

DECONSTRUCTING THE TELEHEALTH INDUSTRY: PART IV
HEALTH. VIRTUALLY. EVERYWHERE.®

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Ziegler

CAPITAL :: INVESTMENTS :: ADVICE

ABOUT THE AUTHORS



Grant Chamberlain

Sr. Managing Director
312 596 1550

gchamberlain@ziegler.com

Grant Chamberlain joined Ziegler in 2015 as a managing director in the Corporate Finance Healthcare Practice. With over 20 years of investment banking experience, Grant has dedicated the majority of his career to advising HCIT and tech-enabled outsourced services companies with particular focus on transactions with telehealth companies such as Anelto, Smart Meter, Avel eCare, Philips Lifeline, CentralLogic, Regroup, Forefront, IRIS, MobileHelp, MDLIVE, Voalte, Airstrip, SCI, Doctible, CancerIQ, Symphony Clinical Research, MedFusion, Schulmann IRB, and iKnowMed.

Prior to Ziegler, Grant led the mHealth sector coverage at Raymond James – which included telehealth, remote monitoring and wireless healthcare solutions – after spending 15 years advising HCIT and tech-enabled outsourced services companies on a broad variety of M&A, joint ventures/partnerships and private financings. Additionally, Grant has completed dozens of transactions in the physician practice management space with a specific concentration in oncology, having closed over 15 deals in that sector in his career.

Prior to Raymond James, Grant was a principal at Shattuck Hammond Partners, which was acquired by Morgan Keegan. He was also a part of the corporate finance group of General Electric Capital Corporation and the financial services division of GE Medical Systems.

Grant previously served as an elected Director of the ATA, the leading international advocate for the use of advanced remote medical technologies. He is also on the Board of Directors for [The MAVEN Project](#), which uses telehealth and a network of volunteer physicians affiliated with the nation's foremost medical school alumni associations to improve healthcare access for underserved populations. Grant earned a B.A. in finance and investment banking from University of Wisconsin-Madison.



Adam Heller

Managing Director
312 596 1554

aheller@ziegler.com

Adam Heller joined the corporate finance team at Ziegler in 2016. He specializes in mergers and acquisitions, strategic advisory and capital formation engagements for clients in the sectors of digital health, benefits administration and broader healthcare services technology.

Prior to Ziegler, Adam was a vice president at KPMG Corporate Finance where he focused on providing M&A advisory services, private equity and debt capital raises and project finance advisory to middle-market and growth companies. Prior to joining KPMG Corporate Finance, Adam was a senior analyst at William Blair & Company where he focused on healthcare investment banking. Previously, he was a senior analyst at Bank of America Merrill Lynch as part of their Debt Private Placements Group.

Throughout his 15-year career in investment banking, Adam has completed over 75 transactions equating to over \$5 billion in capital raised. Adam earned a B.S. in finance from the Kelley School of Business at Indiana University. He holds Series 7, 63 and 79 securities licenses.



Natalie Webb

Asst. Vice President
312 596 1606

nwebb@ziegler.com

Natalie Webb joined Ziegler in 2019. She specializes in mergers and acquisitions, strategic advisory, and capital formation engagements for clients in the healthcare services and healthcare information technology sectors.

Prior to Ziegler, Natalie was vice president at Cain Brothers where she focused on advising not-for-profit health systems in a variety of capital raising and strategic advisory transactions. Her prior experience also includes working for Barclays in the Healthcare and Higher Education Public Finance Division.

Natalie earned a B.A. in economics from Cornell University and an M.B.A. from The University of Chicago Booth School of Business.



Patrick Hayes

Associate

312 596 1544

phayes@ziegler.com

Patrick Hayes joined Ziegler in 2020. He specializes in mergers and acquisitions, strategic advisory and capital formation engagements for clients in the healthcare services and healthcare information technology sectors.

Prior to joining Ziegler, Patrick was an analyst at Tyton Partners, where he executed M&A and equity transactions for high growth companies within the education technology sector. He began his career in strategy consulting at EY-Parthenon advising public and sponsor-backed companies on operational improvement initiatives across healthcare and life sciences.

Patrick earned a B.S. in finance from the Farmer School of Business at Miami University.

ADDITIONAL SECTOR EXPERT CONTRIBUTORS



Behavioral Health

Chris Rogers
Sr. Managing Director

615 982 7550
crogers@ziegler.com



Performance Improvement

Mark Turco
Managing Director

301 828 1069
mturco@ziegler.com



Pharma & Lab Services

Patrick Walsh
Managing Director

615 982 7560
pwalsh@ziegler.com



Smart Aging & SDOH

Jenny Poth
Vice President

312 596 1529
jpoth@ziegler.com

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INTRODUCTION: THE EVOLVING LANDSCAPE OF DIGITAL HEALTH

Over the past seven years, Ziegler has chronicled the evolution of the Digital Health/Telehealth/Virtual Care ecosystem. We have worked hard historically to provide a framework of how to “Deconstruct the Telehealth Landscape” in a manner that is digestible by any of the myriad of stakeholders across the ecosystem. Each paper has tried to highlight:

- The principal themes driving the virtual care market in the years when released
- The identifiable tailwinds and headwinds impacting the awareness, adoption, and continued utilization of available solutions
- Areas where we anticipate capital flowing in the sector in the coming years supporting innovative companies
- A snapshot of the seminal M&A and capital markets transactions that influenced the sector’s advancement



Part I: Deconstructing the Telehealth Industry (2016) | 207 Companies Included

“Telehealth has become the fastest-growing segment of the healthcare industry as patients, providers, payors, employer and legislators have started to recognize the segments far-reaching ability to provide the solutions necessary to significantly bend the cost curve while materially improving the quality of life for patients and their caregivers.”



Part II: Improving the Access Points of Healthcare Delivery – It’s Just Healthcare (2018) | 272 Companies Included

“Virtual Care has gained popularity, trust, and acceptance in the healthcare community. Ziegler believes the next generation of successful virtual care companies will be those who understand the critical marriage between chronic care management, behavioral health, and social determinants.”



Part III: Enabling Clinicians to do More Good for More People (2020) | 480 Companies Included

“Virtual Care has a three-part mission: to deliver care where and when people need it; to assure it is safe, effective and appropriate; and to enable clinicians to do more good for more people.”

Since Ziegler published the last white paper in January of 2020, we have experienced a global pandemic that has completely altered the way healthcare providers, payors, patients and regulators think about care delivery models. As COVID-19 began to overwhelm hospitals throughout 2020 (and for the next two years) the value of Virtual Care became abundantly clear. The sector has gained more awareness, acceptance, and continued engagement in the last three years than it has in the last 30 years – **this genie will never be put back in its bottle.**

In this 2023 edition of the *Deconstructing the Telehealth Industry* white paper series, Ziegler will build on two of the core attributes of virtual care:

- The ability to deliver **unencumbered healthcare access** (physical and behavioral health – whole-person care) to the **most vulnerable populations and underserved markets** (including rural and urban)
- The ability of virtual care to facilitate **workforce optimization** by leveraging advanced analytics to drive timely engagement for patients with the **appropriate providers at the appropriate time**. With the benefit of continually improving technology solutions embedded within existing workflows, virtual care can drive **timely, evidenced-based, analytically driven engagement to the appropriate clinical and non-clinical providers to allow providers to more consistently work at the top of their licensure which will serve as a release valve on the growing provider shortages.**

DIGITAL HEALTH, VIRTUAL CARE, AND TELEHEALTH

Ziegler will also double down on the **prior areas of emphasis** from the past papers:

- **Biopsychosocial & Social Determinants of Health (SDOH) Toolsets:** Using technology that appreciates the full physical, behavioral, and social & environmental picture of a patient's wellbeing in order to deliver top-notch care that is right for the patient, not just convenient for the medical system. Just as embedded analytics can help drive workforce optimization, so too can analytics integrate all aspects of biopsychosocial care.
- **Behavioral Health Solutions:** In the behavioral healthcare sector, care access has historically been fraught with challenges, due to a persistent imbalance of supply and demand and the inability to track and measure outcomes. Tele-behavioral health solutions provide a means to reduce these barriers. It allows providers to reach patients wherever they are, engage patients earlier, and connect with patients on a more consistent basis through a variety of mediums – often with the support of tools like predictive analytics. The results are improved clinical and financial outcomes, increased efficiencies, extended provider reach, and improved population-level health driven by consistent and proactive engagement vs. the episodic and reactive approaches of the past.
- **Smart Aging Solutions:** Because virtual care can literally, physically meet patients where they are, it is an ideal solution for patients whose social circumstances have historically hindered their ability to seek care. The aging population is one prime example. The aging population is one that may find it difficult to seek care due to obstacles like reduced access to transportation, financial concerns, and the increased need to have a family member accompany them to appointments. Meanwhile, they have greater healthcare needs than many other demographics. Providing care virtually can uniquely solve many of these challenges, and provide not just high-quality care, but also care that respects patients' social context.

Finally, as an administrative note, Ziegler will utilize the terms “Telehealth”, “Virtual Care” and “Digital Health” throughout this white paper. The 2016 version of the white paper referred to the “Telehealth” sector which then evolved to the “Virtual Care” sector in 2018, and now in 2023 is more commonly referred to as the “Digital Health” sector. As healthcare technology has advanced and its applications have expanded, Ziegler has broadened the scope of its sector coverage to capture all the innovation the industry is experiencing. The framework of this white paper has evolved from “tele” to “virtual” to now “digital”.

Digital Health captures the full next generation of healthcare technology. The applications that digital technology brings go well beyond the legacy Electronic Health Record (EHR), practice management, revenue cycle or basic audio/video systems of the past. Digital Health was built on top of these legacy systems to enhance the ability of healthcare stakeholders to deliver more effective value-based care solutions. These legacy healthcare technologies focused on the administration of healthcare (track and bill) and simple touchpoints; Digital Health takes the next step forward by focusing on expanding healthcare consumerism, broadening patient access, producing better outcomes and making providers more effective and efficient at their jobs. From a patient perspective, digital health can be used to bring the right healthcare to the patient regardless of setting, engage and capture data between appointments, proactively address potential adverse events, and triage the patient through their healthcare journey. From a provider perspective, digital health can elevate the right data on the right patients to enable the provider to treat those that are most in need and collaborate with their peers to enhance care. Both the provider and patient can reduce wasted administrative time with the right application of digital health. Digital healthcare is delivered through data-driven decision support that optimizes the wellbeing of the patient while utilizing the right providers that are better equipped to deliver the best care. Digital Health solutions include telehealth and virtual care, and expand into areas such as remote monitoring, patient access, patient engagement, patient triage, AI and automation, provider collaboration tools, and data analytics.

Ultimately, when the key goals of HEALTH. VIRTUALLY. EVERYWHERE. are achieved, the terminology to describe the industry will be irrelevant just as “e-commerce” became simply “commerce”. In this future state, all healthcare stakeholders will understand and share in the benefit that technology can bring to improve healthcare delivery.

Favorable Industry Tailwinds

Adoption/Results:

- **Proven Results:** As virtual care matures, more providers and vendors have demonstrated its utility. Many commonly known metrics have emerged that prove virtual care can improve outcomes at lower cost of care. Proven results, especially over the medium- and long-term, catalyze greater adoption and continued investment in evolving solutions.
- **Patient Acceptance:** In the post pandemic “Zoom Culture,” patients are much more willing and able to do everything virtually including see their healthcare provider. Rising awareness has led more and more patients to view remote care solutions as a desirable, first-choice healthcare destination. According to a recent study conducted by KeyCare, almost 90% of respondents had a telehealth visit within the last year and over 40% of consumers stated that they prefer telehealth over in-person appointments for management of routine care.¹
- **Increasing Provider Adoption:** Providers’ comfort with digital healthcare has grown rapidly. They are recognizing the efficiency it can bring to their workflows without disrupting quality – and in many cases, while enhancing it. Furthermore, providers have now experienced the benefits of bringing more flexible care options to more patients, leading to reduced no-show rates, higher engagement, and more patients.
- **Care Setting Optimization Goals:** Healthcare constituents recognize the benefits of optimizing all resources available across a complex ecosystem. Digital Health technology allows decision makers such as providers, navigators, case managers, patients, etc. to be much smarter about where and when is the best place to receive care in any given situation.
- **Employers Bearing Burden of Healthcare Costs:** The cost of employee healthcare benefits has significantly risen. According to the Kaiser Family Foundation, the average annual employer healthcare insurance cost in 2021 was \$7,739 for single coverage and \$22,221 for family coverage, both up 4% from 2020². As inflation continues to grow at relatively high levels, we could potentially observe a higher increase in average premiums for 2023 than we have seen in recent years³. As a key stakeholder in the wellbeing of an employee, both from a cost of care and productivity standpoint, employers are more likely to adopt easy-to-use technology solutions to keep their employees healthy and happy.

Diversifying Interest:

- **Expanding Universe of Funding Sources:** The use of virtual care and expansion of its use cases has created significant investment interest. More capital will continue to flow in as additional and more diverse funding sources seek ways to participate in a rapidly growing space, fueling additional growth.
- **Consumer Brands Becoming Healthcare Brands:** Consumer brands like Apple, Amazon, Google, Walmart, and Best Buy are focusing their attention on healthcare. Technology’s convergence with healthcare has created a natural extension for these brands to expand offerings to their loyal customers. Their reach, engagement, capital access, and notoriety gives these companies the ability to impact millions of consumers. These natural disruptors will deliver healthcare through technology differently than traditional healthcare and force the entire system to innovate.

