the US, there are fewer than 30 major pharmacy benefit managers, and the largest three—**Express Scripts**, **CVS Health**, and **OptumRx**—comprise 78% of the market.[13] Network agreements between pharmacy benefit managers and pharmacies may make it difficult for startups to offer competitive prices. Pharmacy benefit managers reduce pharmaceutical costs by negotiating discounts and rebates with drug manufacturers, providing payment and claims processing, and aggregating consumer demand. Given the difficulty of developing or establishing partnerships with pharmacy benefit managers, we expect startups will likely favor M&A opportunities involving large incumbents.

12: "The Future of Pharmacy Automation," *Drug Topics*, Vol 163, No 7, Fred Gebhart, July 4, 2019.
13: "Big Pharmacies Are Dismantling the Industry That Keeps US Drug Costs Even Sort-Of Under Control," *Quartz*, Brian S. Feldman, March 17, 2016.

# Customer acquisition tools

## Overview

The customer acquisition tools market is categorized into two segments: scheduling & marketing platforms and corporate distribution. Industry growth is mainly driven by the development of technological innovations, shifts in consumer and employer behaviors, and cost-saving opportunities.

- **Corporate distribution:** This subsegment includes corporate-focused providers and platforms that enable distribution via corporate channels. Startups typically focus on workplace wellness initiatives that include products related to physical and mental health, as well as family planning services.

- **Scheduling & marketing platforms:** These platforms enable individuals to search, schedule, and cancel appointments online, helping healthcare providers decrease customer service workload and minimize no-shows. This subsegment also includes marketing and marketplace platforms, which provide patient acquisition opportunities and drive provider discovery.

## Industry drivers

Growth in corporate distribution services and technology can be attributed to both the COVID-19 pandemic and ongoing corporate initiatives to reduce healthcare costs.

- COVID-19 caused many employers to re-evaluate their benefits packages and place a stronger focus on virtual offerings, family planning services, and mental health solutions. During the pandemic, 76% of US employers increased investments into virtual care offerings.[14] Despite the increased investment, median employer healthcare spending decreased by about 10% to 12% in 2020 due to delayed care.[15] Spending is anticipated to increase by 6% in 2021 as a result of employees returning to the doctor and a higher prevalence of mental illness, chronic conditions, and late-stage cancers, due to postponed preventative care.[16]

- Corporate wellness initiatives have the potential to reduce health-related costs, which is a powerful incentive for providing preventative health & wellness services. According to a study conducted by Harvard economists, absenteeism costs fall by $2.73 for every dollar spent on wellness programs.[17] However, the corporate wellness market remains small in comparison to the massive economic burden and productivity losses—10% to 15% of global economic output—associated with an unwell, disengaged workforce.[18]

14: "Health Equity, Impact of Pandemic Among Large Employers' Top Concerns, Says 2022 Health Care Strategy and Plan Design Survey," Business Group on Health, August 25, 2021.
15: "2022 Large Employers' Health Care Strategy and Plan Design Survey: Executive Summary," Business Group on Health, August 2021.
16: "2019 Best Practices in Health Care Employer Survey Report," Willis Towers Watson, April 3, 2020.
17: "Workplace Wellness Programs Can Generate Savings," *Health Affairs*, Vol 29, No 2, Katherine Baicker, David Cutler, and Zirui Song, February 2010.
18: "Global Wellness Economy Monitor: Executive Summary," Global Wellness Institute, Ophelia Yeung and Katherine Johnston, October 2018.

# CUSTOMER ACQUISITION TOOLS

Scheduling & marketing solution growth is driven by increased information technology (IT) development and shifts in consumer behaviors.

- Increased reliance on cloud computing has enabled providers to integrate services with existing platforms more easily while facilitating the use of both physical and virtual workplaces. In addition, scheduling platforms enable businesses to decrease costs by reducing missed appointments, improving staff management, and increasing business efficiencies.

- Consumers increasingly expect to interact via digital channels with health & wellness providers. As consumers utilize more health management technology and rely more on digital health channels, demand for scheduling & marketing software solutions has increased.

# CUSTOMER ACQUISITION TOOLS

## Business model

**Corporate distribution:** Corporate distribution and wellness companies generate revenue from the sale of software and devices to employers, which offer products and services to employees free of charge or at discounted rates to improve physical, behavioral, and mental health; prevent work-related injuries; and decrease employee turnover.

**Scheduling & marketing platforms:** Appointment scheduling software providers typically offer various plans customized to suit business needs. Monthly or annual fees are based on the number of employees or bookings in addition to add-on services, such as text reminders or payment processing fees. Marketing platforms that enable consumers to discover and engage with providers generate revenue from ad sales, data sales, and commissions.

### Figure 12. COMMON CUSTOMER ACQUISITION TOOLS KPIS

**Both subsegments**

- Revenue growth
- Net promoter score
- Conversion score (free/freemium to paid)
- Add-on utilization
- Customer retention
- Customer penetration
- Monthly recurring revenue
- Churn rate
- Viability ratio (LTV/CAC)

**Corporate distribution**

- Percent of employees using the platform
- Change in employer's healthcare costs and employee productivity
- Absenteeism rates post-implementation

# CUSTOMER ACQUISITION TOOLS

## VC activity

Companies tracked in the corporate distribution segment raised $4.4 billion across 91 deals in 2021, well above 2020's deal value of $2.8 billion across 112 deals. The decline in deal count was driven by fewer angel and early-stage deals, while late-stage deal activity remained robust, mirroring broader VC trends, with a record 66 deals completed in 2021 compared with 60 in 2020. On a quarterly basis, aggregate VC deal count was relatively lower in Q4, with only 14 deals closing; however, median deal value rose with $1.5 billion tracked in Q4 compared with $842.8 million across 22 deals in Q3, $793.2 million across 23 deals in Q2, and $1.5 billion across 32 deals in Q1.

We tracked 16 mega-deals, five of which occurred in Q4. The two largest deals of 2021 included a $370.0 million Series E for **Honor**, a scheduling & marketing platform that created an integrated system of third-party care providers for the elderly, and a $350.0 million Series A for **Calendly**, a subscription-based scheduling software—this was the largest Series A tracked among all enterprise healthtech startups since Ping's $1.2 billion Series A in 2018. Other $200 million-plus rounds included a $241.5 million Series C for **SonderMind**, a platform that connects individuals to mental health therapists, which amounted to a 4.7x step-up; a $420.0 million Series E for **Gympass**, a corporate wellness solution that helps employers provide access to a network of workout facilities; and a $200.0 million late-stage round for **Babylon Health**, a digital health platform designed to reduce healthcare costs for employers and insurers.
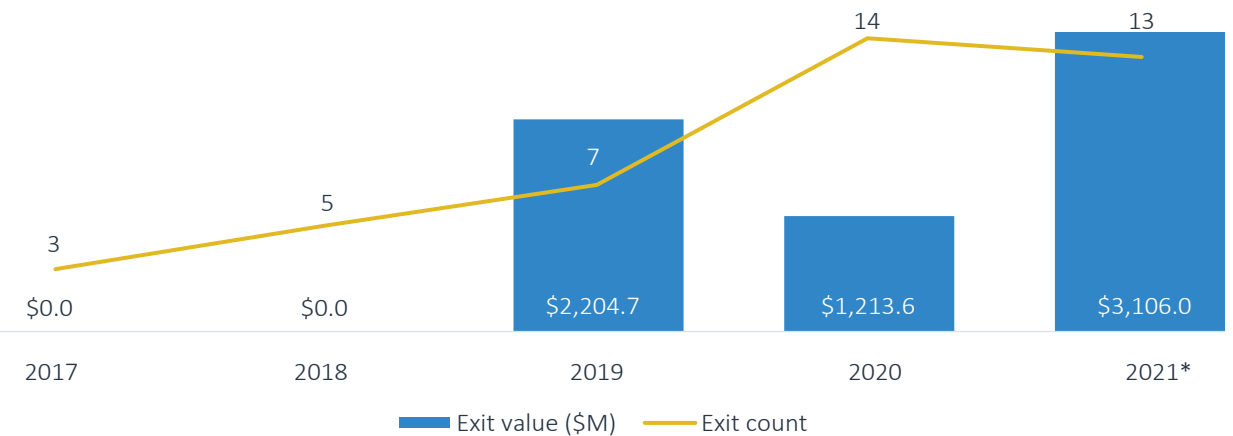
In 2021, we tracked eight mergers, one reverse merger, one IPO, and three LBOs among customer acquisition companies, resulting in $3.1 billion in aggregate disclosed exit value in



Figure 13. CUSTOMER ACQUISITION TOOLS VC DEAL ACTIVITY
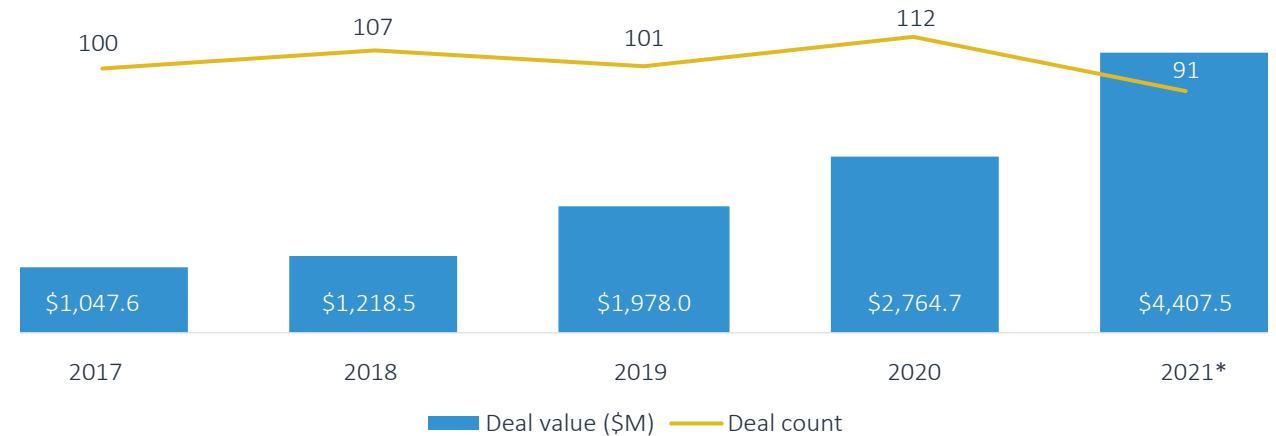
Source: PitchBook  |  Geography: Global  |  *As of December 31, 2021



Figure 14. CUSTOMER ACQUISITION TOOLS VC EXIT ACTIVITY

Source: PitchBook  |  Geography: Global  |  *As of December 31, 2021

# CUSTOMER ACQUISITION TOOLS

2021 and exceeding 2020's total of $1.2 billion. This was driven by **Headspace**'s acquisition of on-demand mental health service **Ginger** for $3.0 billion, which marks the first mental health mega-merger. Mental health startups have received an influx of funding, with $543.0 million invested in H1 2021—nearly equal to the $548.8 million invested in all of 2020. The increase in investment has resulted from several opportunities stemming from COVID-19; employers have increased mental health benefits, and consumers have turned toward digital mental health applications. Together, **Ginger** and **Headspace** will reach 100 million consumers and receive a valuation of $3 billion. Two months prior, **K Health**, a telehealth primary care provider, announced the acquisition of **Trusst**, a messaging-based mental health platform. **Headspace** acquired **Ginger** in a vertical integration play, while **K Health** acquired **Trusst** in a horizontal integration play. We expect consolidation to continue as providers target the same employers and vie for the limited supply of mental health practitioners. Deal values were not disclosed for several acquisitions, and we expect M&A opportunities to remain frothy in the near term. Deals with undisclosed value include **cult.fit**'s acquisition of **Fitternity**, **PatientPop**'s merger with **Kareo**, and Amwell's (NYSE: AMWL) acquisition of **SilverCloud Health**. **Mindbody** acquired **ClassPass** via its financial sponsors Vista Equity Partners, Sixth Street Partners, and Hinge Capital, through an LBO on October 15. The acquisition supports **Mindbody**'s commitment to driving growth for wellness businesses while offering consumers the world's largest fitness and wellness experience marketplace.

**Dialogue** (TSE: CARE), a virtual health benefits program offering mental healthcare, primary care, and employee assistance programs, raised CAD 100 million in its IPO on the Toronto Stock Exchange. **WellteQ Digital Health** (CNQ: WTEQ), a provider of corporate wellness solutions developed to provide data-driven personalized health and wellness coaching to engage its users in healthier behaviors, was acquired by Terra Nova Resources (CSE: TENO) through a reverse merger for $7.1 million, resulting in the combined entity trading on the Canadian Securities Exchange.