Legislative Support:

- **Reimbursement Improvement:** Centers for Medicare and Medicaid Services (CMS) and all commercial plans have offered more clarity on reimbursement for virtual care, sending positive signals about their confidence in digital health’s ability to improve the healthcare system. As the demonstrated Return on Investment (ROI) of digital health use cases continues to grow, reimbursement for these services will follow.
- **Legislators Support Virtual Care:** Virtual care is one of the few issues that receives bipartisan support. Legislators from all parties and states now understand the benefits that virtual care can bring. With limited dissenting views, the government and key related stakeholders are deeply focused on creating policies which maximize the systemic utility of digital healthcare and meet the demands of their constituents.

SOME HEADWINDS REMAIN

- **Cross-State Licensing Compacts:** Cross-state licensing compacts include the Interstate Medical Licensure Compact, the Advanced Practice Registered Nurse (APRN) Compact, and the Nurse Licensure Compact (NLC), to name a few. These compacts have made it significantly easier for providers to be licensed once and be able to practice healthcare across multiple states, greatly amplifying the utility of digital health solutions that enable providers and patients to connect over greater distances. Reducing administrative burdens and red tape will allow virtual care to achieve its goals of enhancing the efficiency of providers and providing greater access to more people.

Improving Technology:

- **Improved Technology:** New digital technologies, especially Artificial Intelligence (AI) continue to improve, expanding the application and uses of digital health. Digital technology has also become substantially more user-friendly; not only is it typically easier to implement and utilize than it has been in the past, but most users are also more familiar and comfortable with it.
- **Reduced Technology Costs:** The technology that makes virtual care possible has become more widely available at a much lower price point. This phenomena has enabled much wider adoption and application.
- **Expanded WiFi/Broadband Access:** Traditionally, rural or healthcare desert areas have had difficulty accessing technology or virtual care solutions. As WiFi and Broadband access have expanded, it is now much easier to connect into the digital health ecosystem.

Remaining Headwinds

General Awareness:

- The general public and even many educated healthcare industry professionals think of virtual care as a video connection between patient and provider, however digital health's applications and use cases go well beyond this model. As stakeholders become more aware of available technologies, it will be more commonly instituted into everyday healthcare delivery.

Proving Tangible ROI and Downstream Care and Cost Impacts:

- It is often difficult to ascribe improved patient outcomes, reduced costs, or heightened clinical/administrative efficiency directly to any single program in a healthcare system. Digital health programs are no exception. Rigorous studies demonstrating the effects of digital health solutions are key to more adoption.

Reimbursement Uncertainty and Complexity:

- Insurance coverage for virtual care has certainly improved, but confusion and uncertainty around reimbursement remain key hurdles to widespread use. In fact, a 2021 Amwell survey found that 38% of clinicians cited uncertainty around reimbursement as a key barrier to virtual care adoption³. From the patient standpoint, this is also very confusing, because one insurance company may pay for a service while another may not."⁴ Momentum is clearly moving in the right direction, but resolving reimbursement uncertainty and confusion is likely to be an ongoing, evolutionary process.

Clinician Shortages:

- The pandemic has highlighted many of the deepest disparities in health and access to healthcare services, contributing to a rising physical and emotional toll on physicians and other healthcare workers. Virtual care vendors face similar clinician shortage constraints to those that traditional providers face. In virtual contractor models, clinician loyalty becomes a challenge to maintain culture, quality and continuity.
- Virtual care technology can ease the burden of these shortages through workflow enhancements to improve the lives of providers while maintaining the same level of clinical quality.
- The Association of American Medical Colleges projects a shortage of up to 124,000 physicians by 2034⁵ and McKinsey estimates that the nursing shortage could be even more dire, with a gap of up to 450,000 nurses by as early as 2025⁶.

REMAINING HEADWINDS (CONT.) & SUMMARY OF WH

Varying Usability and Interfaces:

- Providers currently use a multitude of different technologies and interfaces, bringing inefficiencies and lack of understanding on how to maximize the utility of each solution. The demand for standardized and interoperable platforms persists.

Misconceptions and Bad Actors:

- Virtual care can be viewed as impersonal and more transactional than in-person care. Yet, when used properly, virtual care encourages collaboration and longitudinal care throughout the patient journey, which can enable a more high-touch, seamless, and patient-centered approach to care. Several recent direct-to-consumer (DTC) programs have come under scrutiny for unhealthy prescribing practices. While, unfortunately, a lot of attention is placed on these bad actors, Ziegler views them as outliers more than the norm.

Regulatory Uncertainty:

- Because virtual care is new, many of the established guidelines have just come into practice in the last few years. Providers, payors and patients are still understanding the legal boundaries of what is or isn't possible. Policies can be different State by State and sometimes conflict with federal policy. Turnover in political leadership means an already complex landscape can shift again. As virtual care becomes more established, consistent guidelines and best practices need to become solidified.

Licensing and Credentialing:

- Nationwide virtual care networks create a significant state licensing and payor credentialing administrative burden. Expanding, hiring and operationalizing providers is slow and expensive.

Capital Markets Turbulence:

- In contrast to 2021 and early 2022 where ready access to cheap capital and premium valuations for digital health companies prevailed, financial sponsors and industry consolidators are now being more selective with their investment criteria. Focus is increasingly being placed on gross margins and identifiable pathways to profitability rather than revenue growth at all costs. Given the recent period of inflated valuations, we foresee enhanced receptivity toward mergers of equals in which relative valuation is easier to define and scale and synergies are easier to attain – the sector is in need of larger platforms that can absorb many of the existing point solutions.

OVERVIEW OF THIS WHITE PAPER

Similar to Ziegler's prior white papers, this document is structured around thematic diagrams which, in aggregate, help illustrate the ubiquity of virtual care applications in the healthcare industry. **While all pages that remain from the prior paper have been updated to reflect recent activity, we developed a number of new pages which are distinguished below in purple font.** The goal of this document remains to present our view of the virtual care industry in a concise format that will help various stakeholders envision the potential that the virtual care industry has in their business sectors. The sections and corresponding page numbers are outlined below:

Unencumbered Access of Digital Health (p. 12-13)

- This page once again highlights the key characteristics of a successful virtual care program. COVID-19 has lowered a significant barrier in virtual care: technological access and know-how. The communication technology used for virtual care has become a commodity. Today, the industry must focus on how workflows and analytics integrated into these digital systems can ease patient navigation through the care continuum. Ziegler has slightly restructured its view of the stakeholders to illustrate a more complete ecosystem. Ultimately, Ziegler has seen digital health have a particularly favorable impact on improving access for 10 specific populations: (i) rural areas, (ii) low-income communities, (iii) labor & delivery (L&D)/infants, (iv) children access/education services, (v) post-acute/senior living facilities, (vi) disabled individuals, (vii) veterans, (viii) behavioral health facilities,-

(ix) cancer treatment & decentralized clinical trials, and (x) LGBTQ+ communities. Ziegler also provides a discussion of recent favorable tailwinds and the rapidly evolving future state of virtual care.

Virtual Care Programs Gaining Traction Across a Broad Universe of Stakeholders (p. 14-15)

- Ziegler believes there are eight key stakeholder groups that exist in today's healthcare environment: (i) consumers/patients, (ii) clinicians, (iii) hospitals/health systems/the VA, (iv) payors & employers/brokers, (v) senior living/post-acute/hospice organizations, (vi) pharmacies/health retailers, (vii) clinical trial providers and life sciences companies, and (viii) special uses such as those with rare diseases. In addition to describing the overall advantages of virtual care, this page reviews in detail how the propagation of virtual care can uniquely benefit each stakeholder group mentioned above.

Workforce Optimization: An Underappreciated Yet Increasingly Important Value Driver (p. 16-17)

- Ziegler has further developed and structured its view around workforce optimization in this edition of the white paper with a detailed sector map of the tools that can deliver timely, evidence-based, analytically-driven engagement to the appropriate providers, thereby enabling them to consistently operate at the top of their licenses. Ziegler first highlights (i) administrative tools that promote workforce optimization. The key to alleviating these administrative challenges is ensuring that all possible workflows outside the clinical setting and pre-visit are handled seamlessly. Providers also find themselves under increasing pressure to control back-office costs. Automation of back-office functions as well as other non-clinical workflows are critical in optimizing workforce efficiencies and reducing provider duress. Second, Ziegler highlights (ii) provider enablement and staff augmentation tools. Provider enablement and staff augmentation tools aim to equip providers with the resources, talent, and technology to overcome administrative burdens and physician burnout and enhance patient engagement. The supply of physicians and advanced practice practitioners is likely to continue to contract in the coming years. Adopting technology is imperative to alleviating these pain points and continuing to reach patients in rural areas. Lastly, Ziegler has seen the emergence of (iii) safety and location tracking tools driving workforce optimization. According to the Occupational Safety and Health Administration (OSHA), two of the leading causes of healthcare worker injuries are manual patient lifting and workplace violence. Healthcare and social assistance workers are nearly five times more likely to be injured and require time away from work as a result of workplace violence than workers in other industries.

Digital Patient Navigation Helps Patients Through Their Healthcare Journey (p. 18-19)

- COVID-19 has greatly accelerated the adoption of digital solutions to improve care and enhance patient experience. Effective patient navigation allows the entire healthcare ecosystem to function as a cohesive unit while easing the experience for the patient. Going forward, convenient patient access to care and true digital navigation will be core components of providers' strategies to better engage and retain patients. In order to succeed in an increasingly consumer-centric environment, providers must turn to tech-enabled solutions that proactively direct the patient to the right care access point. Patient outcomes will improve if the optimal setting of care is utilized in each and every encounter during the patient's journey. AI or non-clinical workforces can be woven into digital healthcare ecosystems to act as the "patient guide" while clinicians are left to do what they do best – deliver clinical care.
- Patient navigation starts with (i) patient intake or the "digital front door". A key component of patient navigation is a digital access point which is easy to find and directs patients to the appropriate provider for their given condition. AI and digital symptom checkers have become far more advanced in their ability to steer patients to the right setting and provider. The next navigation step is (ii) receiving care. Effectively managing referrals and coordinating care is essential to promoting better patient outcomes and keeping providers competitive in the marketplace. Balancing all the resources of a large healthcare organization and improving matching between patients and providers/settings has dramatically improved the navigation of patients through their healthcare journey. To ensure effective referral management/care coordination, providers are increasingly turning to digital solutions that make recommendations and automate the referral process.

SUMMARY OF WHITE PAPER (CONT.)

The last step of patient navigation is (iii) discharge & follow-up. The discharge and follow-up process needs to be seamless to increase the throughput of providers and avoid patients returning for the same condition. Finding the right next level of care is crucially important to ensuring a successful recovery from a given healthcare event. Digital technology has dramatically improved providers' ability to find the best next location for a patient and to actively stay engaged with that patient during their recovery in-between in-person visits. Patients are then set on the right care plan while providers can stay engaged to ensure adherence to that care plan.

Genetics Supply the Stone but Environment Carves the Sculpture (p. 20-21)

- As Ziegler has been discussing since the 2020 white paper, no individual has full control over every aspect of their health. Two powerful reasons are social determinants of health (SDOH) and health stigmas. In this section, Ziegler recognizes the importance of measuring and addressing SDOH in achieving health equity using tools including diversity, equity, and inclusion (DE&I) initiatives. Ziegler discusses how in-home care and delivery can help to overcome SDOH and stigma by meeting individuals in the places they feel safest and most comfortable.

Tele-Behavioral Solutions: Connective Tissue Strengthening the Continuum of Care (p. 22-23)

- The United States continues to face a behavioral health crisis in which millions of individuals are suffering from mental illness yet many are not receiving the care they need. The pandemic heightened public awareness of this issue. The consequences of this dilemma are meaningful and unlikely to be solved by “traditional” care delivery methods alone. This page, in addition to contextualizing the mental health crisis, explains how virtual care's flexibility, delivery models, interoperability and digital triage tools make it an attractive solution for delivering and/or enabling access to behavioral healthcare, even more so now than prior to the pandemic.

Growing Landscape of Tele-Behavioral Solutions (p. 24-25)

- Since Ziegler's last white paper, few virtual care sectors have grown as rapidly as behavioral health. As mentioned above, COVID-19 only magnified the behavioral health problem in the United States. As such, Ziegler has updated this page, which provides its view of the virtual behavioral health ecosystem as broken into numerous unique subsectors. This page also highlights three niches within the virtual behavioral health market that are gaining traction particularly rapidly: (i) virtual psychiatry, therapy, and counseling, (ii) substance use disorder interventions and medication-assisted treatment, and (iii) digital therapeutics.

Smart Aging Solutions Allow Seniors to Age Gracefully and Safely (p. 26-27)

- Smart aging describes the process of leveraging digital tools to enhance autonomy, dignity, health, safety, joy, and interpersonal relationships for older adults. Within the “smart aging” landscape, the role of virtual care has evolved from providing senior citizens (age 65+) with monitoring and long-term care solutions to providing diverse solutions that serve the entire “smart aging” population (age 55+). Ziegler presents in this schema an updated view of the smart aging continuum and describes the categories of high priority Smart Aging Solutions: (i) wrap-around support; (ii) innovative remote monitoring; (iii) behavioral health; and (iv) supporting the “Care Force”.