# CUSTOMER ACQUISITION TOOLS

## Key customer acquisition tools VC deals over the past year*

| COMPANY | CLOSE DATE | SUBSEGMENT | STAGE | DEAL SIZE ($M) | LEAD INVESTOR(S) | VALUATION STEP-UP |
|---------|-----------|-----------|-------|----------------|------------------|-------------------|
| Honor | October 5, 2021 | Scheduling & marketing platforms | Late-stage VC | $370.0 | Baillie Gifford | 1.53x |
| SonderMind | October 4, 2021 | Scheduling & marketing platforms | Late-stage VC | $241.5 | Drive Capital, Premji Invest | N/A |
| Babylon Health | October 8, 2021 | Corporate distribution | Late-stage VC | $200.0 | N/A | N/A |
| When I Work | November 1, 2021 | Scheduling & marketing platforms | Late-stage VC | $200.0 | N/A | N/A |
| HealthCare.com | December 13, 2021 | Scheduling & marketing platforms | Late-stage VC | $180.0 | Oaktree Capital Management | 6.21x |
| Luma Health | November 22, 2021 | Scheduling & marketing platforms | Late-stage VC | $130.0 | FTV Capital | N/A |
| Garner Health | December 14, 2021 | Corporate distribution | Early-stage VC | $45.0 | Redpoint Ventures | N/A |
| Sana Benefits | October 25, 2021 | Corporate distribution | Early-stage VC | $44.6 | GigaFund | N/A |
| Recuro Health | December 2, 2021 | Corporate distribution | Early-stage VC | $17.0 | ARCH Venture Partners | 3.37x |
| Vivante Health | October 13, 2021 | Corporate distribution | Late-stage VC | $13.5 | N/A | N/A |

Source: PitchBook | Geography: Global | *As of December 31, 2021

## CUSTOMER ACQUISITION TOOLS

### Key customer acquisition tools VC exits over the past year*

| COMPANY | CLOSE DATE | SUBSEGMENT | EXIT SIZE ($M) | EXIT TYPE | ACQUIRER(S)/INDEX | VALUATION STEP-UP |
|---|---|---|---|---|---|---|
| **Ginger** | October 14, 2021 | Corporate distribution | $3,000.0 | Acquisition | Headspace | 2.51x |
| **WellteQ Digital Health** | March 23, 2021 | Corporate distribution | $16.7 | Public listing | Terra Nova Resources | N/A |
| **QueueDr** | January 8, 2021 | Scheduling & marketing platforms | $10.1 | Acquisition | Phreesia | N/A |
| **SilverCloud Health** | July 28, 2021 | Corporate distribution | N/A | Acquisition | Amwell | N/A |
| **Halo Health** | October 13, 2021 | Hospital management | N/A | Buyout | Symplr | N/A |
| **ClassPass** | October 15, 2021 | Scheduling & marketing platforms | N/A | Buyout | Sixth Street Partners, Hinge Capital, Vista Equity Partners, Mindbody | N/A |
| **PatientPop** | November 2, 2021 | Scheduling & marketing platforms | N/A | Acquisition | Tebra | N/A |
| **Doctor On Demand** | May 11, 2021 | Scheduling & marketing platforms | N/A | Buyout | Grand Rounds Health, The Carlyle Group | N/A |
| **Tango Health** | November 17, 2021 | Corporate distribution | N/A | Acquisition | Benefitfocus | N/A |
| **LaborChart** | October 22, 2021 | Scheduling & marketing platforms | N/A | Acquisition | Procore | N/A |

Source: PitchBook  |  Geography: Global  |  *As of December 31, 2021

# CUSTOMER ACQUISITION TOOLS

## Key customer acquisition tools incumbents*

| COMPANY | SUBSEGMENT | LAST KNOWN VALUATION ($M) | YEAR FOUNDED | FINANCING STATUS |
|---|---|---|---|---|
| Livongo | Corporate distribution | $13,938.04 | 2008 | Formerly VC-backed |
| Babylon Health | Corporate distribution | $3,970.00 | 2013 | Formerly VC-backed |
| Sharecare | Corporate distribution | $3,900.00 | 2010 | Formerly PE-backed |
| Ginger | Corporate distribution | $3,000.00 | 2011 | Formerly VC-backed |
| Ultimate Kronos Group | Scheduling & marketing platforms | $1,704.50 | 1977 | PE-backed |

Source: PitchBook  |  Geography: Global  |  *As of December 31, 2021

# CUSTOMER ACQUISITION TOOLS

## Opportunities

**Expanded access to mental healthcare:** The expected growth in employer-sponsored mental health services will increase the opportunity for digital mental health providers. Notable startups currently pursuing this space include **Headspace**, **Happify Health**, **Modern Health**, **Spring Health**, and **Meru Health**.

**Holistic workplace benefit platforms:** Employers are seeking benefit providers that offer a range of services broad enough to address the needs of the entire workforce, placing pressure on workplace benefit incumbents to develop holistic offerings. We note several partnerships being developed between startups to provide holistic employer benefit packages, as well as startups expanding their products to serve a broader market. For example, Maven Clinic and Cleo are both expanding their family planning and health solutions to incorporate the needs of LGBTQ employees. **Gympass**, a corporate wellness platform, partners with mobile applications such as **Calm**, a meditation application; Neou, a fitness application; and Tempus, a smoking cessation application.

**Full-suite scheduling platforms:** Scheduling platforms will likely expand functionality to include physician finding, eligibility verification, self-check-in, appointment reminders, patient communications, and payment processing. These functions should be available online and through mobile applications, email, and text messaging. Scheduling solutions must support virtual care delivery methods and either offer HIPAA compliant video appointments or integrate with external video telehealth platforms.

**Payment integration:** While small clinics and studios often use third-party payment processors such as Square or Stripe, providers of scheduling software are beginning to add payment processing tools. **Schedulicity** Pay enables clients to generate revenue from transactions, as opposed to paying the entire processing fee to a third party. Similarly, payment service providers such as Square are building scheduling apps on top of existing payment infrastructure. Startups are also finding ways to integrate billing and insurance functions (**see our latest Insurtech Emerging Tech Research report**), which could lead to more convergence among providers of insurance billing, scheduling, and hospital marketing software. Fully integrated scheduling, payment, and insurance systems could streamline the customer experience, as shown in Figure 21 on page 30.

**AI/ML in scheduling software:** Startups are focused on integrating machine learning (ML) and artificial intelligence (AI) into appointment scheduling software. AI can track client usage data and evaluate patterns to improve future interactions based on individual needs. For example, AI can determine when client interactions are appropriate and prompt customer relationship managers to schedule meetings. Startups pursuing this opportunity include **JRNI** and Agendize. AI-based scheduling tools could open the door to more partnerships and M&A with legacy customer relationship management providers.

## Risks & considerations

**Limitations of online scheduling software:** Some of the drawbacks to booking treatments online include the inability to adjust appointment time—which can be necessary for more complex cases—triaging cases digitally, and ensuring patients do not misclassify the purpose of their appointment; for example, calling something urgent when it is not. For this reason, human monitoring remains necessary, reducing the opportunity to fully automate the scheduling process.

**High initial setup cost could be prohibitive for smaller businesses:** While larger organizations can afford to implement wellness initiatives, the cost may be more prohibitive for small and medium-sized businesses (SMBs). Furthermore, the availability of open-source appointment scheduling software may limit the opportunity for startups that offer paid products.
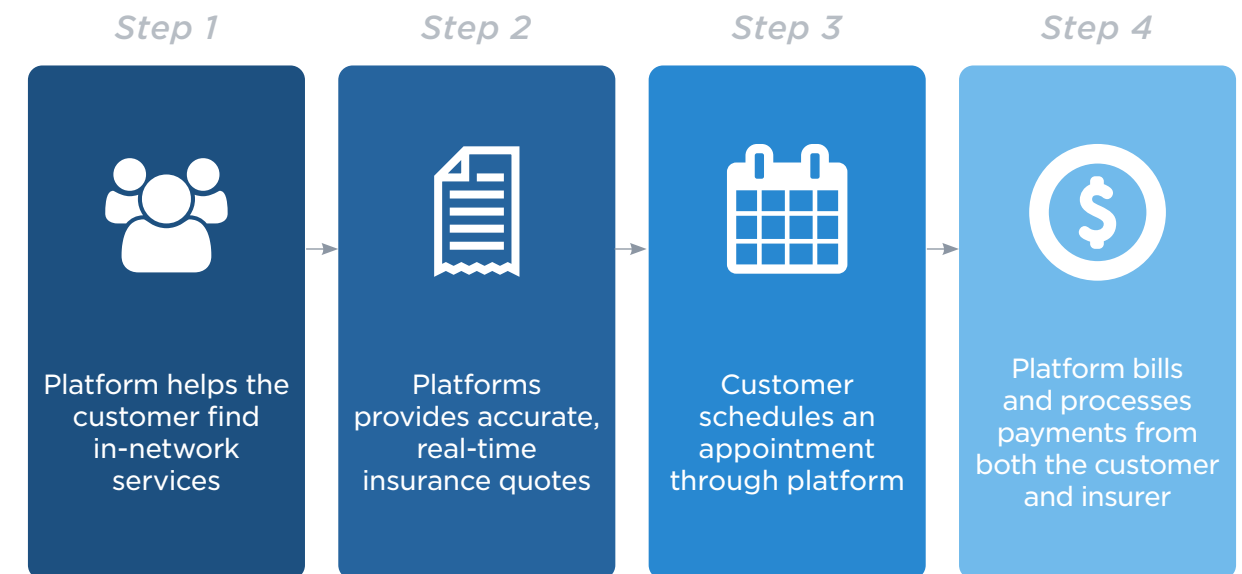
# CUSTOMER ACQUISITION TOOLS

**Partner risk as high-quality gyms avoid joining marketplaces:** If high-quality, in-demand gyms avoid joining marketplaces, this could lessen the value of the marketplace to consumers. Marketplace platforms pay studios a relatively low rate for each customer that registers for a class via the platform. For example, **ClassPass** pays gyms roughly half of what a customer would pay directly. Additionally, discount-based booking platforms attract price-sensitive consumers who are less likely to become recurring customers. Groupon provides a cautionary tale. Around 2010, the discounting platform helped drive traffic to fitness studios, leading to overcrowded classes, which had a negative impact on class quality. Groupon also attracted nonrecurring customers who seldom converted to full members.

**Mixed results on effectiveness of corporate wellness programs:** Many studies indicate that wellness programs do not lead to healthier employees or reduce healthcare costs. They argue that, in many cases, employees who opt into wellness programs are often already quite healthy, whereas those most in need of the service may not participate. One study illustrated that, on average, employees who chose to participate in wellness programs incurred $1,373 less in medical expenses the year prior to participating, compared with employees who were given the option but did not participate.[19]

**Incumbents actively launching new corporate wellness products:** Incumbent corporate wellness providers are continually developing new products to retain market share. In February 2021, Fitbit launched Mindful Method, an audio and video-based wellness program that focuses on mindfulness, sleep, stress management, mental wellbeing, and the mind-body connection. This trend could drive M&A opportunities for startups, with recent deals in the space including Virgin Pulse's acquisition of **Welltok**, Bravo's acquisition of **PUSH**, and **Headspace**'s acquisition of **Ginger**.

19: "What Do Workplace Wellness Programs Do? Evidence from the Illinois Workplace Wellness Study," *The Quarterly Journal of Economics*, Vol 143, No 4, Damon Jones, David Molitor, and Julian Reif, August 16, 2019.



Figure 18. CUSTOMER LIFECYCLE

**Step 1**
Platform helps the customer find in-network services

**Step 2**
Platforms provides accurate, real-time insurance quotes

**Step 3**
Customer schedules an appointment through platform

**Step 4**
Platform bills and processes payments from both the customer and insurer

# Clinical trial tech

## Overview

The clinical trial tech market is categorized into two subsegments: clinical trial management systems (CTMS) and patient recruitment & retention software. Industry growth is mainly driven by the rising complexity and quantity of trials, growth of contract research organizations (CROs), technological innovation, difficulty recruiting trial participants, rising popularity of decentralized trials, and strict government regulations. We believe the market is growing at a 13% CAGR from $4.5 billion in 2020 to $10.3 billion in 2025.

- **CTMS:** These systems address inefficiencies in research management and operations. These tools focus on the many processes involved in conducting trials, including site selection and monitoring, randomization, trial supply management, contact management, financial management, and regulatory document tracking. Electronic data capture (EDC) and electronic clinical outcome assessments (eCOA) solutions were traditionally sold separately from CTMS but are increasingly being developed by CTMS providers. EDC systems improve the way data is indexed and stored, making it easier for trials to conduct research more quickly. eCOAs allow patients, clinicians, and caregivers to directly report granular data using handheld devices, tablets, or websites. Real-time trial connectivity improves adherence to protocol execution, ensures patient safety and engagement, and reduces trial risks. eCOA measures include electronic patient-reported outcomes (ePROs), performance-reported outcomes, clinical-reported outcomes, and observation-reported outcomes.

- **Patient recruitment & retention software:** This software automates the recruitment, screening, and management of clinical trial patients. Patient recruitment software can provide several different capabilities along the trial lifecycle, including recruitment, data exchange, and post-enrollment tracking. Startups such as **Antidote** and **Base** provide researchers with access to candidate health data points before they are invited to participate in a trial. Other startups, such as Ripple, seek to manage all aspects of recruitment and post-enrollment tracking. Ripple helps clinical trial sites enroll more patients, increase retention, simplify reporting, and automate tasks.

## Industry drivers

**Rising popularity of decentralized trials:** In recent years, innovative technology—coupled with the need to improve patient diversity and enhance patient centricity in clinical trials—has encouraged researchers to transition toward decentralized clinical trials (DCTs). The trend has been accelerated by the rush to develop a COVID-19 vaccine and the inability to conduct in-person trials during a pandemic. DCTs use technology and services—such as telemedicine, electronic clinical assessments, and mobile healthcare providers—to create participation opportunities for individuals who are not located near research sites. Transitioning to DCTs can be a complex process for incumbents in the pharmaceutical industry, as researchers must develop new operational infrastructure, navigate additional regulations, and invest in new technologies.