Remote Monitoring Offers Knowledge and Information Between Appointments (p. 28-29)

- The pandemic accelerated the need and value of Remote Physiologic Monitoring (RPM). RPM allows for healthcare monitoring without a consistent need for the patient to visit a provider or healthcare site. Patients are proactively monitored for upcoming and avoidable adverse events. Providers' time is optimized when only those with concerns are elevated to the top of the queue. CMS launched Current Procedural Terminology (CPT) codes for RPM more than four years ago, which greatly accelerated the adoption of RPM technology. In 2022, CMS launched CPT codes for remote therapeutic monitoring (RTM). These codes cover RTM for respiratory and musculoskeletal (MSK) conditions, such as remote physical therapy and chronic obstructive pulmonary disease (COPD) inhaler tracking. Many larger technology or consumer brands have launched their own wearables that have cleared the Food and Drug Administration (FDA), blurring the lines between healthcare companies and-

consumer-facing technology companies. The healthcare industry is at a pivotal inflection point in recognizing the efficacy for RPM and RTM. There is now acknowledgement of compelling clinical data that links remote monitoring devices to meaningful and measureable patient outcomes. This ultimately will force CMS to prioritize the efficacious and equitable provision of CPT codes to augment care for every patient. In 10 years, remote monitoring will be common-practice, and likely reimbursed by all the major payors. This page highlights the rapidly evolving players in the space and the continued changes and momentum in the regulatory landscape.

Decentralized Clinical Trials (DCT) are Changing How Clinical Trials are Delivered (p. 30-31)

- Remote and decentralized clinical trials can be seen as the next seismic advancement in the clinical trial industry. As the pipeline of blockbuster drugs has diminished, and as advances in scientific knowledge have increased (i.e., precision medicine), pharmaceutical companies have started to place greater focus on therapies that have smaller target populations: more targeted therapies for populations with increasingly specific genetic makeups. Due to these changes, there will be a greater number of drugs in development in the coming decade than in the past decade, increasing the number of active clinical trials. The clinical trial ecosystem, to which pharmaceutical companies often outsource the new drug approval process, will continue to see growth in demand for more trials, and more complex clinical trial design. The need for remote and virtual capabilities are amplified by these trends. Remote and DCTs provide many benefits including: (i) improving access for more diverse and underserved communities (ii) making trials more patient-friendly, (iii) making trials safer and more humane, (iv) improving care and trial results, (v) driving overall business efficiencies by advancing adoption of cutting edge technologies across the industry, (vi) solving transportation issues and reducing family member duress, (vii) broadening catchment area and providing access to more diverse populations, and (viii) improving adherence and compliance. Beyond DCTs, virtual and remote capabilities will also enhance pharmaceutical commercialization and distribution.

Last-Mile Solutions Close the Gap Between Virtual Care and Traditional Care (p. 32-33)

- The combination of finite provider resources, increased consumerism, ubiquitous technologies and reimbursement pressures (among other factors) has created a dynamic in which many forms of care that used to take place inside a hospital or other brick-and-mortar physical setting are now being performed digitally. As such, health systems and other provider organizations are actively exploring how virtual care and related technologies can expand their patient bases, prevent leakage, improve efficiencies, enhance treatments and enable integrated care throughout the patient lifecycle. In a similar vein, a number of employers are exploring ways to offer virtual care to their employees in an effort to manage costs, boost productivity and improve retention. This page highlights how virtual care has now gone the “Last Mile” to meet patients at the point of care further expanding the aperture and evolution of digital health in three key areas: (i) lab testing, (ii) pharmacy, and (iii) diagnostic imaging.

Ziegler’s Virtual Care Sector Map (p. 34-35)

- Ziegler once again presents the Ziegler Virtual Care Sector Map which displays our view of the entire virtual care ecosystem on a high-level organizational diagram. Ziegler comprehensively updated the Sector Map since the last paper to include companies that have matured or recently entered the market, removed companies that have exited or been acquired, and further distinguish the industry into distinct subsectors. A number of new subsectors have been added to the Sector Map that are covered in this white paper including Workforce Optimization, Digital Patient Navigation, Tele-Behavioral Solutions, Smart Aging Solutions, Remote Monitoring Solutions, Decentralized Clinical Trails, Last-Mile Solutions, and SDOH.

Robust M&A and Capital Markets Activity (p. 36-37)

- This section contains a representative list of partners, investors and acquirers who are emerging as leaders or potential “change-makers” in the virtual care market. The page highlights several recent transactions that amplify the themes laid out in this white paper.

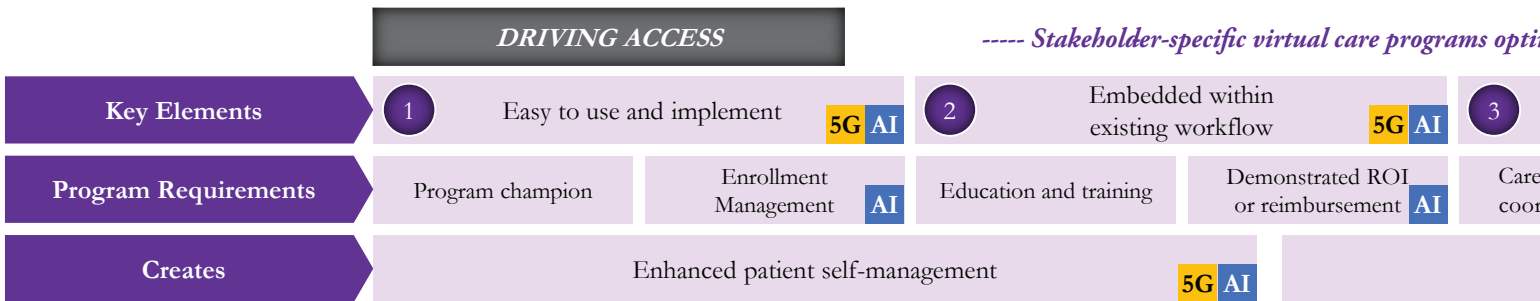
UNENCUMBERED ACCESS OF DIGITAL HEALTH

The healthcare innovation landscape has finally matured to the point where virtual care innovations are being met with enthusiasm and supported by favorable tailwinds. The pandemic resolved many historical barriers to adoption. The necessary technology (5G, AI) is available. Healthcare providers, payors and patients are craving more efficient delivery solutions and are willing to align their payment models. If they can demonstrate value with measurable ROIs, they are becoming an integral component of modern healthcare.

Communities & Stakeholders



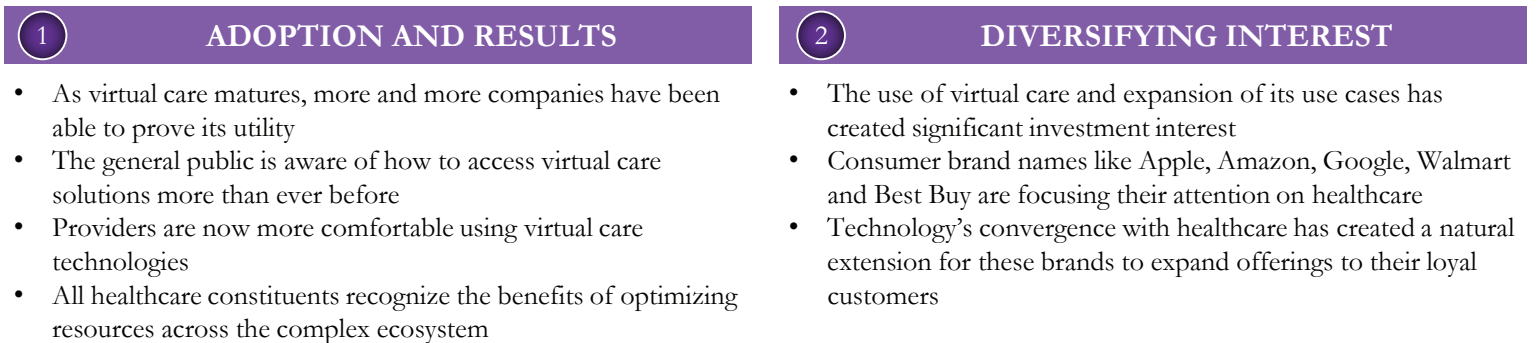
CHARACTERISTICS OF SUCCESSFUL VIRTUAL CARE PROGRAMS



HISTORICAL BARRIERS TO VIRTUAL CARE ADOPTION

- Adoption rates low
- Competing IT department priorities
- Confusion regarding insurance coverage
- Cost
- Ease of use
- Establishing common terminology
- Hard to define ROI and lack of proven ROI
- Inconsistent ongoing compliance
- Interoperability challenges
- Lack of reimbursement opportunity
- Lack of single vendor, enterprise solution
- Medical establishment resistance

RECENT FAVORABLE TRENDS



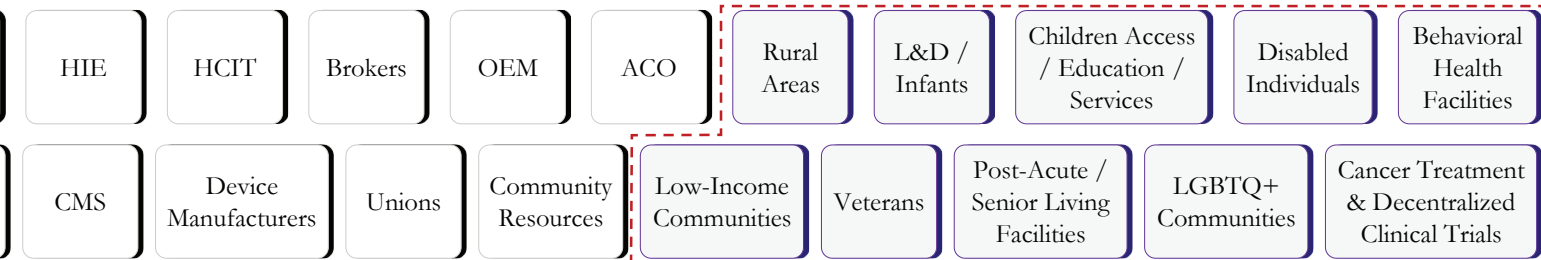
RAPIDLY EVOLVING TECHNOLOGIES

- | | | |
|--|--|---|
| <ul style="list-style-type: none"> • 5G and broadband access 5G • Aligned financial incentives • Artificial intelligence AI | <ul style="list-style-type: none"> • Avatars and robotics • Big data analytics • Digital-first mindsets | <ul style="list-style-type: none"> • Evidence-based medicine • Gamification • Genomic coordination |
|--|--|---|

enthusiasm across a wide array of stakeholder groups who are excited about designing successful virtual care programs (video, audio, etc.) is now a commodity and broad awareness and utilization of solutions has improved exponentially. New business models to accommodate proven, increasingly commoditized virtual care tools. As these solutions gain greater acceptance

- 5G** Expansion of 5G networks and broadband are of special importance
- AI** Artificial Intelligence (AI) and Machine Learning (ML) have particularly great promise
- U** Underserved communities in need of enhanced solutions

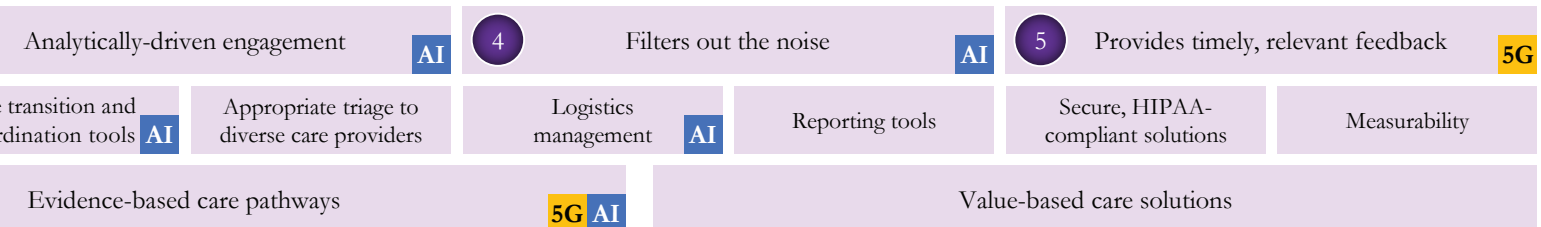
Stakeholders



DRAMA – BEING DISRUPTIVE WITHOUT BEING DISRUPTING

Optimize supply & demand needs to use scarce resources most efficiently ----

FACILITATING WORKFORCE OPTIMIZATION



CHALLENGES – COVID HAS RESOLVED MOST OR ALL OF THESE

- Medical malpractice concerns
- Misaligned incentives
- Poor training and implementation
- Privacy and security concerns
- Regulatory hurdles (e.g. credentialing barriers)
- Slow adoption of smartphones/technology by seniors
- Telecom infrastructure/bandwidth limitations
- Uncoordinated engagement and awareness efforts

ENABLED TAILWINDS

- ### 3 LEGISLATIVE SUPPORT
- CMS and all commercial plans have offered more clarity on the reimbursement for virtual care
 - As the ROI of use cases continue to grow, reimbursement for these services will follow
 - Virtual care is one of the few issues that receives bi-partisan support
 - Legislators from all parties and states now understand the benefits that virtual care can bring

- ### 4 IMPROVING TECHNOLOGY
- Technology, especially AI, continues to improve and become more user friendly, which expands the applications and uses of digital health.
 - The technology that makes virtual care possible has become more widely available at a much lower price point. This phenomena has enabled much wider adoption and application
 - As WiFi and broadband access have expanded, it is now much easier to connect into the digital health ecosystem

ENHANCING FUTURE STATE

- Geo-targeting
- Hospital-at-Home
- Implantable devices
- Measurable order sets and guidance
- MedApp formularies
- Predictive analytics
- Smart homes
- Virtual reality

VIRTUAL CARE PROGRAMS GAINING TRACTION ACROSS

Virtual care can efficiently and effectively serve the needs of patients
Whether providing, receiving or paying for care, everyone stands to benefit

VIRTUAL CARE

Improve Provider Productivity:

- Optimize triage so all clinicians consistently work to the full extent of their training and licensure
- Improve care coordination
- Ease impact of clinical shortages and reduce burnout
- Leverage AI to help providers consistently make quick, accurate decisions
- Increase staff efficiency at all levels

Drive Consumer Access and Engagement:

- Enhance care quality and expand options for care settings, modalities and providers
- Boost engagement, modify behavior, and promote healthier lifestyles
- Make care accessible, affordable and navigable
- Provide options to circumvent stigma

Reduce Cost:

- Provide care in the most appropriate setting
- Reduce no-shows
- Reduce overhead costs
- Ease access burdens to reduce later acute episode
- Deliver tangible ROI



Consumers/Patients Can...