# CLINICAL TRIAL TECH

**Growing customer base of CROs:** Trials are increasingly being outsourced to CROs, which are growing in importance as buyers of clinical trial tools. COVID-19 has accelerated the use of advanced technologies that can help improve the quality of studies, streamline processes, and improve information-sharing capabilities. Surveys indicate that more than 80% of sponsors and CROs plan to integrate clinical applications.[20]

**Rise in quantity and complexity of clinical trials:** The life sciences industry is witnessing a global increase in the number of clinical trials each year.[21] This growth can be attributed to factors such as the aging population, high prevalence of chronic diseases, expiration of blockbuster drugs, availability of government funds for clinical trials, fierce competition in the pharmaceutical industry, and new technological advancements enabling the development of digital therapeutics and medical devices.

**Technological innovation and adoption of smartphones:** The growth of biometric trackers and smartphones has enabled the development of eCOA systems as trackers and mobile applications that help collect patient data.

**Ongoing complexity of recruiting and training patients:** Determining if potential participants meet trial criteria is often time-consuming and expensive, as 80% of clinical trials do not meet designated patient enrollment deadlines, and the clinical trial dropout rate is around 30%.[22] Emerging patient recruitment startups are finding ways to more effectively match participants to clinical trials and assist in the enrollment process. These include **Deep 6 AI**, **PatientWing**, and **SubjectWell**, which help determine if patients meet inclusion criteria and facilitate patient engagement throughout the enrollment process. Verified Clinical Trials, a global organization that maintains a clinical trials database registry, prevents patients from enrolling in multiple trials and determines if a patient has violated protocols.

**Need to adhere to strict government regulations:** Drug failure can result when feedback from the US Food & Drug Administration is not followed, paperwork is not filed on time, or data is not properly validated. eCOAs help digitize many trial processes, enhancing regulatory compliance and potentially improving trial success rates.

20: "Veeva 2020 Unified Clinical Operations Survey Report," Veeva Systems, 2020.
21: "Trends, Charts, and Maps," ClinicalTrials.gov, January 25, 2022.
22: "What Is Patient Centricity in Clinical Trials?" Antidote, Eian Kantor, March 16, 2021.

# CLINICAL TRIAL TECH

## Business model

Key customers include pharmaceutical and biopharmaceutical companies, CROs, medical device companies, and others. Providers generate revenue via installation, subscription, consulting, and support fees. Patient recruitment & retention providers may offer pay-per-performance options, where payments occur when candidates accept a trial invitation.

Figure 19. **COMMON CLINICAL TRIAL TECH KPIS**

- Revenue growth & profit per customer

- Customer acquisition cost

- Patient recruitment & retention: number of patients reviewed or engaged on platform, number of patients referred, percentage of patients who complete trial

- Net promoter score

- LTV

- Size of dataset per customer

- Churn rate

- Records managed

- Users under license

- Market penetration proportion

# CLINICAL TRIAL TECH

## VC activity

Companies tracked in the clinical trial tech segment have raised $1.7 billion in venture funding across 24 deals in 2021, above 2020's $1.3 billion across 35 deals. Relative to 2020, total deal activity has skewed more heavily toward the late stage (17 deals) as opposed to the angel & seed (one deal) and early (six deals) stages—a trend consistent across the enterprise healthtech industry. Invested capital was significantly higher in Q2 2021, with $765.0 million raised, driven by the largest deal of the year, **insitro**'s $400.0 million Series C, along with several midsized deals. We tracked $370.5 raised in Q4 across six deals, with decentralized trial platform **Medable** raising the second-largest deal of the year, a $304.0 million Series D, on October 26. Other mega-deals raised by companies focused on developing DCT technology include **Reify**'s $220.0 million Series C, which amounted to a massive 12.37x step-up, and **Huma**'s $130.0 million Series C.

Exit activity reached an all-time high this year with $1.0 billion in exit value disclosed across six deals. We tracked a total of 10 exits from 2016 to 2020, although none disclosed exit value. **Science 37** went public on the Nasdaq through a SPAC for $235.0 million, putting the company's pre-money valuation at $970.0 million, less than half of competitor **Reify**'s $2.2 billion valuation. **4G Clinical** was acquired by The Goldman Sachs Group through a $230.0 million LBO. After raising a $300.0 million Series B in March, **Valo** planned to go public through a reverse merger with Khosla Ventures Acquisition (KVSA) in June, in a deal valuing the company at $2.8 billion. However, in November, both parties decided to terminate the deal "based on market conditions."[23] We anticipate **Valo** will seek to raise funds in the near future.
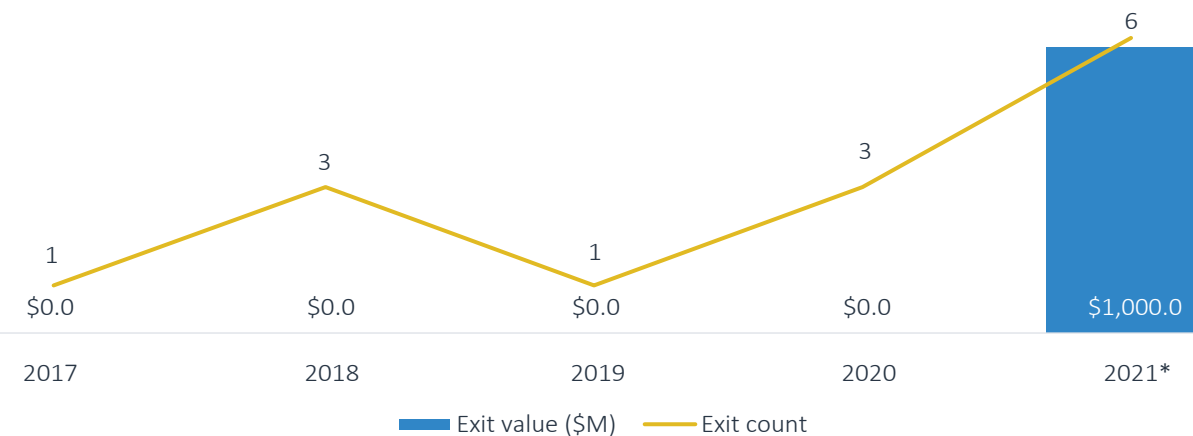
**23: "Valo Health and Khosla Ventures Acquisition Co. Mutually Agree to Terminate Business Combination Agreement," Cision, November 15, 2021.**

Figure 20. CLINICAL TRIAL TECH VC DEAL ACTIVITY

Deal count: 2017: 33, 2018: 37, 2019: 32, 2020: 35, 2021*: 24

Deal value ($M): 2017: $185.9, 2018: $498.8, 2019: $599.1, 2020: $1,252.0, 2021*: $1,740.6

Deal value ($M) — Deal count
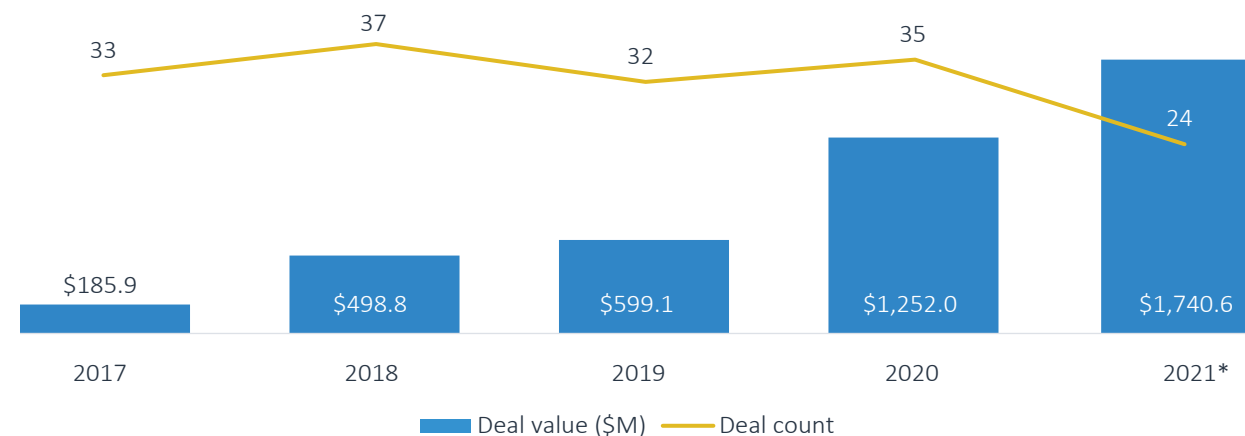
Source: PitchBook | Geography: Global | *As of December 31, 2021



Figure 21. CLINICAL TRIAL TECH VC EXIT ACTIVITY

Exit count: 2017: 1, 2018: 3, 2019: 1, 2020: 3, 2021*: 6

Exit value ($M): 2017: $0.0, 2018: $0.0, 2019: $0.0, 2020: $0.0, 2021*: $1,000.0

Exit value ($M) — Exit count

Source: PitchBook | Geography: Global | *As of December 31, 2021

**Figure 22.**

## Key clinical trial tech VC deals over the past year*

| COMPANY | CLOSE DATE | SUBSEGMENT | STAGE | DEAL SIZE ($M) | LEAD INVESTOR(S) | VALUATION STEP-UP |
|---------|-----------|-----------|-------|----------------|------------------|-------------------|
| **Medable** | October 26, 2021 | Patient recruitment & retention | Late-stage VC | $304.0 | Blackstone, Tiger Global Management | 2.47x |
| **AUM Biosciences** | October 12, 2021 | Nonsegmented | Early-stage VC | $27.0 | Everlife Asia | N/A |
| **Teckro** | November 24, 2021 | Patient recruitment & retention | Late-stage VC | $25.0 | N/A | N/A |
| **Circuit Clinical** | October 28, 2021 | Patient recruitment & retention | Late-stage VC | $14.5 | N/A | 2.42x |
| **Ancora.ai** | December 2, 2021 | Nonsegmented | Seed | N/A | N/A | N/A |
| **SubjectWell** | December 1, 2021 | Patient recruitment & retention | Late-stage VC | N/A | N/A | N/A |

Source: PitchBook  |  Geography: Global  |  *As of December 31, 2021

# CLINICAL TRIAL TECH

Figure 23.

## Key clinical trial tech VC exits over the past year*

| COMPANY | CLOSE DATE | SUBSEGMENT | EXIT SIZE | EXIT TYPE | ACQUIRER(S)/INDEX | VALUATION STEP-UP |
|---------|-----------|------------|-----------|-----------|-------------------|-------------------|
| Science 37 | October 7, 2021 | Clinical trial management | $770.0 | Public listing | LifeSci Acquisition II | 2.46x |
| 4G Clinical | July 2, 2021 | Clinical trial management | $230.0 | Buyout | The Goldman Sachs Group | N/A |
| Cmed | May 1, 2021 | Clinical trial management | N/A | Acquisition | Alten | N/A |
| Kairos | March 1, 2021 | Nonsegmented | N/A | Acquisition | IQVIA | N/A |
| PatchAi | November 16, 2021 | Patient recruitment & retention | N/A | Buyout | Creadev | N/A |
| SignalPath | September 1, 2021 | Clinical trial management | N/A | Acquisition | Verily Life Sciences | N/A |

Source: PitchBook  |  Geography: Global  |  *As of December 31, 2021

Figure 24.

## Key clinical trial tech incumbents*

| COMPANY | SUBSEGMENT | LAST KNOWN VALUATION ($M) | YEAR FOUNDED | FINANCING STATUS |
|---|---|---|---|---|
| Datavant | Clinical trial management | $7,000.00 | 2017 | PE-backed |
| Science 37 | Clinical trial management | $1,050.00 | 2014 | Formerly VC-backed |
| CRF Health | Clinical trial management | $1,000.00 | 2000 | PE-backed |
| 4G Clinical | Clinical trial management | $280.00 | 2015 | PE-backed |
| TriNetX | Clinical trial management | $160.00 | 2013 | PE-backed |

Source: PitchBook | Geography: Global | *As of December 31, 2021

# CLINICAL TRIAL TECH

## Opportunities

**Unified clinical management and recruitment solutions:** While CTMs, EDCs, eCOAs, and patient recruitment solutions have traditionally been offered by different providers, we expect increased development of unified platforms that can address holistic clinical research from recruitment to trial completion. Standalone systems can cause significant inefficiencies due to system maintenance and higher set-up costs, creating an opportunity for unified platforms to take market share.

**ePROs:** Clinical trials often require participants to keep diaries of their daily behaviors and experiences. Whereas written diaries can be difficult to maintain and transcribe, ePRO systems consist of electronic diaries with several features intended to improve the patient documentation experience, including reminders and alerts, animated compliance feedback, and dynamic, context-sensitive messaging. Electronic diaries automatically timestamp entries and remind patients when entries are due, improving compliance and regulatory documentation. 94% of patients using ePROs during trial periods complied with trial protocols, compared with only 11% compliance for those using paper documentation.[24] Startups pursuing the opportunity to develop ePRO systems include **Koneksa Health**, which raised a $10.0 million seed round in April 2020, and **uMotif**.