- Experience an unprecedented convenience factor – especially for low-acuity/chronic illnesses and behavioral health
- Avoid the “unhealthy” setting of physician offices/urgent care centers/emergency rooms (ERs)/retail clinics and the strain of transport
- High-deductible/copay plans make economics of even self-pay virtual care solutions very attractive compared to in-person visits
- Enhance ability to self-manage, track and store health content
- Receive relevant, timely and unobtrusive reminders and alerts to prompt behavior changes
- Strengthen communications with family members and caregivers
- Access providers who are the right fit for a patient’s preferences (e.g. LGBTQ sensitive, Spanish-speaking, etc.)
- Improve coordination of care for all members of a family



Hospitals/Health Systems/VA Can...

- Reduce avoidable readmissions and average length of stay
- Improve access to, and availability of, specialists – including providing access to specialists outside of the system when needed
- Appropriately use and optimize advanced practitioners
- Differentiate brands and keep patients within a health system’s network
- Manage/track chronically ill patients more effectively
- Improve care transition handoffs
- Facilitate and enable hospital-at-home solutions
- Triage ER demand more efficiently
- Improve management of behavioral health and comorbid patients
- Align with rapidly evolving shared risk models more effectively
- Promote care delivery in the most appropriate setting for accountable care organizations (ACOs) and in the home
- Effectively measure and track SDOH at community level
- Increase revenues through improving HCC and RAF scores



Payors & Employers/Brokers Can...

- Provide appropriate care in the most cost-effective settings
- Enhance adherence and compliance to evidence-based pathways and use AI to increase treatment protocol consistency
- Modify patient behavior to promote healthier living
- Share risk with employees more effectively by increasing alternatives for plan designs
- Align solutions effectively with shared-risk payment models
- Improve wellness and drive specific programs/rewards
- Enhance productivity by reducing out-of-office time and improving mental health
- Counterbalance the increasing financial responsibility that employees face in high-deductible plans
- Reduce overall costs with more timely, consistent delivery of care
- Improve employee satisfaction



Pharmacies/Health Retailers Can...

- Support adherence and compliance with smart alerts and reminders as well as automated solutions such as pill dispensers
- Access to wireless peripherals such as blood pressure monitors can drive new traffic into retail pharmacies: position stores as the retail destination of choice for the virtual care wireless peripheral boom
- Encourage pharmacists to be viewed as trusted advocates for digital solutions such as medication adherence apps; use retail pharmacy websites as trusted channels for driving adoption of virtual care solutions
- Drive loyalty with rewards programs
- Create competitive differentiation and build loyalty
- Leverage retailers’ customer support, installation and IT assistance teams to implement and support virtual care solutions for clients

CROSS A BROAD UNIVERSE OF STAKEHOLDERS

of every stakeholder group in today's healthcare system.
stands to gain from the proliferation of virtual care solutions.

ADVANTAGES

most appropriate setting

of brick-and-mortar care
to preventative care,
episodes

Enhance Care Coordination:

- Enhance care teams' abilities to share information, consult, and collaborate
- Improve caregiver communication with family members
- Give patients greater awareness of their own health data
- Improve data capture, monitoring and sharing

Improve Outcomes:

- Enhance patient safety by making care accessible, affordable and navigable
- Speed time to recovery
- Avoid unnecessary hospitalizations and readmissions
- Encourage consistency in treatments, reduce errors
- Reduce lengths of stay
- Identify areas of concern earlier
- Close care gaps



Clinicians Can...

- Use data analytics and AI to triage patients more efficiently, ensuring all providers consistently work at the top of their licenses and all patients receive the correct type of care
- Reduce no-shows and in-office waits by enabling virtual access
- Manage/track chronically ill patients more effectively and intervene at key moments to improve outcomes and change behaviors
- Incorporate AI to optimize diagnoses and treatment decisions
- Diversify/supplement income streams, enhance work/life balance
- Connect with a patient's other providers and caregivers more easily
- Address growing digital appetite/demands of patients
- Align quickly with rapidly evolving shared-risk models
- Increase complexity levels of in-office patients by treating low-acuity patients virtually and digitally completing administrative work prior to a visit



Senior Living/Post-acute/Hospice Can...

- Use scarce clinical resources more efficiently
- Avoid unnecessary hospitalizations/ER visits and related travel
- Manage/track chronically ill patients more effectively
- Increase medication and therapy adherence and compliance
- Create brand differentiation in a competitive marketplace
- Enhance caregiver/family member communication
- Gain the ability to measure changes in vitals 24/7
- See early warning signs of health issues, with the potential help of AI – engage in “proactive” vs. “reactive” care, including behavioral
- Use safety monitoring solutions to increase patient security and family member/caregiver comfort
- Overcome reduced vision or mobility using voice-enabled tools
- Slow transition into more acute settings – reduce vacancy rates
- Meet evolving resident expectations and demands for seamless digital experiences



Clinical Trials Providers/ Life Sciences Companies Can...

- Enhance recruitment and fill trials more quickly while improving participant retention by making compliance simpler
- Broaden clinical trial catchment areas to improve access, compliance, and diversity of trial panel
- Minimize costs by reducing staffing needs, cutting significant transportation costs, improving patient recruitment process, etc.
- Deliver educational material and other content efficiently
- Drive medication adherence and promote formulary compliance
- Identify and intervene in the case of adverse events with more speed, precision and consistency
- Improve ability to track social and behavioral factors impacting trial participant outcomes
- Reduce trial duration and time-to-market for new drugs



Special Uses...

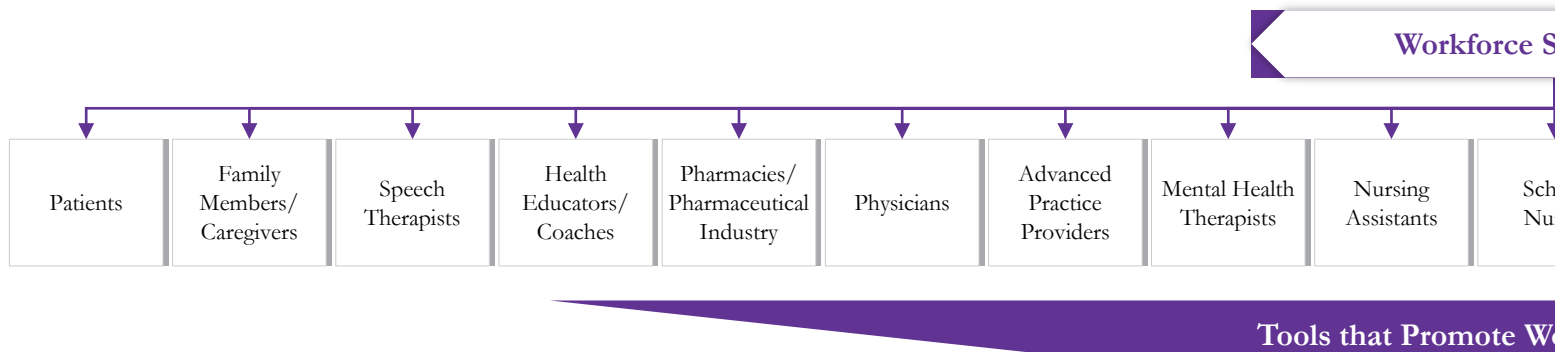
- Improve the ability to conduct rare disease clinical trials with the appropriate populations and specialists
- Provide accessible care options to more effectively address the opioid crisis and other public health emergencies
- Enhance care at schools by providing remote access to acute care, behavioral care and hearing and speech therapy
- Supplement provider shortages during and after natural disasters, even when survivors are not physically reachable
- Increase access to primary and specialty care, as well as mental health services, for prison inmates; reduce high costs associated with transporting and guarding inmates in need of treatment
- Improve treatment options for American Indian and Alaska Native tribes, where lack of access to adequate care is, for some, a decades-long concern
- Use tele-ministry services to provide spiritual support (e.g. end-of-life care)

WORKFORCE OPTIMIZATION: AN UNDERAPPRECIATED

Virtual care facilitates provider (subspecialist, specialist, PCP, PA, NP, case worker, social worker, family member, etc.) work evidence-based, analytically-driven engagement to the appropriate providers, thereby enabling them all to operate at the top

WORKFORCE OPTIMIZATION: THE K

- Workforce optimization tools will enable digital health’s primary goal: cost-effectively increasing the access points of high
- These tools will ease the current and future crisis of provider and caregiver shortages.
- Analytically-driven engagement tools, increasingly enhanced by AI and information on social determinants, will continue production of actionable analytics.



ADMINISTRATIVE

Administrative workforce tools include scheduling, revenue cycle management, medical claims and payment, patient engagement tools, EMR integration, and patient navigation



PROVIDER ENABLEMENT AND

Provider enablement tools aim to equip providers with the tools, talent, and technology to overcome administrative burdens and provider burnout and enhance patient engagement



SAFETY AND LOCATION

Safety tools include real-time location tracking or technology designed to identify and intervene in cases of caregiver duress



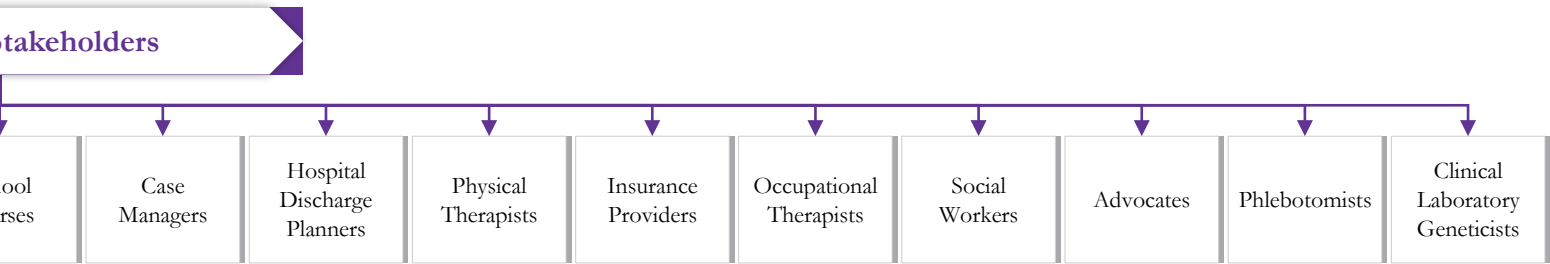
... YET INCREASINGLY IMPORTANT VALUE DRIVER

workforce optimization. By continually improving solutions embedded within existing workflows, virtual care can deliver timely, high-quality physical, behavioral, and social care. ... of their licenses.

KEY VALUE DRIVER IN ALL USE CASES

high-quality physical, behavioral, and social care.

to drive more efficient use of virtual care solutions in optimal care settings, but require strong data management and



Workforce Optimization

ACTIVE TOOLS



STAFF AUGMENTATION TOOLS



LOCATION TRACKING TOOLS



DIGITAL PATIENT NAVIGATION HELPS PATIENTS THROUGH

Seamlessly navigating patients into, through, and out of a health system is an increasingly important capability for care providers.

Navigating the healthcare journey can be daunting and complex – from finding the proper provider and site to receive a diagnosis, to identifying the best care for a unique case, and making lifestyle changes to prevent relapse and even finding transportation between all of these sites.

Health systems need to ensure that every patient receives personalized guidance and support to get to the resources that are best for them, elevating the quality of care, reducing barriers to access, and optimizing costs as well as clinical resources.

To facilitate these improvements, health systems should endeavor to centrally coordinate scheduling in a single department, regardless of specialty, service line, or acuity: This enables harmonized, consistent care and provides patients and clinicians with a single access point for any navigation needs.

Navigation centers with full control of scheduling can expand to coordinate patient transportation, manage procedure preauthorization, orchestrate patient transfers, and more, creating a one-stop shop for care coordination that eases burdens on all stakeholders.



Intake: Start of Patient Journey

Reception



Locations

- Patient self-referral for emergent or recurring symptoms
- AI-enabled triage and remote patient monitoring
- Referring primary care provider or specialty clinic
- Referring hospital, ER, or urgent care

- Primary care
- Hospital, ER,
- Labs, imaging
- Tertiary care
- Behavioral care
- Virtual care
- Community health



Integrated Digital Navigation Tools

- Triage
- Scheduling
- Transportation
- Telehealth and remote patient monitoring
- Preauthorization

- Acute inpatient
- Bed management
- Documentation
- Transportation
- On-call scheduling
- Clinical trial

Increasing Focus on Enhancing Patient Experience, Streamlining



Healthcare Consumerism

- Patients increasingly “shop” for providers as they would any other service for life
- 57% of Millennials surveyed have changed providers to get a better experience
- In this environment, maximizing patient satisfaction is critical



Need for Workflow Efficiencies

- Gradual replacement of traditional fee for service models with value-based care, increasing effectiveness of care delivery
- Optimizing workflow efficiencies through digital front door care to patients without administrative headache, while maximizing revenue



Impending Physician Shortage

- The Association of American Medical Colleges projects a shortage of 100,000 physicians by 2030
- McKinsey estimates that the nursing shortage could be even more acute
- Diminished supply of physicians means longer in-office wait times, necessitating HCIT solutions that will alleviate these pain points





Patient Financial Responsibility

- From 2010 to 2021, US per capita out of pocket health spending is projected to continue growing⁷
- Increasing patient financial responsibility means higher uncollected receivables
- Innovative patient payment solutions will allow providers to reduce financial risk

UGH THEIR HEALTHCARE JOURNEY

providers to master as competition increases and patients continue to make more of their own healthcare decisions.

 Living Care	 Discharge & Follow-Up
<p>for specialty care urgent care, ICU and LTAC re consultation health center</p>	<ul style="list-style-type: none"> • Home (with or without ongoing remote monitoring) • SNF, rehab, or residential care • PT/OT • Primary or specialty care • Virtual care consultation
<p>nt transfers ent on and record transfer n uling ccess</p>	<ul style="list-style-type: none"> • Discharge planning • Continuing education • Transportation • Med and therapy delivery and adherence • Addressing social determinants
ing Workflows, and Optimizing Revenue Capture	
<p>other product, and are less likely to remain with a single provider n appointment sooner, compared with only 22% of Baby Boomers al to gaining new patients and retaining current ones</p>	
<p>th value based care means that providers must find ways to increase the solutions frees physicians to focus on providing the highest quality mizing the number of visits possible in a day</p>	
<p>ortage of up to 124,000 physicians by 2034⁵ more dire, with a gap of up to 450,000 by as early as 2025⁶ times and more difficulty scheduling appointments, driving need for</p>	
<p>d grew by over 26%, and patient pay amounts are projected to ollectible accounts receivable (AR) and a slower revenue cycle maximize revenue capture and streamline the entire revenue cycle</p>	

PATIENT NAVIGATION SECTOR MAP

Select representative companies:



The grid contains the following logos (row by row, left to right):

- Row 1: ABOUT™, Align™, ALTERNATE SOLUTIONS Health Network (Building Partnerships, Transforming Care)
- Row 2: Amaze HEALTH, AIONEX (like no other difference), AUDACIOUS INQUIRY / PointClickCare®
- Row 3: babylon, Bamboo Health, buoy®
- Row 4: CarePort® (powered by WellSky), CaringWire, CEDAR GATE TECHNOLOGIES
- Row 5: CipherHealth, Clarify, clearstep
- Row 6: clearwave, cloudmed (an RTI company), Connexall®
- Row 7: cureatr, dexcare, dina
- Row 8: Doctible® / PracticeTek, eClinicalWorks
- Row 9: EmOpti, experian. health, forcura
- Row 10: getwell:)network, GOZIO Health, GYANT
- Row 11: Hospital IQ / LeanTaaS, ICARIO, InQuicker (by Stericycle® Communication Solutions)
- Row 12: intelligent locations INTRAX™ (Digitize Your Healthcare Operations), JUVARE, kaizen HEALTH
- Row 13: Krames (Activating health), KYRUUS, Lyn, MD ALLY
- Row 14: Medsphere, naviHealth, new ocean HEALTH SOLUTIONS
- Row 15: perfectserve, Phreesia, PRIVIA HEALTH
- Row 16: Quantum HEALTH, referral md, roundtrip
- Row 17: Strata Health, TAGNOS, TeleTracking
- Row 18: transcarent, TCARE, TriageLogic
- Row 19: VALIDIC™, WellSky, ZIPNØSIS

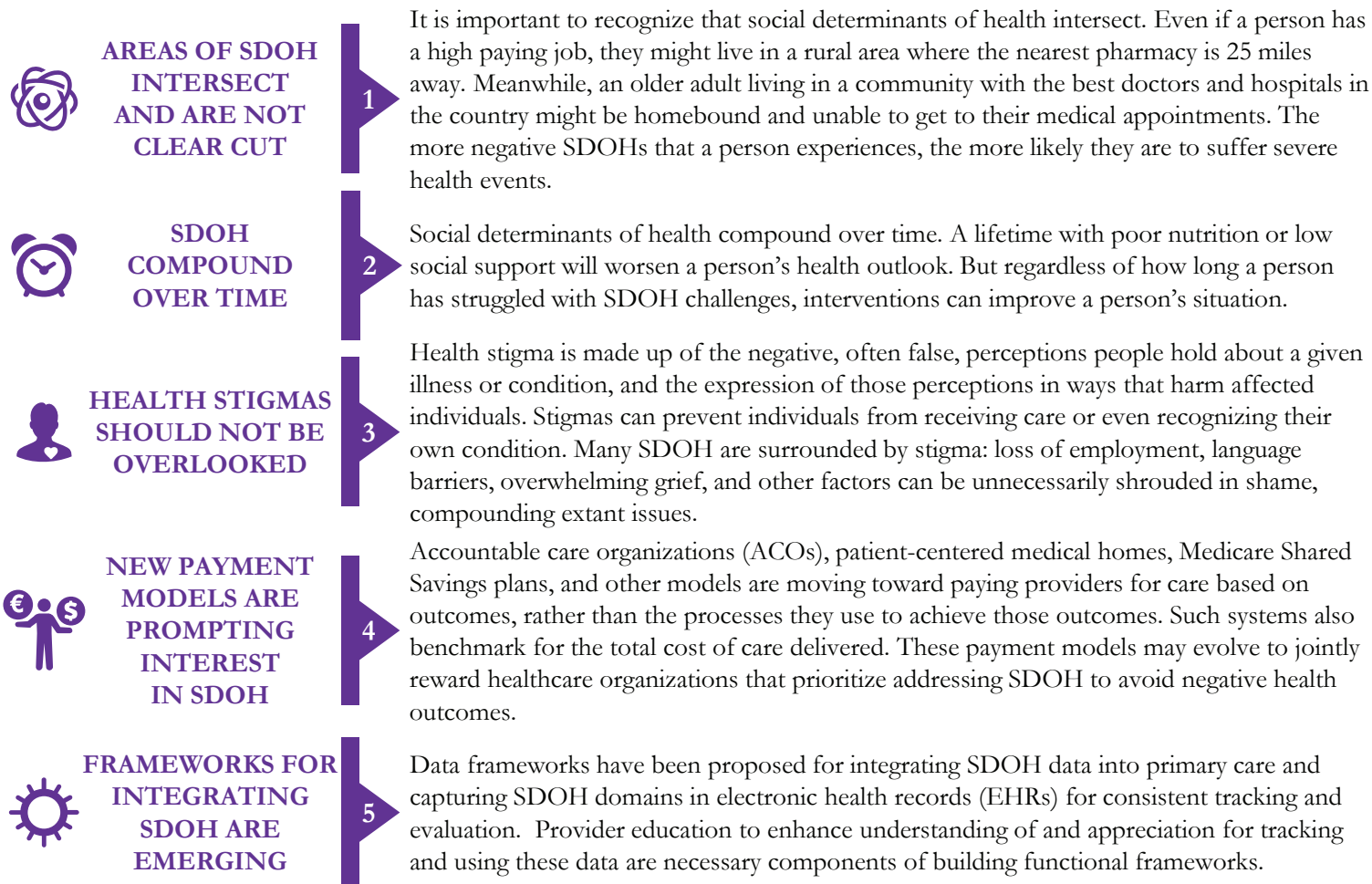
GENETICS SUPPLY THE STONE BUT ENVIRONMENT CA

RECOGNIZING SOCIAL DETERMINANTS OF HEALTH (SDOH)

SDOH are the environmental and social conditions that impact a person's health and quality of life. Roughly 10-20% of health outcomes are attributable to medical care; the remaining 80-90% are the results of SDOH.^{8,9}

SDOH account for many **health disparities**. Wealth inequality, racism, and differing exposure to the effects of climate change, among many other SDOH, have all prevented the U.S. from achieving social justice in health, also called **health equity**. When social factors reduce certain people's opportunity to attain their highest level of health, individuals, families, and communities cannot thrive. In order to reduce disparities, individuals can educate themselves; challenge their environments; gain exposure to diverse experiences; and change their culture, thoughts, and actions.

Below are five key concepts to understand about SDOH:^{8,9}



Institutional racism is a particularly destructive and pervasive SDOH which infects the U.S., including our healthcare system. Institutional racism may manifest in both overt and covert norms and structures which systematically treat members of different ethnic groups in inequitable ways. The consequences can be deadly, painful, and expensive. The U.S. Government Accountability Office has specifically noted that normalizing for factors such as age, Black patients with diabetes died at twice the rate that white patients did in 2018; Black women suffered nearly three times as many deaths during childbirth as white women between 2011 and 2016; and Hispanic or Latino and non-Hispanic Black Americans were hospitalized due to COVID-19 at rates 2.8x higher than their non-Hispanic white counterparts between March 2020 and June 2021. Overcoming racism and other biases is no simple task. **Diversity, equity, and inclusion initiatives** are one starting point which healthcare organizations are beginning to pursue with vigor, part of a much larger process of renewal.¹⁰

CARVES THE SCULPTURE

A MAP OF PSYCHOLOGICAL AND SOCIAL FACTORS IN HEALTH

 Economic Stability <ul style="list-style-type: none"> • Employment • Income • Expenses • Debt, esp. Medical • Job Safety • Dependents • Financial Literacy 	 Education <ul style="list-style-type: none"> • Literacy • Language • Early Childhood Edu. • Vocational Training • Higher Education • Affordability of Edu. • Engaged Educators 	 Behavioral <ul style="list-style-type: none"> • Diet • Exercise and Activity • Alcohol/Drug Misuse • Mental Stimulation • Risky Behavior • Medication Adherence • Preventive Care Use 	 Social Context <ul style="list-style-type: none"> • Social/Family Support • Social Integration • Community Engagement • Discrimination • Caregiving Duties • Access to Childcare and Eldercare
 Environment <ul style="list-style-type: none"> • Housing • Walkability • Transportation • Parks and Playgrounds • Safety • Pollution • Climate and Weather 	 Nutrition <ul style="list-style-type: none"> • Malnutrition • Access to Healthy Options • Time for Food Prep • Nutritional Edu. • Cultural Traditions • Oral Health 	 Technology <ul style="list-style-type: none"> • Broadband Access and Speed • Affordability of Cellular Data • Technological Skills • Smart Technology Ownership 	 Mental Health <ul style="list-style-type: none"> • Resilience • Stress • Trauma • Grief • Psychological Conditions • Genetic Predispositions • Addiction

DIGITAL HEALTH COMPANIES ADDRESSING SDOH





SOCIALLYDETERMINED
Addresses all areas discussed on this page

IN-HOME CARE AS A TOOL TO OVERCOME CHALLENGING SDOH²

Digital tools have made it more possible than ever for caregivers to meet patients in their own homes, both virtually and in-person, offering myriad SDOH advantages. For instance, video visits can directly overcome barriers such as poor access to transportation or great geographic distances. They can also expand a patient’s options for caregivers beyond their immediate neighborhood, allowing for LGBTQ+, immigrant, or minority religious patients to find culturally aligned providers. Face-to-face in-home appointments also have the additional benefit of shifting the traditional power balance in the patient-provider interaction. The provider becomes a guest in the patient’s home, which may help patients be more open and confident. Additionally, a provider can glean key insights by seeing a patient’s home, either on a screen or in-person. Factors such as neighborhood violence, lack of childcare, or inadequate access to nutrition all become far more apparent in someone’s home than in a medical office, and digital tools facilitate providing care away from the office.

Care delivery mediums are more diverse than ever. Meeting patients in their environments and personal circumstances in the ways that best suit their needs is key to health equity and enabled by digital healthcare.

TELE-BEHAVIORAL SOLUTIONS: CONNECTIVE TISSUE S

The pandemic has exacerbated the issue and brought the behavioral health crisis out of the closet. Even more than in any engagement with the appropriate, scarce providers for all patients, maximizing the likelihood of all providers (psychiatrists at the top of their licenses and all patients receiving the correct level of care.