**Decentralized trial technology:** DCTs use technology and services such as telemedicine, electronic clinical assessments, and mobile healthcare providers to create participation opportunities for individuals who are not located near research sites. In recent years, innovative technology, coupled with the need to improve patient diversity and enhance patient centricity in

clinical trials, has encouraged researchers to transition toward DCTs. The trend was accelerated by the rush to develop a COVID-19 vaccine, as well as by the inability to conduct in-person trials during a pandemic. We anticipate clinical trials to increasingly use elements of decentralization. **Medable** aims to increase access to medical research by developing a DCT platform.

**Patient enrollment software:** While several patient recruitment startups match clinical trials with potential patients, few assist in the enrollment process. **Deep 6 AI**, **PatientWing**, and **SubjectWell** help determine if patients meet inclusion criteria as well as facilitate patient engagement throughout the enrollment process. Verified Clinical Trials prevents patients from enrolling in multiple trials and determines if a patient has violated protocols.

**Medication adherence software:** Researchers generally increase trial size to account for instances of nonadherence and dropouts, a process that adds cost and expands timelines. Several startups (such as TowerView Health, **Wellth**, MedMinder, AdhereTech, and Medisafe) are focused on increasing adherence rates through the use of devices such as smart pillboxes and pill bottles, as well as virtual pillboxes, or behavioral incentives. Emocha Mobile Health and AiCure provide digital forms of directly observed therapy (DOT), which involve an AI application capable of watching patients take their medication. Research indicates that patients who receive DOT complete treatment 90% of the time versus 61% of the time for self-administered therapies.[25] Medication adherence solutions can also be applied to regular medical prescriptions as well as clinical trials.

24: "Patient Non-Compliance With Paper Diaries," *British Medical Journal*, Vol 324, Arthur A. Stone, et al., May 18, 2002.
25: American Thoracic Society/Centers for Disease Control and Prevention/Infectious Diseases Society of America: Treatment of Tuberculosis," *American Journal of Respiratory and Critical Care Medicine*, Vol 167, 2003.

## Risks & considerations

**Real-world evidence and EHRs could reduce market potential for patient recruitment startups:** EHRs can facilitate clinical trial recruitment by allowing researchers to search and screen patients based on trial-specific criteria. In addition, the FDA's indication that real-world evidence could be used to simulate control groups could reduce the overall sample size for trials. We view these threats as more significant for startups focused on recruiting patients but less relevant for sign-up and retention-focused technology. However, we note some startups, such as **Trialbee**, are leveraging EHR data to improve their recruitment-focused capabilities.

**High implementation costs:** Implementing, maintaining, and upgrading clinical trial technologies requires significant investment, which could hinder adoption, especially in the SMB market. However, these costs could be partially offset, as COVID-19-driven nonprofit investment into research processes may benefit the industry.

**Digitalization increases risk of ransomware and cyberattacks:** In September 2021, a high-profile cyberattack was carried out against eResearchTechnology, causing a delay in COVID-19 trials, as researchers had to manually process (that is, with pen and paper) data. Ransomware and cyberattacks are likely to become permanent fixtures of the healthtech landscape, adding to trial cost structure as researchers invest in security systems.

# Insurtech

## Overview

The US health insurance industry is dominated by large legacy insurance providers such as Anthem (NYSE: ANTM), Centene (NYSE: CNC), and UnitedHealth (NYSE: UNH). Yet rising healthcare costs coupled with steadily improving technological capabilities are creating opportunities for startups to build viable models that address gaps in the insurance market. The health insurtech market can be categorized into three subsegments: health insurers, insurance operations tech, and marketplace & benefits management providers.

- **Health insurers:** Startups that offer traditional health insurance products, often for targeted markets (for example, direct-to-consumer, Medicare Advantage, or employer-sponsored).

- **Insurance operation tech:** Providers of operational and analytical solutions for insurance providers. Services include claims adjudication, billing management systems, patient enrollment, marketing, mailroom correspondence management, and patient eligibility verification solutions. While the Affordable Care Act mitigated the medical insurance underwriting market in the US, underwriting technology remains prevalent internationally.

- **Marketplace & benefits management:** In addition to providing valuable information hubs for customers, insurance marketplaces represent a key distribution and onboarding channel. Key benefit management functions consist of plan information, appointment scheduling, and prescription pricing information.

## Industry drivers

**Improved access to traditional and alternative data sources for risk analysis:** The growth and increased availability of traditional and nontraditional data sources enable startups to build patient management platforms that provide the risk-takers—including insurers, risk-taking providers, and self-insured employers—with a better understanding of individual healthcare needs. These solutions flag potential health implications and provide personalized medical care guidance.

**Increased focus on VBC and shared-risk business models:** Rising healthcare costs are putting pressure on policymakers and other stakeholders to focus on VBC and shared-risk business models, which incentivize preventive care and encourage lower-cost targeted treatments, thus requiring more convergence and data sharing between insurance providers and care providers as they work to optimize treatments, payments, and risk analysis. This trend drives opportunities for insurance startups looking to improve legacy processes and increase data utilization.

**Increased focus on virtual care opportunities in the wake of the pandemic:** Virtual care emerged from the COVID-19 pandemic as a preferred route to improve care and lower costs. Several insurers have partnered with virtual care providers to offer discounted visits, including legacy provider Cigna (NYSE: CI) acquiring **MDLive** in April 2021. Due to their IT expertise and consumer-oriented mindset, insurtech startups may integrate telehealth capabilities more swiftly than legacy incumbents.

# INSURTECH

**Dismal consumer ratings drive need for improved engagement tech:** With an industry average net promoter score of 19%,[26] insurers are working to improve customer satisfaction rates—a measure that can also affect Centers for Medicare & Medicaid Services (CMS) reimbursement levels. This effort creates an opportunity for benefits management and consumer engagement technology startups focused on helping insurers improve customer experience flows through upgraded product portals, mobile apps, recommendation assistants, chatbots, and unified digital service centers. Zipari built a consumer experience platform for health insurers that offers various digital products, including consumer portals, a member mobile app, a recommendation assistant tool, a chatbot, and a unified digital service center to enhance customer satisfaction rates.

**The rise of Medicare Advantage (MA) boosts opportunity for marketplace startups:** According to McKinsey & Company, "MA is the fastest-growing line of business for many health plans, with enrollment growth of around 8% per year..." and expectations to reach roughly 34 million participants by 2023.[27] This creates fertile territory for insurance marketplace providers that help consumers find and enroll in the best possible plans.

26: "What Is a Good NPS Score (2021 Benchmark)," Doter, Sushant Kumar, March 11, 2021.
27: "New Stars Ratings for Medicare Advantage Prioritize Customer Experiences," McKinsey & Company, Stephanie Carlton et al., October 15, 2020.

## Business model

**Health insurers:** Traditionally, insurers generate revenue from premiums charged for medical insurance policies. Premiums are used to fund operations and pay claims from the customer-incurred medical costs outlined under the terms of coverage. Providers may also earn float revenue or returns from invested cash.

**Insurance operation technology:** Providers in this space are primarily software platforms or integration—via application programming interfaces (APIs) or software development kits (SDKs)—vendors that generate revenues from time-based license arrangements and maintenance and support fees. Fees may vary based on client size and usage rates. Some may also offer analytics, training, implementation, strategic advisory, outsourcing, and improvement services. We note a few companies providing VBC solutions engaging in shared-risk contracts with insurers. These companies provide their solutions at a low cost but take a percentage of savings generated through their products.

**Distribution and benefits managers:** Many distribution-focused companies are registered lead generators, brokers, or agents and are intermediaries between insurers and consumers. They receive commissions from insurers for each policy sold or renewed. Benefit managers contract with insurers and employers, generating revenues via software licenses or SaaS. They may also earn commissions from providers when consumers schedule appointments through their platforms.

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### Figure 25. COMMON INSURTECH KPIS

| Health insurers | All |
|---|---|
| • Net premiums written | • Churn rate |
| • Medical care ratio | • New business premiums |
| • Average treatment charge | • Revenue growth |
| • Claims denial rate | • Monthly recurring revenue |
| • Underwriting expenses | • Viability ratio (LTV/CAC) |
| • Number of customers | • Value of data mined |
| • Medical loss ratio (MLR) | • Market penetration proportion |
| • First contact resolution rate (member services) | • Net promotion score |
| • Provider contracting cycle time | • Gross margin |
| | • Addressable market |
| | • Patents |
| | • Number of partnerships |

# INSURTECH

## VC activity

In 2021, the insurtech segment has generated $4.7 billion in VC financing across 81 deals, a significant increase in terms of deal value from $2.7 billion across 88 deals in 2020. Several large deals drove this growth, with 11 mega-deals tracked. The largest deals included a $1.2 billion Series D for Devoted Health, a $650.0 million Series C for **Wefox**, and a $400.0 million Series D and $354.0 million Series C for Cityblock. Medicare has been a point of interest among several health insurance startups—including **Clover Health**, AllyAlign Health, Alignment Healthcare (NASDAQ: ALHC), **Oscar**, and Devoted Health—as the market opportunity increases due to governmental promotion of Medicare Advantage over the historical fee-for-service model. Devoted Health benefited from rising opportunities and more than doubled membership from 18,000 members in June 2020 to 40,000 members in June 2021.

In Q4 2021, deal activity dropped substantially, with only $475.9 million raised across 11 deals compared with $1.9 billion across 24 deals in Q3, $1.3 billion across 24 deals in Q2, and $964.6 million across 22 deals in Q1. Despite the decline, we believe the market opportunity for the health insurtech segment to remain ample and expect investment to increase in 2022. Exit activity within this segment was ample with four IPOs, one SPAC, one M&A, and three LBOs. Public exits included **Bright Health Group** at $10.2 billion in exit value, **Oscar** at $6.5 billion, **PolicyBazaar** at $5.4 billion, **Shuidi** at $4.4 billion, and and **Clover Health** at $3.7 billion.[28] All five companies have experienced a decline in enterprise value since going public. VC-backed Centivo, a provider of employer-funded health plans, acquired **Apostrophe**, a health benefits platform and third-party administrator. Centivo will service select members of **Apostrophe** and leverage **Apostrophe**'s creative member engagement strategies across the entire firm.
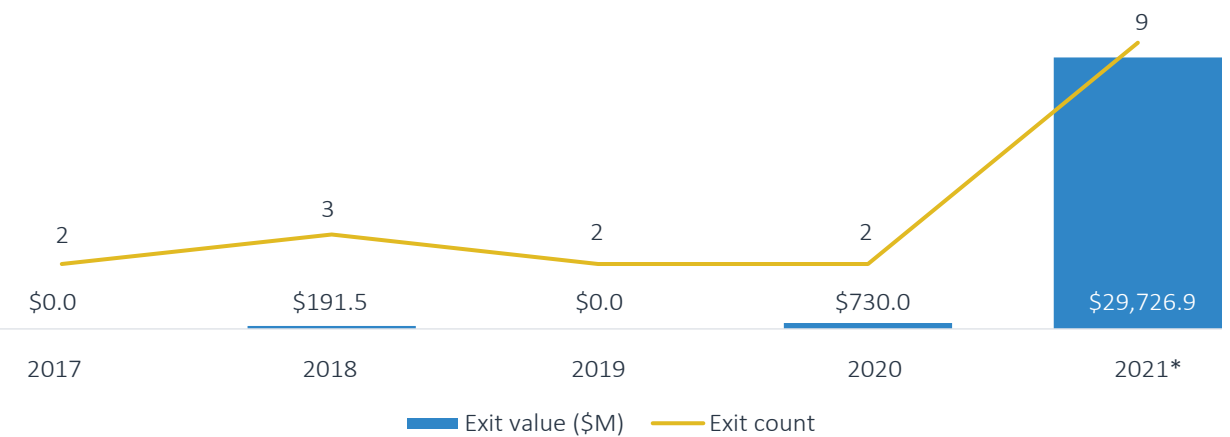
28: "Chamath Palihapitiya to Take Clover Health Public in Another SPAC Deal Worth $3.7 Billion," *CNBC,* Yun Li, October 6, 2020.

Figure 26. INSURANCE TECH VC DEAL ACTIVITY
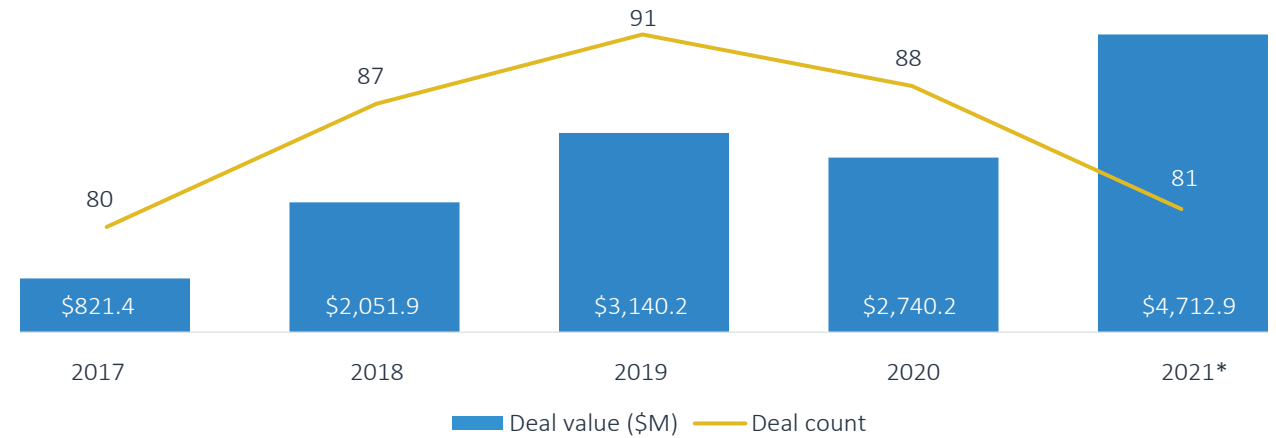


Source: PitchBook  |  Geography: Global  |  *As of December 31, 2021

Figure 27. INSURANCE TECH VC EXIT ACTIVITY



Source: PitchBook  |  Geography: Global  |  *As of December 31, 2021

**Figure 28.**

## Key insurance tech VC deals over the past year*

| COMPANY | CLOSE DATE | SUBSEGMENT | STAGE | DEAL SIZE ($M) | LEAD INVESTOR(S) | VALUATION STEP-UP |
|---------|-----------|-----------|-------|----------------|------------------|-------------------|
| Acko | October 28, 2021 | Marketplace & benefit platforms | Late-stage VC | $255.0 | General Atlantic, Multiples Alternate Asset Management | 2.11x |
| Nomi Health | December 8, 2021 | Operations tech | Early-stage VC | $110.0 | Arbor Ventures, Rose Park Advisors | N/A |
| Stride | October 26, 2021 | Marketplace & benefit platforms | Late-stage VC | $47.0 | King River Capital | 1.98x |
| SafeRide Health | November 8, 2021 | Operations tech | Late-stage VC | $28.8 | Sands Capital | 2.22x |
| Bowtie | October 19, 2021 | Insurance providers | Early-stage VC | $22.6 | Mitsui & Co. | N/A |
| Alaffia Health | October 29, 2021 | Operations tech | Seed | $6.5 | N/A | N/A |
| MyHealthMath | December 7, 2021 | Operations tech | Late-stage VC | $3.5 | Jennus Innovation | 1.00x |
| Baloon Africa | December 3, 2021 | Operations tech | Early-stage VC | $2.5 | Gaëlle Olivier, Nelly Brossard, Pierre-Olivier Desaulle | N/A |
| Leyue Health | December 27, 2021 | Operations tech | Late-stage VC | N/A | CCB International, CE Innovation Capital, Shenzhen Capital Group | N/A |
| GIGI Benefits | October 1, 2021 | Operations tech | Early-stage VC | N/A | N/A | N/A |

Source: PitchBook | Geography: Global | *As of December 31, 2021

## INSURTECH

Figure 29.

## Key insurance tech VC exits over the past year*

| COMPANY | CLOSE DATE | SUBSEGMENT | EXIT SIZE | EXIT TYPE | ACQUIRER(S)/INDEX | VALUATION STEP-UP |
|---|---|---|---|---|---|---|
| **Bright Health Group** | June 24, 2021 | Insurance providers | $10,158.4 | Public listing | N/A | 2.54x |
| **Oscar** | March 3, 2021 | Insurance providers | $6,503.3 | Public listing | Tiger Global Management, Coatue Management, Dragoneer Investment Group | N/A |
| **PolicyBazaar** | November 15, 2021 | Marketplace & benefit platforms | $5,395.7 | Public listing | N/A | 3.60x |
| **Shuidi** | May 7, 2021 | Insurance providers | $4,369.5 | Public listing | N/A | 2.48x |
| **Clover Health** | January 7, 2021 | Insurance providers | $3,300.0 | Public listing | Social Capital Hedosophia Holdings Corp III | 2.52x |
| **EnterMedicare** | June 8, 2021 | Operations tech | N/A | Buyout | Hellman & Friedman, Altas Partners, AlpInvest Partners, Hub International, HarbourVest Partners | N/A |
| **Apostrophe** | June 23, 2021 | Insurance providers | N/A | Acquisition | Centivo | N/A |
| **Punkta** | January 28, 2021 | Marketplace & benefit platforms | N/A | Buyout | Pollen Street Capital, BIK Brokers | N/A |
| **Progexia** | March 26, 2021 | Operations tech | N/A | Buyout | MoneyTrack, Truffle Capital, AG2R La Mondiale | N/A |

Source: PitchBook | Geography: Global | *As of December 31, 2021

## INSURTECH

## Key insurance tech incumbents*

| COMPANY | SUBSEGMENT | LAST KNOWN VALUATION ($M) | YEAR FOUNDED | FINANCING STATUS |
|---|---|---|---|---|
| Bright Health Group | Insurance providers | $11,082.73 | 2015 | Formerly VC-backed |
| Agilon Health | Operations tech | $8,832.50 | 2016 | Formerly PE-backed |
| Oscar | Insurance providers | $7,922.55 | 2012 | Formerly VC-backed |
| GoHealth | Marketplace & benefit platforms | $6,585.23 | 2001 | Formerly PE-Backed |
| PolicyBazaar | Marketplace & benefit platforms | $5,897.79 | 2008 | Formerly VC-backed |

Source: PitchBook | Geography: Global | *As of December 31, 2021

## Opportunities

**Identifying members at highest risk:** Effectively identifying and engaging high-risk members is critical to lowering healthcare costs. Startups such as Prosper are employing new methods to measure and mitigate risk, such as partnerships with employer wellness programs and health coaching techniques to reduce health costs.

**Improving complicated payment processes:** The rise of high-deductible health plans (HDHP) can make it harder for patients to understand their liability, leading to reduced collection rates.[29] This is creating opportunities for technologies that can help insurers improve patient collection rates and explain bills more clearly. For example, Sidecar Health provides members with payment cards that can enable up-front payment and help secure better rates from providers. OODA Health, which was acquired by Cedar in May 2021 for $450.0 million, offers patients a payer-branded statement that consolidates all provider bills and explanations of benefits (EOBs) associated with each encounter. In addition to direct consumer billing, startups have emerged that are focused on helping bridge the gap between insurance and provider billing systems. Startup Patientco, valued at $450.0 million, is focused on this opportunity.

**Marketplace & benefit management platforms:** The prevalence of new insurance startups, the expansion of Medicare Advantage, and rising digital distribution channels are leading to an increased need for online marketplaces. Such marketplaces are also likely to be critical in helping insurers meet requirements for more price transparency by 2023.

**Risk-sharing enablement platforms:** Several startups are building solutions to create shared-risk platforms between payers and providers. Effective value-based contracts range from simple quality metrics to full capitation. A startup focused on this opportunity is **HealthEdge**, which enables insurers to swiftly configure and launch new contract VBC arrangements and benefit plans.

**Models that connect payment models directly to outcomes:** The increased focus on VBC is incentivizing insurers to find ways to proactively manage patient health and enter into risk-sharing arrangements with providers. Several startups are developing models to improve how risk is shared between providers and payers. **Bright Health**'s "under one roof" model limits the startup to partnering with just one health system in an effort to reduce complexity and streamline processes. Centivo, an insurer for self-funded employers, seeks to link compensation for primary care providers directly to patient experience. Firefly Health employs its own team of physicians, nurse practitioners, behavioral health specialists, and health guides capable of delivering virtual primary care in addition to partnering with a broad network of physical partners and a hybrid specialist network.

**Monitoring devices and wellness providers:** Monitoring devices can help insurers understand real-time and long-term consumer wellness trends, as well as develop initiatives to support healthier members. Examples of how devices are being used by insurers include **Humana**'s partnership with Fitbit, started in 2019, and **Oscar**'s provision of fitness and sleep monitors to clients, which began in 2014. Other examples include **Beam Dental**'s smart toothbrush to help reduce dental coverage premiums.[30]

**29: "Why Patient Payments Are a System Issue," OODA Health, August 2019.**
**30: "Meet a Startup Building an Insurance Business Around a Connected Toothbrush," *Fortune*, Stacey Higginbotham, June 26, 2015.**

**Real-time coverage verification and cost analysis:** Emerging technologies are helping providers verify coverage, find coverage, and estimate costs at the point of service. PointCare helps health systems find coverage for self-pay patients and provides an integrated insurance validation service to help organizations check and monitor insurance coverage to patients. Anagram enables independent practices to obtain real-time insurance benefits, gain access to out-of-network patient benefits, and offer cash discounts. In addition to its technological offerings, Anagram's service team resolves insurance denials for providers.

## Risks & considerations

**Price transparency law minimizes common startup insurance provider differentiation tactic:**
New price transparency laws in the US, which took effect in January 2022, will require insurers to make public more information regarding copays and prescription prices.[31] All information must be available through online, consumer-usable tools. While this may improve the competitiveness of incumbents relative to startups by lowering their compliance costs relative to legacy providers, startups are generally ahead of the industry in terms of transparency. These regulations could also increase the opportunity for providers of marketplace & benefits managers to help insurers build and maintain pricing portals.

**Data privacy regulations:** Data privacy laws are likely to play an important role in the evolution of health-related technologies. While the European Union passed the General Data Protection Regulation in May 2018,[32] US healthcare data laws are (so far) less stringent. Both the Health Insurance Portability and Accountability Act (HIPAA)[33] and Health Information Technology for Economic and Clinical Health Act (HITECH)[34] outline health data usage and privacy regulations. We anticipate stricter regulations in the US could be enacted at the state levels. For example, the 2018 California Consumer Privacy Act (CCPA) controls the collection, use, and sale of personal information to businesses and other entities. Recent controversy related to Lemonade's (NYSE: LMND) alleged use of AI to detect fraud by monitoring its customers' facial expressions highlights the potential danger of misusing new data technologies.[35]

**High entry barriers for insurance startups:** Health insurance is a complex, price-competitive industry with several barriers to entry. Startups must obtain individual state licenses, develop partnerships with providers and pharmacy benefit managers, and have enough capital to fund potential payouts. Furthermore, health insurance is a competitive market. The top five US insurers hold nearly 44% of the market and have several advantages over startups,[36] including vast datasets that support predictive analytics and risk forecasting, sticky clients, and strong partnerships with pharmacy benefit managers and health providers. They also have strong balance sheets and ample float revenue.

31: "Consumers: How to Get the Most Out of Hospital Price Transparency," CMS.gov, December 1, 2021.
32: "What is GDPR, the EU's New Data Protection Law?" GDPR.eu, Accessed on May 20, 2021.
33: "Health Insurance Portability and Accountability Act of 1996 (HIPAA)," CDC.gov, September 14, 2018.
34: "HITECH Act Enforcement Interim Final Rule," HHS.gov, June 16, 2017.
35: "Lemonade Weathers a Raging Storm," Seeking Alpha, June 2, 2021.
36: "Largest Health Insurance Companies of 2022," ValuePenguin, Robin Townsend, January 5, 2022.

# Operations & care management

## Overview

The operations & care management market is categorized into three subsegments: healthcare analytics & Big Data, hospital management systems, and patient management systems. Industry growth is mainly driven by the persistence of outdated and inefficient administrative processes and tools, the opportunity to improve patient care and outcomes, and the implementation of favorable government initiatives. Attractive characteristics of this industry include high demand, high switching costs, and government regulations that require or incentivize digitizing medical data. Large players include Epic Health, **Cerner**, IBM, **Athenahealth**, and McKesson Corporation. These corporations offer several software services that enhance operations & care management. Epic Health holds a substantial share of the US EHRs market and offers services aimed at patient experience and care, population health, AI & analytics, revenue cycle management, and more.

- **Healthcare analytics & Big Data:** Software that enables healthcare data analysis and assists with public health tracking and individual diagnoses. Startups in this space provide decision-support tools, population health management, and software focused on tracking disease.

- **Hospital management systems:** Software that facilitates hospital management. Key functions include scheduling, bill payment, compliance, and workforce and revenue management.

- **Patient management systems:** Hardware and software that facilitate patient management and treatment, with a focus on patient engagement, monitoring, and communication, as well as digital patient records management. The EHRs opportunity has persisted as a primary focus of investors for many years and represents a fragmented space with significant challenges regarding data integration capabilities.

## Industry drivers

**Shift toward transparent pre-care pricing:** We believe there will be a shift away from post-care paper billing toward transparent, real-time payment with several payment method options and the ability to split payments for larger bills. These offerings will help provide more payment transparency and flexibility for patients while lowering the cost and increasing the speed of collections for providers. Rivet, a revenue cycle management platform, allows providers to give patients upfront pricing estimates and collect payment prior to or shortly after providing care. Its ML system reviews estimates, practice data, billing rules, and contract details to improve accuracy.

**Ongoing modernization of software, processes, and tools:** Hospitals and care centers use numerous processes and systems to collect, maintain, and store patient records. These systems are often not well integrated and require distinct processes and workflows to maintain. Modern SaaS-based EHRs promise to create a relatively easier way to exchange records while improving communication and collaboration among various stakeholders within healthcare systems, such as pharmaceutical companies, laboratories, hospitals, care providers, and academic and research institutes. Potential benefits include accelerating care delivery processes by allowing easy and streamlined access to patient records, reducing administrative processes, decreasing the costs associated with paper records storage, and speeding up bill payment and reimbursement. **CareCloud**, which was acquired by Medical Transcription Billing (NASDAQ: MTBC) for $39.0 million on January 8, 2020, offers a suite of cloud-based healthcare IT solutions such as EHRs, patient engagement, mobile administration application, and revenue cycle management software.