An Overview Of The U.S. Behavioral Health Crisis¹¹⁻¹⁵

Behavioral health is a wide-scale challenge

- Nearly 1 in 4 (~26%) American adults will have a diagnosable mental health condition in any given year
 - 46% of Americans will meet the criteria for a diagnosable mental health condition sometime in their life, and half of those people will develop conditions by the age of 14
- 3 in 10 employees suffer from severe stress, anxiety or depression
- Suicide is the second leading cause of death for people between ages 10 - 34
 - 11.0% of adults who identified with two or more races reported serious thoughts of suicide in 2020, 6% higher than the average among all adults
 - Nearly 1 in 5 transgender and non-binary youth attempted suicide and LGBTQ youth of color reported higher rates than their white peers
- 1 in 6 Americans 12 years and older have taken an antidepressant in the last month
- Over 1 in 10 youth in the U.S. are experiencing depression that is severely impairing their ability to function at school or work, at home, with family, or in their social life
- 6.4% of youth (age 12-17) report suffering from at least one major depressive episode (MDE) in the past year. 11.5% of youth (over 2.7 million youth) are experiencing severe major depression
- 6.4% of youth in the U.S. reported a substance use disorder in the past year
- The average demand for counseling center service at universities grew over 5 times faster than enrollment between 2009-2016

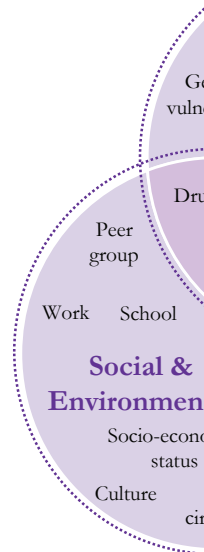
For numerous reasons, people are not getting the help they need

- Over half (54.7%) of adults with a mental illness do not receive treatment, totaling over 28M individuals
- Almost a third (28.2%) of all adults with a mental illness reported that they were not able to receive the treatment they needed
 - 42% of adults with any mental illness (AMI) reported they were unable to receive necessary care because they could not afford it
 - 10.8% (over 5.5 million) of adults with a mental illness are uninsured
 - Hispanic adults with AMI were least likely to have health insurance, with 19.0% reporting they were not covered by insurance
- 22.9% of adults who report experiencing 14 or more mentally unhealthy days each month were not able to see a doctor due to costs
- Nationally, 1 in 10 youth who are covered under private insurance do not have coverage for mental or emotional difficulties
 - 59.8% of youth with major depression do not receive any mental health treatment
 - Nationally, only 28% of youth with severe depression receive some consistent treatment (7-25+ visits in a year). Most (57.3%) youth with severe depression do not receive any care
- Only three states have enough behavioral health providers to meet over 50% of population need
 - In the U.S., there are an estimated 350 individuals for every one mental health provider

The consequences of this crisis are costly

- Lack of mental health and substance abuse care is costly:
 - It is projected that there is \$300 billion in incremental costs from unaddressed behavioral health issues
- Substance use disorders (SUD) cost employer-sponsored health plans about \$35.3 billion per year
- Spending for other health, residential, and personal care services grew 6.1% in 2021 to \$223.5 billion, slowing from 8.2% growth in 2020. The deceleration was driven by slower growth in spending for Medicaid home and community-based waivers
- 30.0% of disabilities reported attributed to behavioral and neuropsychiatric disorders

- Behavioral health add
- This includes such fac
- Ziegler believes the ne
- health, and social dete
- In particular, there are
- driven social determin
- Tele-behavioral health
- The COVID-19 pand



Tele-behavioral health w
behavioral health solutio
administrative infrastruc
appropriate providers tha

- ACOs
- American Indian and Alaska Native tribes
- Cancer programs
- Community mental health clinics
- Correctional facilities
- EDs
- Employers

STRENGTHENING THE CONTINUUM OF CARE

Other specialty, virtual care workflows built into behavioral health can drive timely, evidence-based, analytically-driven care (involving psychiatrists, psychologists, nurse practitioners, licensed clinical social workers, therapists, caregivers, and family members) operating

Virtual Behavioral Healthcare – Meeting Patients Where They Are

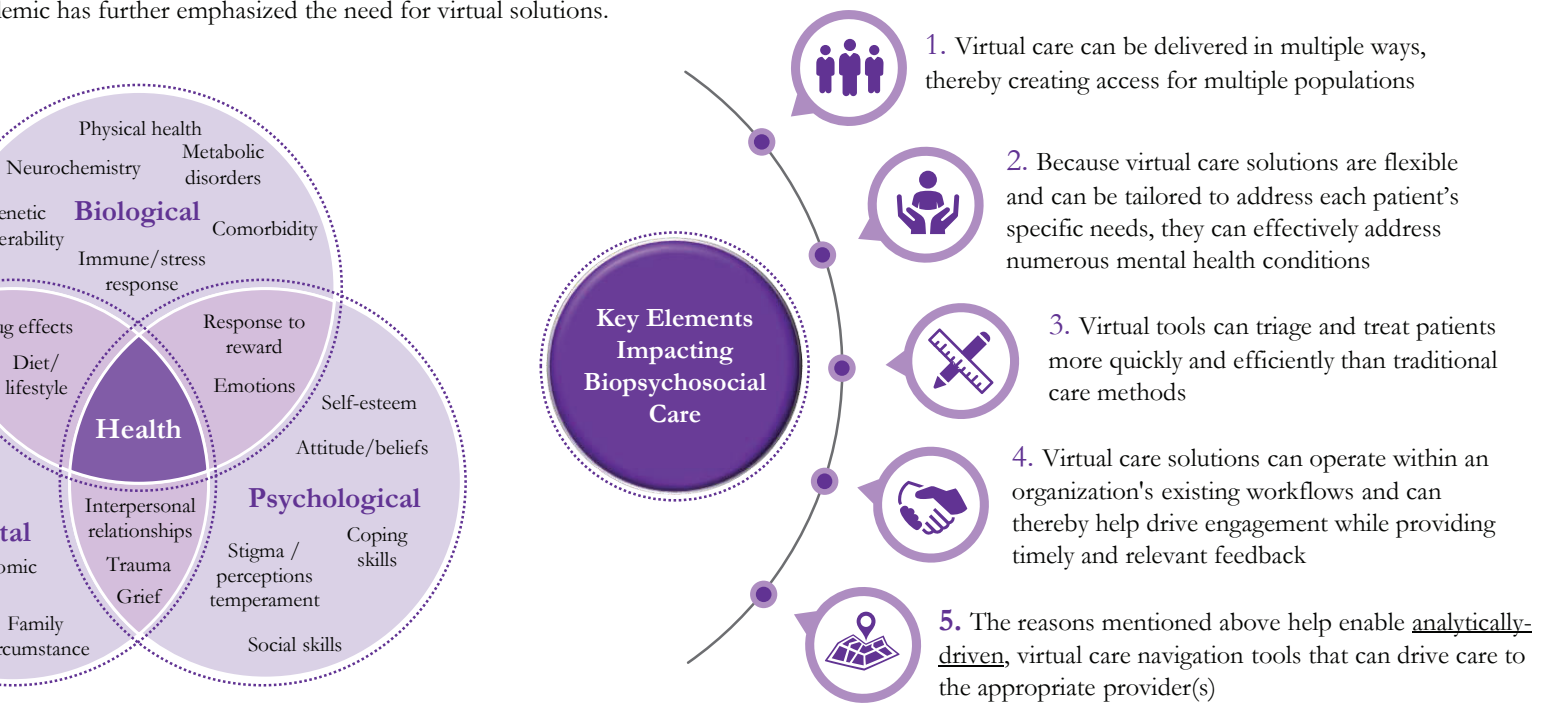
addresses how emotions, behavior and biology relate to a person’s mental wellbeing, their ability to function in everyday life and their concept of self. Symptoms such as mental health, substance use, habits and physical symptoms of emotional distress.

The next generation of successful virtual care companies will be those who understand the critical marriage between chronic care management, behavioral health and social determinants (“biopsychosocial care”).

The two primary subsectors on which we place redoubled emphasis in this new white paper: (i) tele-behavioral health offerings and (ii) analytically-driven navigation tools of health toolkits.

Virtual care has demonstrated that it can be as good as, if not better than, in person.

The pandemic has further emphasized the need for virtual solutions.



Potential Outcomes Of Virtual Care In Behavioral Health



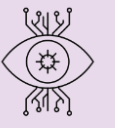



Virtual care will likely become the preferred delivery medium for behavioral health services once the workforce optimization tools and clinical infrastructure are in place, giving myriad institutions access to the care that they are starved for:

- Family support programs
- FQHCs
- Hospital-based wards
- Individuals
- K-12 schools and universities
- Long-term care (assisted living, skilled nursing, hospice)
- Payors
- Primary care physicians
- Psychiatric hospitals and outpatient units
- Residential treatment centers
- Substance abuse treatment centers
- Survivorship groups

Virtual behavioral solutions can lead to:

- Greater access with reduced barriers related to time, geography and stigma
- Improved care and significant cost reductions, generating a meaningful ROI
- Improved compliance and coordination with other CCM programs
- Improved employee training and productivity; reduced turnover and staff recruitment expense
- Increased ability to manage social determinants of health including with improved matching of patients to providers with relevant cultural competencies
- Improved medication adherence and compliance; reduction in anti-psychotic drug prescriptions
- Reduced hospital admissions and shorter high-acuity wait times
- Regained emotional health and wellbeing
- Significant reductions in missed appointments/identification of patients at risk of attrition

VIRTUAL BEHAVIORAL HEALTH SECTOR MAP

 <p>Virtual Psychiatry, Therapy, and Counseling</p>	<ul style="list-style-type: none"> • AbleTo/Joyable/Optom • Alkeme Health • Amwell • Array Behavioral Care • BasePoint Academy • Behavioral Health Works • BetterHelp/Teladoc Health • Brightside Health • Cerebral • Cloud 9 • Cloudbreak/UpHealth • Concert Health • Dotcom Therapy • Encounter Telehealth • e-Psychiatry • FasPsych 	<ul style="list-style-type: none"> • Forefront Telecare/Access TeleCare (f.k.a. SOC TeleMed)/Patient Square Capital • Genoa Telepsychiatry/UnitedHealthcare • Ginger Headspace • HealthLinkNow • Ieso Digital Health • innovaTel/Quartet • Integrated Telehealth Partners/PMC/Consonance Capital • Iris Telehealth • LifeStance Health • MDLIVE/Cigna • MediTelecare • Mentegram 	<ul style="list-style-type: none"> • Mindcare • Mindoula • Mindstrong • Optum • QLER Telepsychiatry • Quartet Health • Rippl Care • SonderMind • Talkspace • TAO Connect • Teladoc Health • Telemynd • thera-LINK • Togetherall • Virtual Therapy, LLC (a.k.a. Thrive360) • ZipDoctor/Cosmos Health
 <p>Screening & Monitoring Tools</p>	<ul style="list-style-type: none"> • AppliedVR • Arise Health • Clarigent Health • Collective Medical Technologies/PointClickCare • Ellipsis • ERP Health 	<ul style="list-style-type: none"> • Hatch (f.k.a. VisuWell/WeCounsel) • Ilumivu • InfoMC • Kintsugi • Ksana Health • Linus Health • Owl 	<ul style="list-style-type: none"> • Spring Health • StressPal • Tridium/New Directions • uMore • Valera Health • Wellbrain
 <p>Substance Use Disorder Focus</p>	<ul style="list-style-type: none"> • Better Life Partners • Bicycle Health • Boulder Care • Brave Health • Bright Heart Health • CHESS Health • DynamiCare 	<ul style="list-style-type: none"> • Halcyon Health • Integrity Ho • Kaden Health/BayMark Health Services • Lyra Health, Inc. • MAP Health Management • Ophelia Health, Inc. • PursueCare 	<ul style="list-style-type: none"> • Ria Health • Sonara Health • Stay Clean • Trigr Health/SonarMD • Workit Health
 <p>Pediatric Focus</p>	<ul style="list-style-type: none"> • Amplio Learning Technologies • Behavior Imaging • Brightline • Cognoa • Hopscotch 	<ul style="list-style-type: none"> • Pediatric Therapeutic Services/Kelly Services • PresenceLearning/Spectrum Equity • Sage Care Therapy/Sevita • TeleTeachers 	<p>Behavioral Health EMR</p>
 <p>Self-Management Tools</p>	<ul style="list-style-type: none"> • DarioHealth • Engageware/Clearhaven Partners • FeelingBetterNow • Feel Therapeutics • HabitAware • Headspace • Kaya Care • Kick • myStrength/Teladoc Health • NOCD • Prairie Health/Carbon Health • Prevail Health • UCM Digital Health • Woebot Health 	 <p>Digital Therapeutics</p> <ul style="list-style-type: none"> • BehaVR • Big Health • Freespira • HealthRhythms • Limbix Health • Lirio • Mahana Therapeutics • Manatee, Inc. • Meru Health • Neuroflow • Options MD • Pear Therapeutics • Quit Genius (a.k.a. Digital Therapeutics) • SilverCloud/Amwell • Synchronous Health • Twill 	<ul style="list-style-type: none"> • Alleva • Azzly • Behave Health Corp • Cantata Health Solutions • ContinuumCloud • Core Solutions • KIPU Health • Lightening Step Technologies • Netsmart Technologies • Patagonia Health • PsyTech Solutions/Harris Healthcare • Qualifacts • Radicle Health • Sigmund Software/VSS Technologies • Streamline Healthcare Solutions • Therapy Brands • Valant

VIRTUAL PSYCHIATRY, THERAPY, AND COUNSELING

- The most common types of mood disorders are major depression, dysthymia, bipolar disorder, mood disorder due to a general medical condition, and substance-induced mood disorder¹⁶
- Depression is most often treated with medicine, psychotherapy or cognitive behavioral therapy, family therapy, or a combination of medicine and therapy. Telepsychiatry, in the form of live interactive videoconferencing, has demonstrated its ability to improve access to high-quality mental health care, specifically in the treatment of patients with depression and mood disorders¹⁶
- Anxiety disorders are the most common form of mental illness and affect ~30% of adults at some point in their lives and are treatable with psychotherapy, medication, or both¹⁷
- Virtual reality exposure-based cognitive behavioral therapy has shown good treatment results in (subclinical) anxiety disorders and seems to be a good alternative to exposure in vivo in regular cognitive behavioral therapy¹⁸

Select representative companies:



SUBSTANCE USE DISORDERS (SUDS) AND MEDICATION-ASSISTED TREATMENT (MAT)

- As of 2020, among Americans aged 12 years and older, 37.309 million were current illegal drug users (used within the last 30 days); 9.49 million or 3.4% of Americans aged 12 and older misuse opioids at least once over a 12-month period¹⁹
- Combination of medication and therapy can successfully treat these disorders, and for some people struggling with addiction, MAT can help sustain recovery. MAT is also used to prevent or reduce opioid overdose²⁰
- SUD treatment programs are usually based on psychological model, medical model and sociocultural model²¹
- Psychotherapy, or talk therapy, is helpful for those living with SUD. It can reinforce motivation to remain sober and target any underlying mental health issues, including anxiety and depression²²
- 45% of SUD-related virtual care services are provided via computerized or Web-based assessments; telephone-based therapy comprises 28% of and video-based therapy makes up 20% of SUD-related virtual care services²³

Select representative companies:



DIGITAL THERAPEUTICS

- Digital therapeutics (DTx) are evidence-based, clinically evaluated software and devices that can be used to treat an array of diseases and disorders²⁴
- The DTx market is expected to grow tenfold in the next three to five years, with a projected market value of \$9 billion by 2025²⁴
- Advances in and the increasingly dominant role of mobile technology and AI in our everyday lives have broadened the role of DTx in healthcare²⁴
- Leading DTx companies are working on development of therapeutic applications for a diverse range of neuroscience indications, such as ADHD, autism spectrum disorder, schizophrenia, depression, and bipolar disorder²⁴
- Providers and other stakeholders are using digital health technologies in their efforts to reduce inefficiencies, improve access, reduce costs, increase quality, and make medicine more personalized for patients²⁵
- Several market forces are supporting the development and use of DTx. For example, patients are increasingly using digital channels to engage with their health and health care providers, with a high level of patient and caregiver interest in smartphone apps that are designed to affect health²⁵

Select representative companies:



SMART AGING SOLUTIONS ALLOW SENIORS TO AGE C

Smart aging describes the process of leveraging digital tools to enhance autonomy, dignity, health, safety, joy, and professional caregivers who assist them to the untold number of family and friends who love, care about, and sacrifice for. The population will continue to outpace birth rates. Socially and economically, using digital tools to help older adults live their best lives may face related to transportation, mobility, and specialist access, it is often most appropriate to bring care to the patient, rather than the patient to the care. Biopsychosocial needs are as complex as at any other stage in life, but solutions for this population sometimes require extra resources. Below, we illustrate some of the stages of smart aging and highlight specific solution categories of interest.