# OPERATIONS & CARE MANAGEMENT

**Continued efforts to improve patient care and outcomes:** Clinical solutions such as decision-support tools, patient management, and healthcare analytics can enhance physicians' ability to provide personalized care based on the best available data. These services can also facilitate communication among doctors and patients, decreasing readmissions and reducing the number of clinical visits. Improved use of patient data also has the potential to optimize personalized treatment plans.

**Government initiatives to promote EHR adoption:** Many government initiatives intend to promote the adoption of EHR solutions. In 2014, the UK upped its investment into healthcare IT by $5.4 billion over five years to stimulate the adoption of EHRs.[37] CMS's Quality Payment Program, also known as Medicare Access and CHIP Reauthorization Act of 2015, offers two tracks under which Medicare clinicians can receive payment increases for using an EHR. Both Japan and China are also advancing implementation initiatives.

37: "Healthcare Information Technology Market to Reach $441 Billion by 2025," Healthcare Facilities Today, April 26, 2019.

## OPERATIONS & CARE MANAGEMENT

### Business model

Providers in this space are largely software vendors that generate revenues primarily from subscriptions, time-based license arrangements, and maintenance and support fees. Some may also offer analytics, training, implementation, strategic advisory, outsourcing, and improvement services. These services deliver expertise to customers, enabling them to fully configure and utilize the technology's benefits. Some companies include services in the price of their software, while others charge additional fees. Cloud-based software companies generally charge monthly fees based on the number of patients or physicians using the software.

Figure 31. **COMMON OPERATIONS & CARE MANAGEMENT KPIS**

- Revenue growth & profit per customer
- Customer acquisition cost
- Net promoter score
- Size of dataset per customer
- Customer retention
- Monthly recurring revenue
- Viability ratio (LTV/CAC)
- Records managed
- Users under license
- Market penetration proportion

# OPERATIONS & CARE MANAGEMENT

## VC activity

In 2021, the operations & care management segment generated $6.5 billion in VC financing across 149 deals, an increase in terms of deal value from $4.3 billion in 2020 across 185 deals. Several large deals drove this growth, with 21 mega-deals tracked in 2021—up from 10 in 2020. Deal value decreased quarterly to $1.1 billion in Q4 from $1.2 billion in Q3, $1.4 billion in Q2, and $2.8 billion in Q1, while deal count remains relatively unchanged QoQ. **VillageMD**'s $1.0 billion late-stage round in January drove Q1's heightened deal value. Other large deals include Olive AI's $400.0 Series H, **Miaoshou Doctor**'s $391.0 million Series H and $231.5 Series E, and **Komodo Health**'s $220.0 Series F. Median pre-money valuation nearly tripled to $80.0 million from $30.0 million with the average median pre-money valuation step-up being 1.84x. Numerous hospital management startups, such as **VillageMD**, **PatientPing**, and Olive AI, achieved high valuations this year as hospitals undergo digital transformation to improve patient flow and automate operational tasks.

Exit activity within this segment was relatively slow, with $2.3 billion tracked across 24 deals—three SPACs, 12 M&As, and seven LBOs. Notable exits include **PatientPing**'s $500.0 million LBO, **Pear Therapeutics'** $401.0 million SPAC, and medical imaging systems manufacturer Nanox's (NAS: NNOX) acquisition of **Nanox.AI** for $110.0 million.

## Figure 32. OPERATIONS & CARE MANAGEMENT VC DEAL ACTIVITY



Deal count: 176 (2017), 199 (2018), 189 (2019), 185 (2020), 149 (2021*)

Deal value ($M): $1,090.4 (2017), $2,903.5 (2018), $2,012.4 (2019), $4,270.7 (2020), $6,484.7 (2021*)

- Deal value ($M) — Deal count
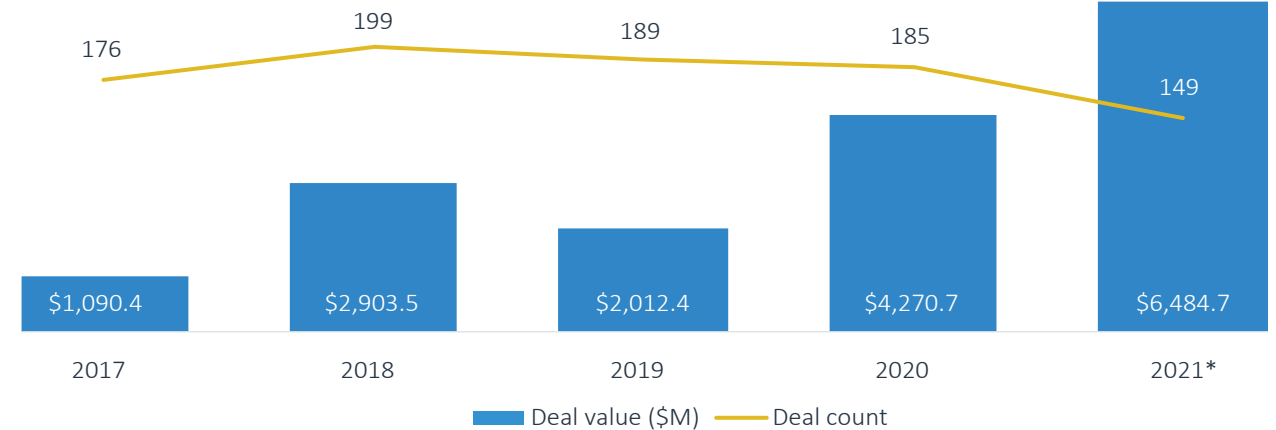
Source: PitchBook | Geography: Global | *As of December 31, 2021

## Figure 33. OPERATIONS & CARE MANAGEMENT VC EXIT ACTIVITY
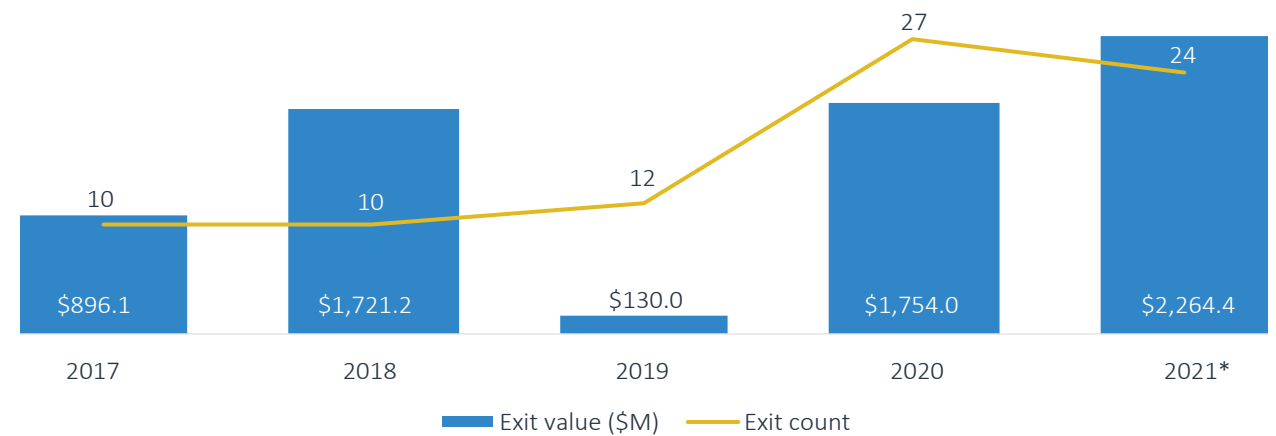


Exit count: 10 (2017), 10 (2018), 12 (2019), 27 (2020), 24 (2021*)

Exit value ($M): $896.1 (2017), $1,721.2 (2018), $130.0 (2019), $1,754.0 (2020), $2,264.4 (2021*)

- Exit value ($M) — Exit count

Source: PitchBook | Geography: Global | *As of December 31, 2021

# OPERATIONS & CARE MANAGEMENT

## Key operations & care management VC deals over the past year*

| COMPANY | CLOSE DATE | SUBSEGMENT | STAGE | DEAL SIZE ($M) | LEAD INVESTOR(S) | VALUATION STEP-UP |
|---|---|---|---|---|---|---|
| HotSpot Therapeutics | November 29, 2021 | Patient management | Late-stage VC | $100.0 | Pivotal bioVenture Partners | 1.48x |
| H1 Insights | November 16, 2021 | Healthcare analytics & Big Data | Late-stage VC | $100.0 | Altimeter Capital Management | 2.67x |
| Notable | November 3, 2021 | Healthcare analytics & Big Data | Early-stage VC | $100.0 | ICONIQ Capital | 4.40x |
| Justhealth Technology | November 8, 2021 | Patient management | Late-stage VC | $77.9 | China Renaissance | N/A |
| Quartet | December 2, 2021 | Patient management | Late-stage VC | $60.0 | Independence Health Group | 1.83x |
| Enlace Health | November 3, 2021 | Hospital management | Late-stage VC | $58.0 | Cox Enterprises | 2.98x |
| Lifen | November 15, 2021 | Hospital management | Late-stage VC | $57.9 | Creadev, Lauxera Capital Partners | N/A |
| Ieso Digital Health | November 23, 2021 | Nonsegmented | Late-stage VC | $53.3 | Morningside Group | 1.18x |
| Robin Healthcare | December 8, 2021 | Hospital management | Early-stage VC | $49.3 | Scale Venture Partners | 3.32x |
| Innovaccer | December 7, 2021 | Healthcare analytics & Big Data | Late-stage VC | $150.0 | N/A | 2.31x |

Source: PitchBook | Geography: Global | *As of December 31, 2021

Figure 35.

## Key operations & care management VC exits over the past year*

| COMPANY | CLOSE DATE | SUBSEGMENT | EXIT SIZE ($M) | EXIT TYPE | ACQUIRER(S)/INDEX | VALUATION STEP-UP |
|---|---|---|---|---|---|---|
| LumiraDx | September 28, 2021 | Healthcare analytics & Big Data | $3,000.0 | Public listing | CA Healthcare Acquisition | N/A |
| PatientPing | May 6, 2021 | Patient management | $500.0 | Buyout | Appriss, Auburn Hill Capital, Norwest Venture Partners, Clearlake Capital Group, Insight Partners | 1.93x |
| Nanox.AI | November 8, 2021 | Healthcare analytics & Big Data | $110.0 | Acquisition | Nanox | N/A |
| Aknamed | September 14, 2021 | Hospital management | $54.4 | Acquisition | PharmEasy | 0.77x |
| Docent Health | January 28, 2021 | Patient management | N/A | Buyout | GetWellNetwork, Pamplona Capital Management | N/A |
| Skyland Analytics | November 16, 2021 | Clinical trial management | N/A | Acquisition | ID Business Solutions | N/A |
| Pear Therapeutics | December 3, 2021 | Patient management | $1,600.0 | Public listing | Thimble Point Acquisition | N/A |
| ForceClouds | May 28, 2021 | Healthcare analytics & Big Data | N/A | Acquisition | Tencent Investment | N/A |
| HealthReveal | October 7, 2021 | Healthcare analytics & Big Data | N/A | Acquisition | Accolade | N/A |

Source: PitchBook  |  Geography: Global  |  *As of December 31, 2021

## OPERATIONS & CARE MANAGEMENT

### Key operations & care management incumbents*

| COMPANY | SUBSEGMENT | LAST KNOWN VALUATION ($M) | YEAR FOUNDED | FINANCING STATUS |
|---|---|---|---|---|
| Nuance Communications | Healthcare analytics & Big Data | $19,700.00 | 1992 | Formerly VC-backed |
| Athenahealth | Hospital management | $17,000.00 | 1997 | PE-backed |
| Cotiviti | Healthcare analytics & Big Data | $15,000.00 | 1997 | PE-backed |
| Change Healthcare | Hospital management | $13,000.00 | 1986 | Formerly PE-backed |
| Signify Health | Healthcare analytics & Big Data | $5,403.64 | 2017 | Formerly PE-backed |

Source: PitchBook | Geography: Global | *As of December 31, 2021

## Opportunities

**Pain-point targeted technology:** Incumbent insurers are often slow to transform or lack the capital necessary to adopt a full suite of VBC solutions. Instead, they seek solutions with low upfront outlays that will quickly reduce costs or deliver other visible results such as increased member engagement. For this reason, we believe startups focused on solving specific pain points can find success in helping risk-takers target niche opportunities. For example, **pulseData** uses AI & ML to understand patient data and predict outcomes for chronic kidney disease and end-stage renal disease. By targeting kidney care, which accounts for roughly 20% of CMS spending, **pulseData** can potentially provide quick wins to customers.[38] Risk-takers will use these savings to further invest in VBC technology.

**Clinical decision support systems:** Tremendous opportunity exists for improving how healthcare organizations make data more accessible and useful. These systems help sift through enormous amounts of data to suggest treatments, alert providers to information they may not have seen, and spot potential problems such as dangerous medication interactions. Startups in this space are focused on integrating various datasets from EHRs, wearables, genomics, and other sources to develop insights and support decision making.

**Startups focused on real-world evidence:** The quantity of routinely collected data has skyrocketed due to the rise of mobile and digital health apps, EHRs, biometric trackers, and remote patient monitoring devices. This "real-world data" (RWD) and subsequent "real-world evidence" (RWE)

have the potential to be useful across the entire healthcare ecosystem—including for clinical trials, care provision, determining treatment outcomes, and post-care safety monitoring. Startups are building proprietary datasets for use by pharmaceutical firms and healthcare providers, as well as developing RWD analytic and standardization tools. We believe startups will likely prioritize the most highly monetizable datasets where data tracking is feasible. These include datasets focused on illnesses that attract large investments related to drug development or those that have highly variable patient populations and treatments. VC-backed companies with specialty focuses include **Holmusk** (behavioral health), **Verana Health** (ophthalmology and neurology), and **AllStripes** (rare diseases).

## Risks & considerations

**System upgrades can be complicated, costly, and disruptive:** Implementing enterprise software is complex, expensive, and disruptive in ways that can impact care outcomes. While cloud-based services can improve the implementation process, shifting to cloud infrastructure can also be challenging and costly, requiring hospitals to add IT staff, train existing staff, and configure new systems. These headwinds—along with generally lengthy return on investment (ROI) for new healthcare records systems—can reduce the appetite for system upgrades, particularly among smaller healthcare organizations with limited budgets and primarily in developing countries, although some smaller organizations may be nimbler in adopting new tech.

## OPERATIONS & CARE MANAGEMENT

**Crowded market:** Given the multitude of providers in the space, finding the right system that both meets the strategic needs of the provider and is viable in the market can be complicated. Many small providers focus on niche markets, and it is often difficult to determine the best fit.

**Growing competitive threat from large software incumbents:** We have seen an increased focus on healthcare from legacy enterprise software companies including Microsoft, **Amazon**, and Oracle. In 2021, **Amazon** launched an accelerator program for healthcare startups in the UK and introduced AWS for Health, which helps clinical teams manage data across the care continuum. In December of 2021, Oracle announced plans to acquire **Cerner** for $28.3 billion, and in April 2021, Microsoft acquired **Nuance Communications**, a provider of speech-to-text software focused on healthcare. Incumbents such as these can get to market quickly with significant research and development (R&D) budgets. They also have substantial customer sets, which allows them to build market share more quickly.

**Interoperability issues:** No singular system addresses all the administrative, clinical, technical, and laboratory requirements of large healthcare providers. Many countries lack data storage and exchange standards. Although various data storage, transportation, and safety standards exist, implementing them has been a challenge for healthcare providers and EHR vendors. Most vendors follow different data formats and standards, creating issues in terms of sharing real-time data with partner systems.
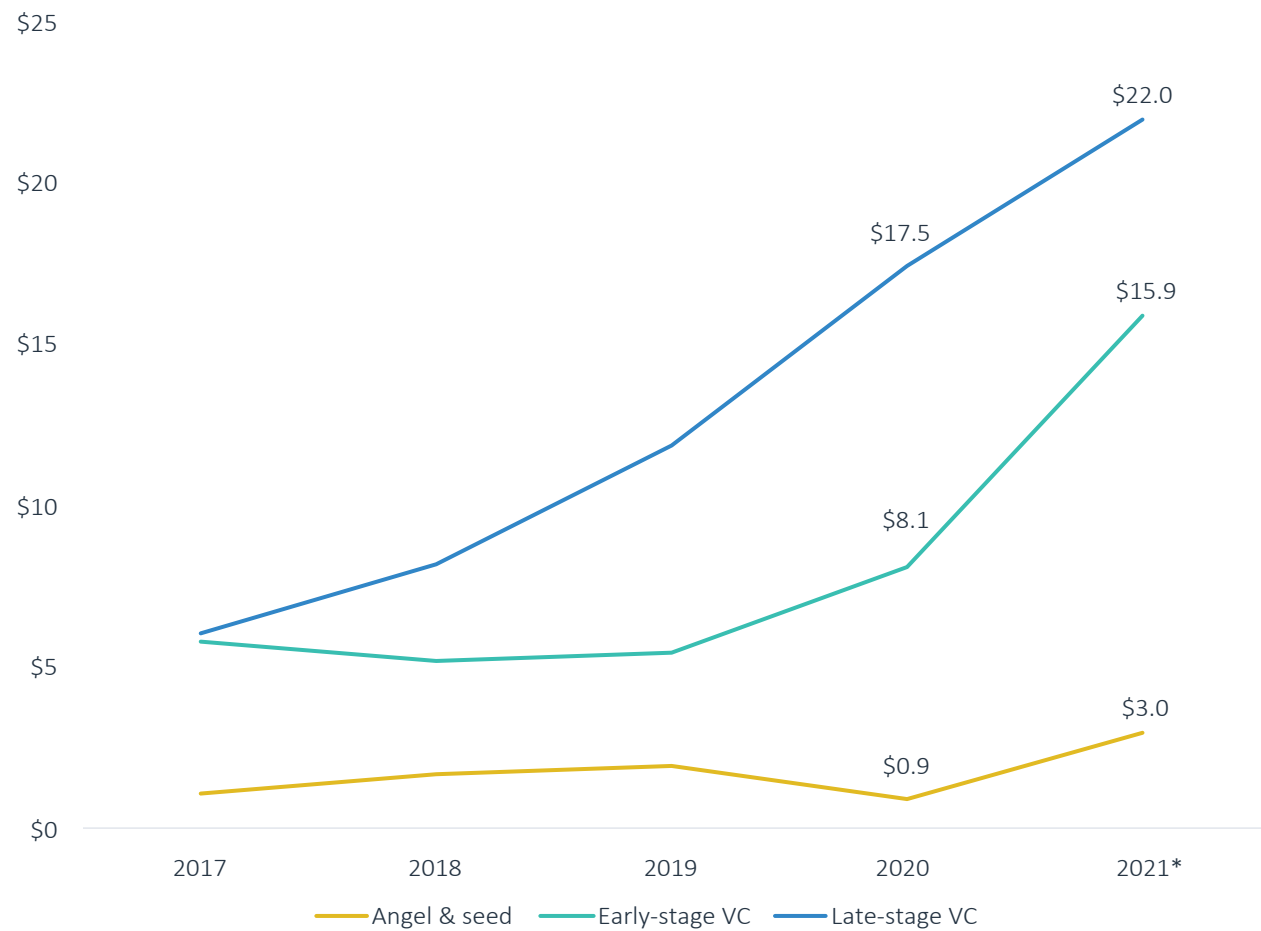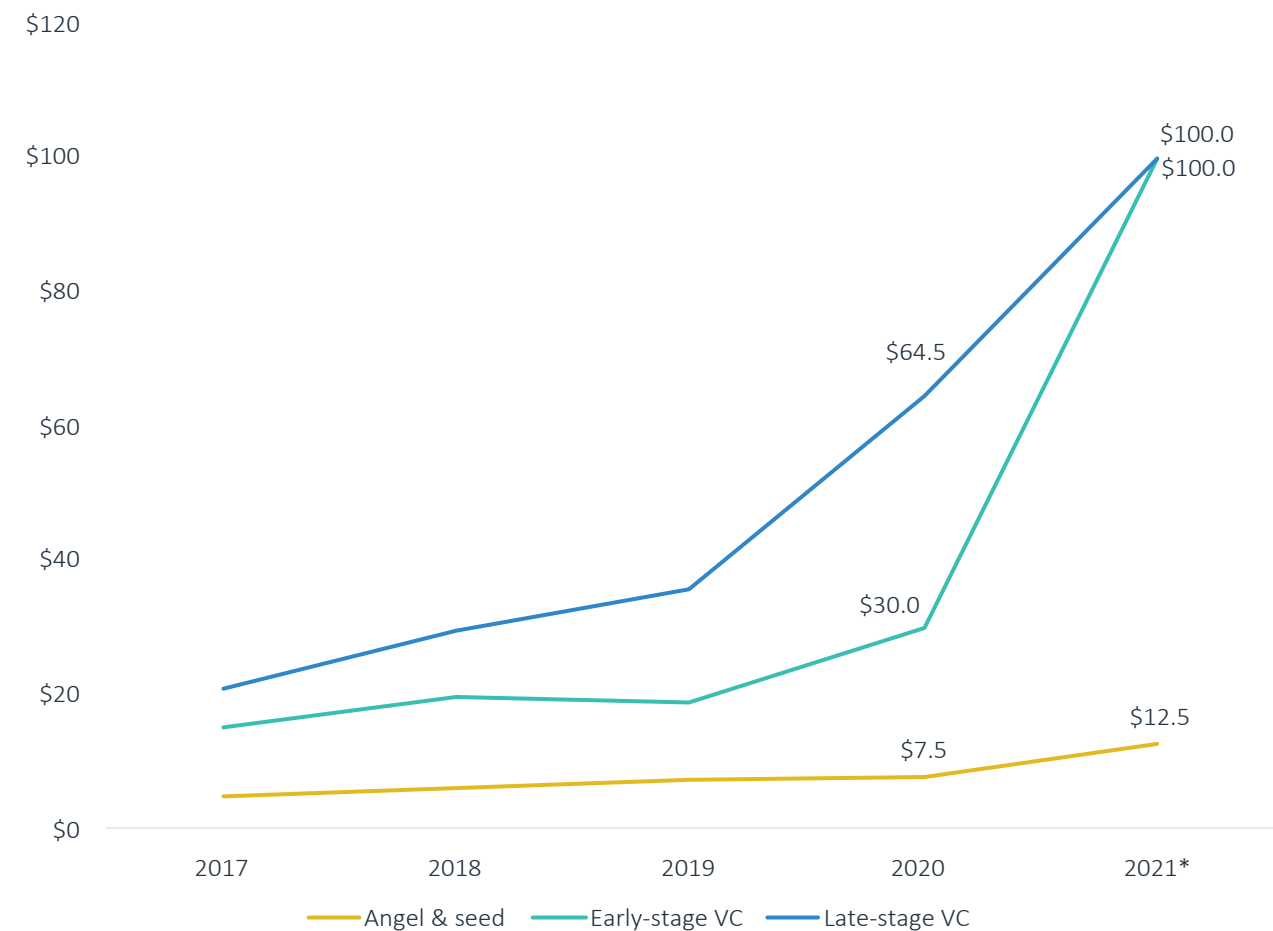
# Appendix

Figure 39. ENTERPRISE HEALTHTECH VC DEAL VALUE ($B) BY STAGE

■ Angel & seed  ■ Early-stage VC  ■ Late-stage VC
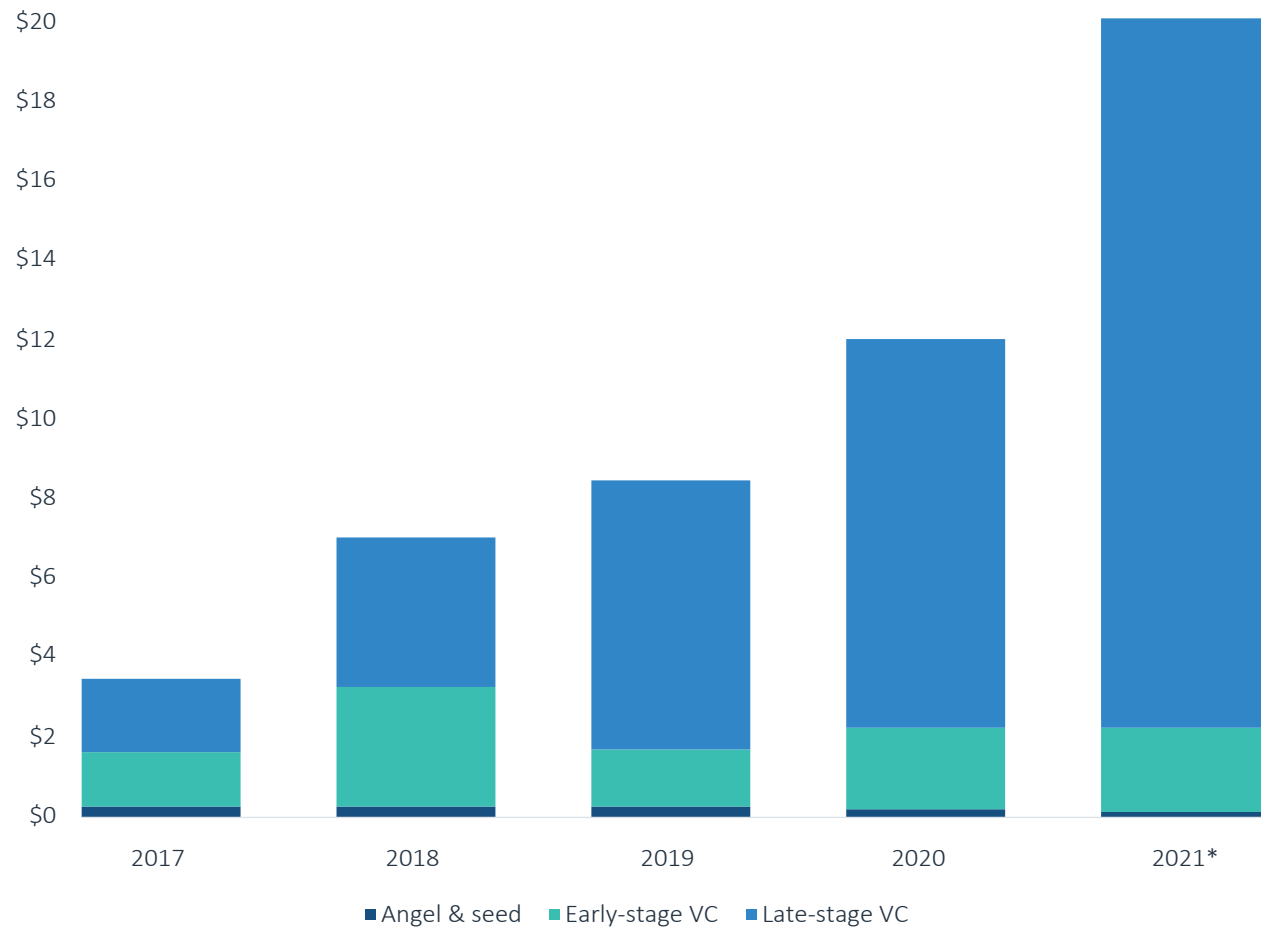
Source: PitchBook  |  Geography: Global  |  *As of December 31, 2021