	Age ~55		Illustrative A
Acuity:	Low Acuity		
Deciders / Payors:	Individual Choices / Self-Pay & Private Pay		
Common Phases and Illustrative Tools:*	Education and Prevention	Aging in Place	
	<ul style="list-style-type: none"> • Proactive health screenings and risk assessments • Fitness regimens • Advance care planning • Career continuation and “encore careers” • Fostering cognitive and emotional wellbeing and resilience 	<ul style="list-style-type: none"> • Health trackers and sensory aids • Senior center services • Case management • Home accessibility and safety modifications (esp. to reduce fall risk) • Downsizing, moving to life plan community or independent living 	
Continuous Underlying Priorities:	Promote dignity and joy Support relationships and interests Balance nutrition, exercise, and sleep		

Categories of High-Priority

Wrap-Around Support

Whether aging at home or in a care community, older adults often need coordinated, around-the-clock care. From simple daily wellness checks to on-demand urgent care to connecting multiple caregivers across locations, digital tools enable wrap-around support anywhere.

Spotlight on: Supportive Home Environments

While aging at home, many older adults feel little need for constant care, but do need to be in a supportive environment. Making intelligent home safety modifications or searching for the perfect new home can be part of this process.

Innovative Remote Monitoring

Remote monitoring continues to be a popular and powerful solution to prevent and detect myriad health problems, from heart arrhythmias to hypoglycemic events. Many of the conditions remote monitoring can detect pertain to heart failure, diabetes, and other conditions particularly common among older adults.

Spotlight on: Monitors for Fall Prevention

About 36M older adults fall each year in the US, leading to injuries, hospital visits, and loss of autonomy – or simply hours spent immobilized on the floor.²⁶ Fortunately, there are AI-enabled digital solutions to predict, prevent, or quickly report falls.

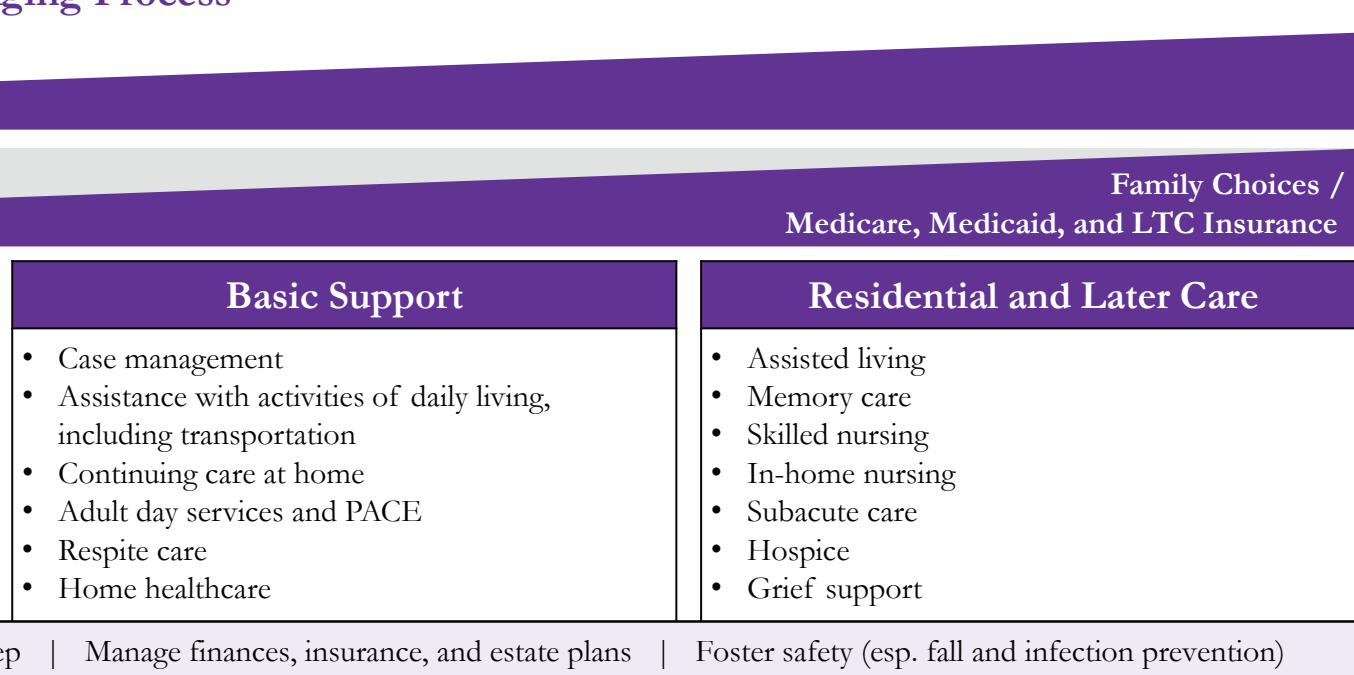
**This should not be considered an exhaustive or ironclad list of aging phases and tools. One of the tenets of*

GRACEFULLY AND SAFELY

and interpersonal relationships for older adults. Aging impacts everyone, from older adults themselves to the scores of them. It is broadly appreciated that the population of the U.S. is older than ever before, and the growth of the older adult best possible lives in the face of constrained caregiver resources is imperative; and considering the limitations older adults rather than the patient to their care. This makes virtual care a key category of digital health for this population. Older adults' a careful design to be appropriate for individuals who may have reduced mobility, cognitive function, or sensory perception.

Smart Aging Process

Age 90+



Smart Aging Solutions

Behavioral Health

~20% of the U.S. population over the age of 55 experiences a mental health issue of some kind, and supportive services are severely lacking.²⁷ Digital tools can overcome geographic barriers as well as stigma to address older adults' mental health challenges.

Spotlight on: Reducing Loneliness

Nearly 25% of older adults are socially isolated, which notably contributes to worse mental health. Digital tools can foster relationships and communities as well as shared experiences and activities.²⁸

Supporting the "Care-Force"

The care-force is comprised of the loved ones and professionals who support older adults, often making emotional, temporal, and financial sacrifices to do so. Unfortunately, the care-force is increasingly strained. A wave of digital tools aims to simplify caregiving tasks, reduce financial burdens, and proactively prevent burnout.

Spotlight on: Caring at End of Life

Many caregivers experience both anticipatory grief while caring for older loved ones or patients and bereavement when their caregiving culminates in the end of a life. Digital solutions can help busy, grieving caregivers prepare for and manage loss.

REMOTE MONITORING OFFERS KNOWLEDGE AND INSIGHT

A pivotal inflection point will be taking place in 2023, with stakeholders recognizing the efficacy of Remote Physiologic Monitoring (RPM) and Remote Therapeutic Monitoring (RTM) and compelling clinical data that links remote monitoring to meaningful and measurable patient outcomes. As it did with providing increased reimbursement structures to encourage better adoption and utilization by providers and patients. Additionally, we are seeing more of a shift now towards value-based

Transforming Remote Monitoring

- The Centers for Medicare & Medicaid Services' introduction of new CPT codes has expanded opportunities for virtual care reimbursement and revolutionized the way that providers think about managing patients with chronic conditions.²⁹⁻³⁰
- These codes fall into two major categories: Remote Physiologic Monitoring and Remote Therapeutic Monitoring.
- While RPM and RTM serve a similar purpose, there are key distinctions which are outlined below:

RPM

- Remote Physiologic Monitoring is a method of monitoring patients remotely by transmitting data from the patient's healthcare devices back to the clinician. This can be done in real-time or at periodic intervals, depending on what is most appropriate for the particular patient and condition.
- RPM requires the device to digitally (that is, automatically) record and upload patient physiologic data (i.e., data cannot be patient self-recorded, self-reported, or entered manually into the device).³¹⁻³²

RTM

- Remote Therapeutic Monitoring also allows clinicians to monitor their patients remotely, but with RTM, providers are able to focus on patient "therapy adherence" and "therapy response" specific to the musculoskeletal system status and respiratory system status, where "non-physiologic data" is more appropriate to review.
- RTM data can be self-reported by the patient, as well as digitally uploaded via the device.³¹⁻³²

Remote monitoring solutions drive value for all healthcare stakeholders including:

- **Providers:** easy to manage populations and get reimbursed
- **Patients:** receive timing intervention to avoid hospitalizations and gain greater mastery over personal health data
- **Payors:** proactive care to avoid reimbursable events.

A Legislative Turning Point for Remote Monitoring

- We are at an inflection point with recognizing the value of RPM and RTM and reimbursing for that value accordingly. The Medicare Administrative Contractors, the CPT Committee, and CMS will all be contemplating changes that will impact the industry as a whole
- Evidence demonstrates that digital health innovations, specifically non-implantable RPM and RTM devices, improve patient care, reduce hospitalizations, help avoid complications, improve patient engagement, and augment the caregiver experience
- Outreach to CMS, the CPT Committee, and the MACs by stakeholders will be important in finalizing policy that will increase adoption of these services and ensure appropriate payment for this growing and exciting area of healthcare
- Currently, we are at a pivotal legislative turning point in RPM and RTM reimbursement, with the acknowledgement of these CPT codes and their value in the healthcare ecosystem, CMS will be forced to prioritize the efficacious and equitable provision of these codes to augment care for every patient
- This is a similar process that occurred with Chronic Care Management (CCM) reimbursement codes. CCM codes were first introduced in 2015 in which they were underutilized and valued too low by CMS. After the efficacy of these codes was proven, CMS went on to increase reimbursement for these codes by 60% in 2022
- We are hopeful that Remote Monitoring will follow the same trajectory as CCM

Core Components of a Successful Remote Monitoring Program

Device Ease of Use & Reliability

- Devices turn on, connect seamlessly, and begin working directly out of the box
- No connectivity issues – creates gap in readings and available data

Seamless Tech Platform

- Population management dashboards
- Customizable risk-based alerts to promote timely intervention and improve patient engagement
- Secure connection between primary care provider or specialist and nurse call center

Automated Billing

- Claims/billing occur automatically through software platform

Staffing

- Virtual staff to monitor, educate, triage and manage patients with abnormal readings

FORMATION BETWEEN APPOINTMENTS

Remote Therapeutic Monitoring (RTM) in improving patient outcomes and reducing overall cost of care. There is now widespread acknowledgment of the need for Chronic Care Management services in 2022, CMS should prioritize changes to the Current Procedural Terminology (CPT) code set to support care than ever before, where remote monitoring is well-suited to play an important role — and be rewarded accordingly in at-risk arrangements.

Remote Monitoring Sector Map

Active Remote Monitoring Acquirers



Non-Traditional Remote Monitoring Players & Acquirers



Diverse Ecosystem of Hardware, Software, and End-to-End Remote Monitoring Solutions

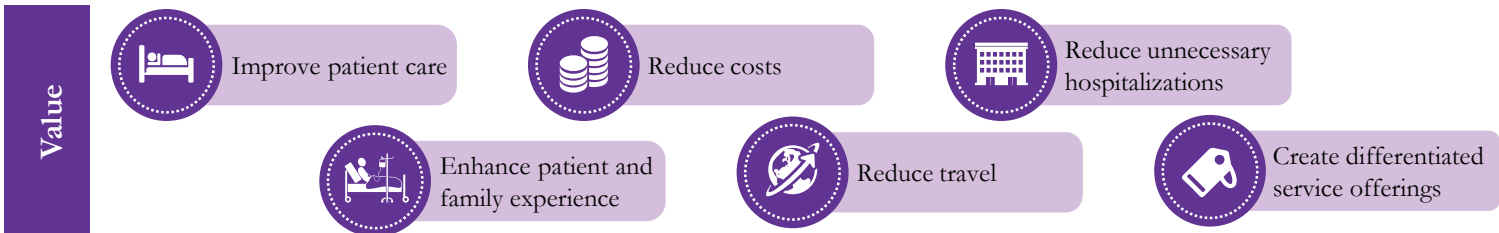
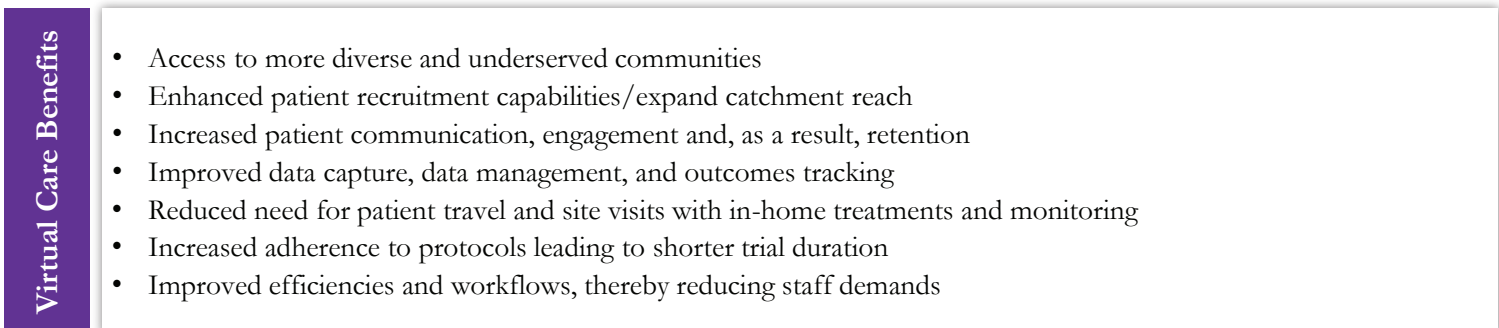


DECENTRALIZED CLINICAL TRIALS (DCT) ARE CHANGING

- The COVID-19 pandemic shed additional light on the complexities of conducting clinical trials using physical site-based and legacy approaches. The use of technology for both clinical care and research continues to increase in importance.
- Digital Health in all its forms (i.e. telehealth clinical visits, remote patient monitoring, communication using text messaging and other asynchronous methods), provides additional solutions to addressing barriers to recruitment, engagement and retention in clinical research.