Figure 40. ENTERPRISE HEALTHTECH VC DEAL COUNT BY STAGE
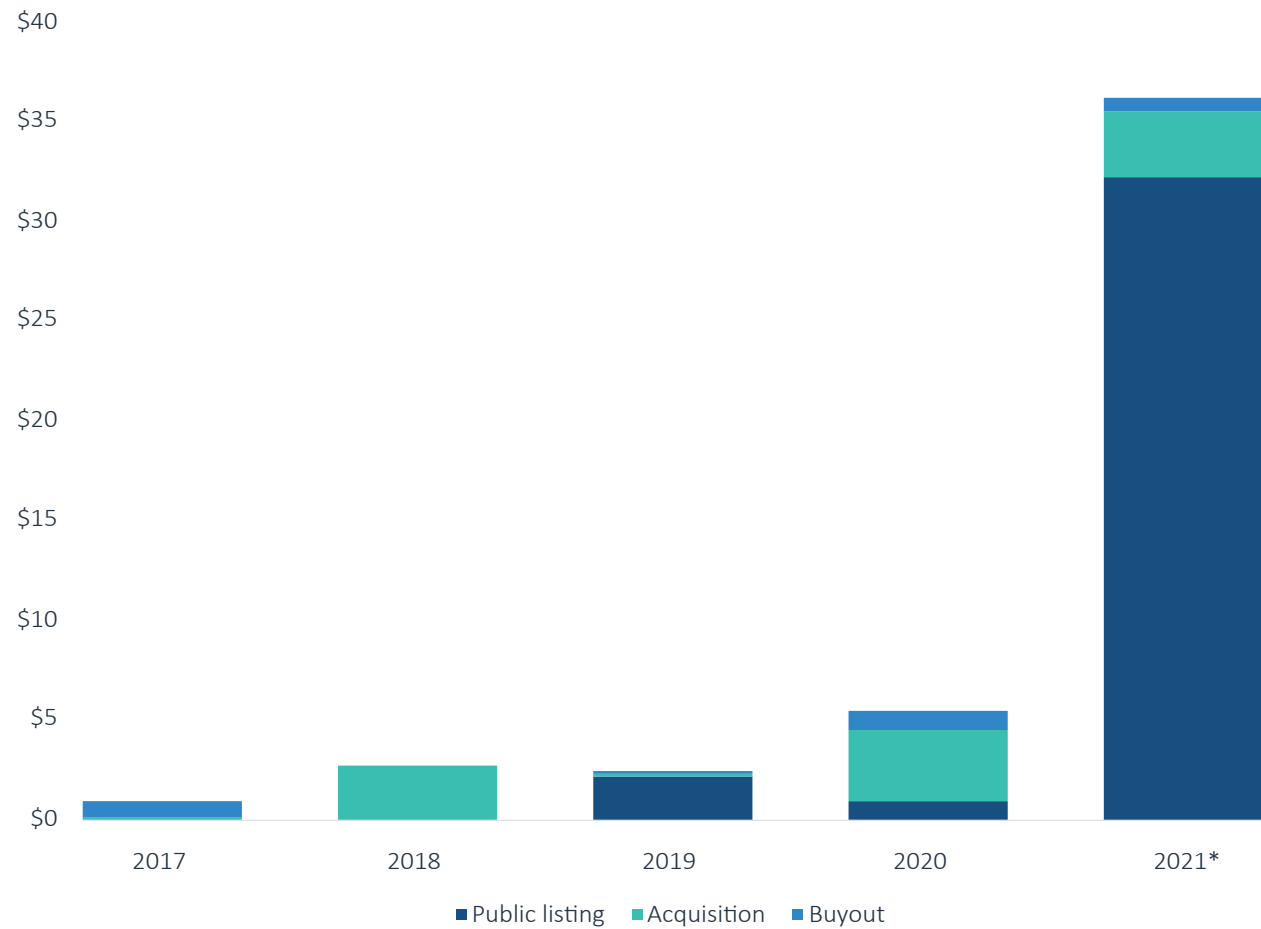
■ Angel & seed  ■ Early-stage VC  ■ Late-stage VC
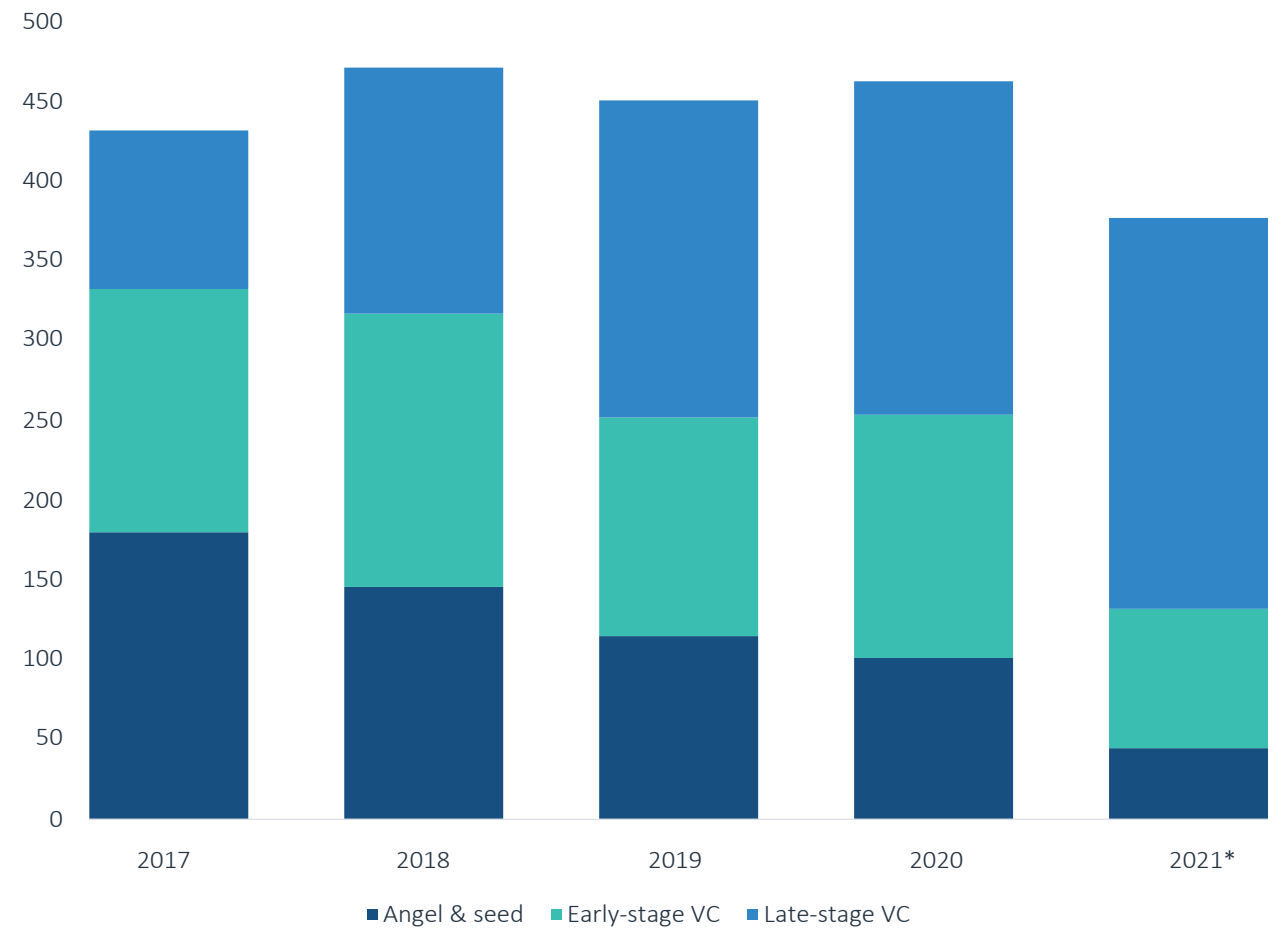
Source: PitchBook  |  Geography: Global  |  *As of December 31, 2021

Figure 41. ENTERPRISE HEALTHTECH VC EXIT VALUE ($B) BY TYPE

Source: PitchBook | Geography: Global | *As of December 31, 2021



Figure 42. ENTERPRISE HEALTHTECH VC EXIT COUNT BY TYPE
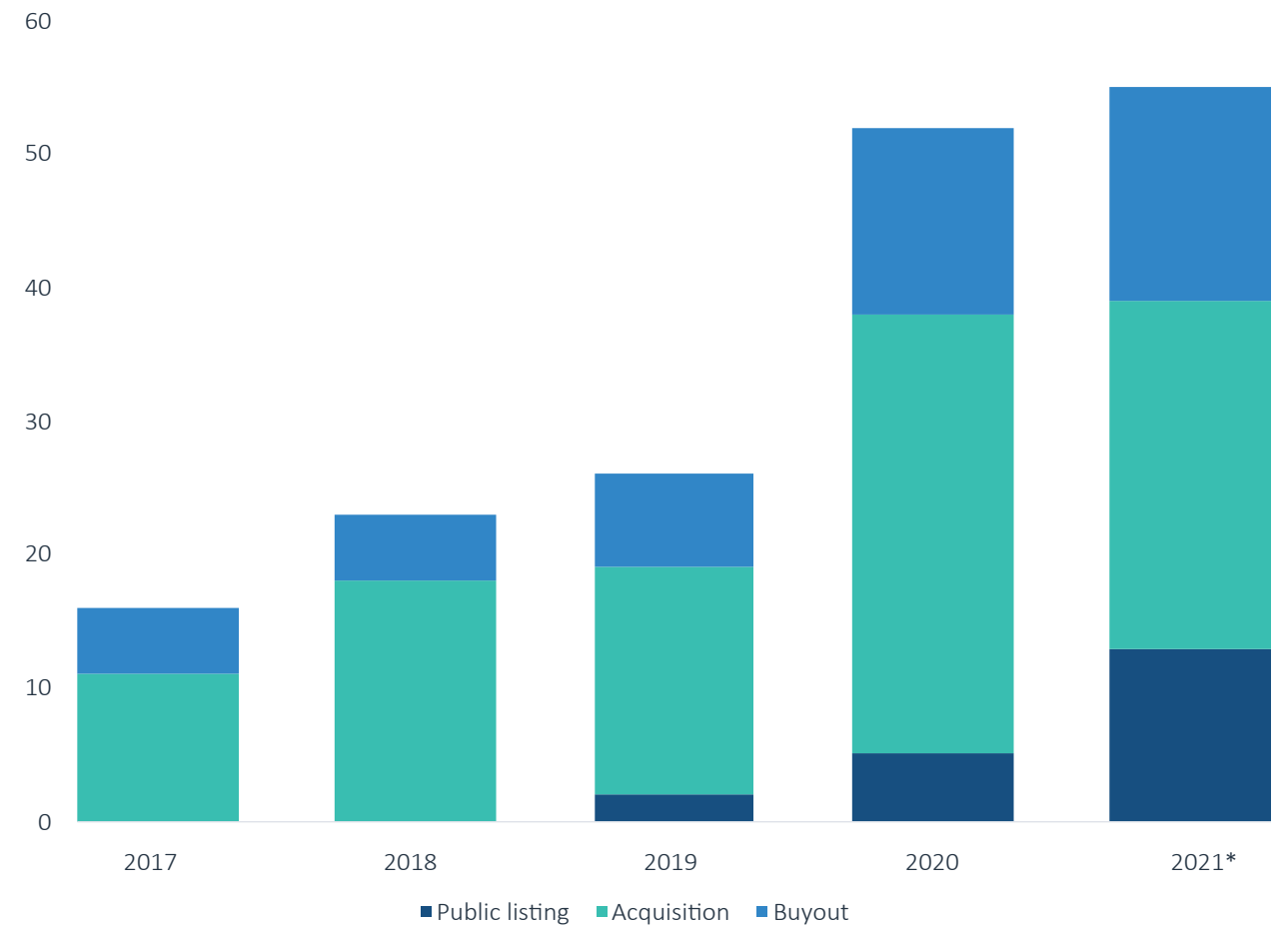
Source: PitchBook | Geography: Global | *As of December 31, 2021

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As the private markets continue to grow in complexity and competition, it's essential for investors to understand the industries, sectors and companies driving the asset class.

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