Keys to Success:

- Gaining the trust of all stakeholders – through access to information, ease of use of technologies, training and compliance.
- A data infrastructure allowing interoperability between disparate systems. An infrastructure that provides access to Wi-Fi and connectivity across the United States, including within rural and remote communities.
- The use of low-tech solutions and existing technologies where appropriate to reduce complexity for patients and investigators.



National Organization Fo

- The need for virtual capabilities in clinical trials becomes even more evident when considering the legacy approach to researching treatment for rare diseases such as multiple sclerosis, cystic fibrosis, pediatric cancers, Ehlers-Danlos syndrome, and nearly 7,000³⁵ other conditions that have been identified to date. While some of the more commonly known rare diseases such as cystic fibrosis affect ~40,000 people in the U.S.³⁶ there are many disorders that affect far fewer individuals.
- Today, more than 90% of rare diseases lack an FDA-approved treatment³⁵ – Limited patient populations combined with a scarcity of clinical experts in any one condition create a scenario where clinical trials for rare disorders are difficult to conduct at scale.
- A [2019 NORD survey](#) found that many rare disease patients travel long distances to see their health care providers – a barrier that drives poor outcomes and inequity of access. In some scenarios, patients permanently relocate in order to access care specific to their rare disease.³⁷
- When the COVID-19 pandemic hit, in-person clinics and other on-site locations were forced to conduct virtual clinical trials, thus improving the ability for rare disease trials to be conducted across adequate patient populations and under the supervision of the appropriate specialists.

ING HOW CLINICAL TRIALS ARE DELIVERED

Clinical Trial & Forward-Leaning Digital Health Players²⁹

Large CROs

- Charles River
- Covance/Labcorp
- Firma
- ICON
- IQVIA
- Medpace
- Parexel
- Syneos
- Thermo Fisher Scientific
- Worldwide Clinical Trials

Last Mile Solutions

- LabConnect
- Marken (UPS)
- PCM Trials
- World Courier (ABC)

Post-Approval Commercialization, Education, & Monitoring

- Aktana
- Alucio
- Red Nucleus
- Stardog

Other Pharma Services

- AMC Health
- Advarra
- ClinOne
- Clinical Ink
- Elligo
- Evidation Health
- Hawthorne Effect
- Lightship
- Medable
- THREAD
- WCG

Large, Innovative IDNs³³

- Ascension
- CommonSpirit
- Community Health Systems
- Dignity Health
- Encompass Health Corporation
- HCA Healthcare
- LifePoint Health
- Mass General Brigham
- OSF
- Providence St. Joseph
- Select Medical Corporation
- Sutter
- Tenet Healthcare
- Trinity Health
- Universal Health Services

Consultancies

- Clarivate
- EY-Parthenon
- PWC

Patient Advocacy Groups

- Alzheimer's Association
- Antidote
- CareAcross
- CompuGroup Medical
- Health Union
- PatientsLikeMe/UHG
- Praxis
- MyHealthTeam
- NORD

Laboratories³⁴

- BioReference/OPKO
- Clinical Reference Laboratory
- LabCorp
- NeoGenomics
- PathGroup
- Quest Diagnostics
- Sonic Healthcare
- Versant Diagnostics

Other Relevant Clinical Trials Players

- Biointellisense
- COTA
- Infuss Health
- Integrated Oncology Network
- McKesson
- Medidata/Dassault Systems
- Memora Health
- Navigating Cancer
- OncoHealth
- OneOncology
- Outcomes4Me
- Thyme Care
- Trialspark
- Veeva
- Verdi Oncology

r Rare Disorders (NORD)

- While elements of the pre-pandemic approach to clinical trials have reemerged, the [National Organization for Rare Disorders \(NORD\)](#) has been working to improve the health and well-being of people with rare diseases by driving advances in policy, research, and care.
- [The NORD Rare Disease Centers of Excellence](#) comprise a unique network of medical institutions with broad and deep expertise in rare diseases, located in more than 30 cities across the U.S. making it easier for rare diseases patients to access expert care closer to their homes.
- In addition, the NORD Rare Disease Centers of Excellence network is fostering knowledge sharing between experts at different sites, adoption of best practices, and collaborative research to further advance diagnosis, care, research, and clinical trials of new therapies for rare diseases.
- Teams of faculty members and staff from the Centers of Excellence and from NORD are actively exploring solutions for virtual care and innovative, patient-focused clinical trials, with three specific working groups focused on: Telehealth and Inter-site Consultation; Facilitating Multisite Research; and Diversity, Equity, and Inclusion.

LAST-MILE SOLUTIONS CLOSE THE GAP BETWEEN VIR

The combination of finite provider resources, increased consumerism, ubiquitous technologies, the COVID-19 pandemic and reimbursement performed digitally. As such, health systems and other provider organizations are actively exploring how virtual care and related technologies lifecycle. In a similar vein, a number of employers are exploring ways to offer virtual care to their employees in an effort to manage costs, believes that the last mile of necessary solutions to fully reconstitute a patient's digital/virtual journey necessitates seamless, timely access to



LAB TESTING



Point-of-Care Testing

Timely Turnaround

Early Identification

Digital Pathology

- One of the major growth areas in the diagnostic market is point-of care testing. This entails testing at or near the point of care for the patient – whether it be an urgent care, the home, or elsewhere – resulting in faster diagnosis and more rapid treatment.³⁸
- Readily available early tests can improve treatment by letting patients detect and intervene earlier in their disease progression, improving outcomes and lowering costs.³⁹
- Digital pathology leverages algorithms to automate and accelerate complex analytical tasks, enabling virtual primary diagnostics and peer review. This means earlier disease detection and faster turnaround of results.³⁴⁰

PHARMACY



In-Residence Delivery

Adherence & Compliance Tools

Specialty Medication Access

Clinical Trial Access

- Enhanced last-mile delivery can provide many benefits to patients who need continued access to medical supplies and pharmaceuticals as well.⁴¹
- Pharmacies need an affordable HIPAA-compliant delivery solution that can effectively reach customers nationwide.⁴²
- Pharmacies must also have technology in place that allows them to track shipments from start to finish and keep Protected Health Information (PHI) secure.⁴³
- The move towards decentralized trials could gain wider acceptance if augmented by local pharmacies while improving trial access, enrollment and retention.⁴⁴

DIAGNOSTIC IMAGING



Timely Delivery

Seamless Access

Artificial Intelligence

Enhanced Storage

- The medical imaging AI world market has surged past pre-pandemic levels and is anticipated to top \$4.5B by the end of 2031.⁴⁵
- The use of picture archiving and communication systems (PACS) eliminates the need to manually file, store, and retrieve sensitive information leading to a faster review of health information.⁴⁶
- An imaging-at-home approach improves health outcomes and decreases unnecessary utilization of emergency and hospital care by detecting changes earlier with faster access to information.
- Use of AI as a second opinion delivers the same high-quality analysis every time and in real time; AI platforms extract actionable insights from medical images to add clinical value, improve diagnostic decision making, efficiency, and productivity.⁴⁷

TUAL CARE AND TRADITIONAL CARE

nt pressures (among other factors) has created a dynamic in which many forms of care that used to take place inside a hospital are now being s can expand their patient base, prevent leakage, improve efficiencies, enhance treatments and enable integrated care throughout the patient most productivity and improve retention. The pandemic has driven exponential growth in all the areas highlighted on the prior pages. Ziegler lab testing, pharmacy delivery/adherence, and diagnostic imaging access (home and mobile) and patient controlled image coordination.

LAST-MILE SOLUTIONS SECTOR MAP

Lab Testing



In-Home Lab & Blood Draws

- IxLayer
- Medline Diagnostic Labs
- Ro/IGGBO/Workpath
- WellnessFX /Health Elements

Over-the-Counter Home Results

- Butterfly Labs
- ChipCare
- Cue Health
- Ellume/Hough
- eMed
- Everly Health/Everlywell/PWNHealth
- Healthy.io
- LifeScan
- Lucira Health
- QuidelOrtho
- Turtle Health

Genomic Risk Testing

- 23andMe
- CancerIQ
- Exact Sciences
- Fluidic Analytics
- Fulgent Genetics
- GeneDX/Sema4
- Gene By Gene/MYDNA
- Genuity Science/HiberCell
- Human Longevity
- IQuity/Decode Health
- Myriad Genetics
- Natera
- VieCure

Tools for Diagnostic Testing

- Astute Medical/BioMerieux
- Drummond Scientific
- Thermo Fisher Scientific

Traditional Labs

- LabCorp
- Quest
- Sonic Healthcare

Pharmacy



B2C Digital Pharmacy

- Alto
- Amazon Pharmacy
- Blink Health
- Capsule
- Genius Rx
- Medly
- NowRx
- PillPack/Amazon
- Ro Pharmacy
- Wheel Health/GoodRx

B2C PBM/Mail Order

- CarelonRx/Elevance
- Caremark/CVS /Aetna
- Costco Mail Order Pharmacy
- Express Scripts/CIGNA
- Navitus Health
- OptumRx/UHG
- Prime Therapeutics

B2B Prescription Services

- Anovo
- ExactCare/CarepathRx
- InSightRx
- Nimble
- Phil
- Phox Health
- ScriptDrop
- TruePill

B2C Retail & Specialty Pharmacy

- Accredo Health/Express Scripts
- CVS/Aetna
- Kroger Health "The Little Clinic"
- MedPro Rx/Optum / UHG
- Rite Aid
- Walgreens
- Walmart Pharmacy

Prescription Delivery Services

- Door Dash
- Lyft
- Uber Health
- UPS Marken/Roadie

Diagnostic Imaging



Consumer/Patient Imaging Control

PACS

- Apollo Enterprise Imaging
- DICOM Director
- Healthy-IT
- Heart Imaging Technologies/Intelrad Medical Systems
- Nexus MD
- PACSGEAR/Hyland Software /Lexmark

AI Interpretations

- Aidoc
- AI Metrics
- Arterys/Tempus Labs
- Astute Imaging
- Imagen
- Rapid AI
- Terarecon/Symphony Innovation
- Therenva/Ziehm Imaging
- Viz.ai

Remote Diagnostic/Home Imaging

- CompuMed
- DMS Health Technologies
- House Call Doctors
- Lackawanna Mobile X-Ray Inc.
- Maxwell Telecare
- Mobile Vascular Physicians
- Rely Radiology Holdings
- Swift Medical
- TridentCare
- Worksite Medical

Universal Image Viewer

- AGFA Healthcare
- GE Healthcare
- INFINITT North America, Inc
- Merative
- Novarad Corp
- Philips
- Visage Imaging

ZIEGLER'S VIRTUAL CARE SECTOR MAP

PHYSICAL

CONSUMER HEALTH & WELLNESS

Triage (Primary & Specialty)

On-demand Remote MD/Nurse Care

- 98point6
- Akos MD
- AllyHealth/PES
- Axs Healthcare
- Babylon Health
- Call A Doctor Plus
- CareXM
- CirrusMD
- Doctor on Demand/Grand Rounds Health
- First Stop Health
- Galileo
- Hazel
- HealthJoy
- HealthTap
- IntellaTriage
- Intellivisit/Urgent Care Partners
- K Health
- KeyCare
- Krixi Care
- Lemonaid Health/23andMe
- MDLIVE/Cigna
- MeMD/ Walmart
- MYidealDOCTOR/ RelyMD
- MyTelemedicine
- Nice Healthcare
- NuPhysicia
- OnMed
- Optum Virtual Care
- Orbita
- Pager
- PlushCare /Accolade
- Sherpa /Crossover Health
- SteadyMD
- SwiftMD/ReviveHealth
- Synct
- TelaCare
- Teladoc Health
- TeleMed2U
- TytoCare
- UMC Digital Health
- Virtuwel
- Zipnosis/Bright Health Group

Triage (Primary & Specialty)

Care Navigation/Virtual Care Plans

- Eden Health
- SameSky Health
- SpaKinect

Virtual Physician Assistant

- Ada
- BrightMD
- Buoy Health
- GYANT

Kiosks

- AMD Global Telemedicine
- American Well/Avizia /Carena
- Higi/Babylon Health
- MedAvail
- OnMed
- Pursuant Health

Wellness

- Aidar
- Azumio
- Canary Health
- Fitbit/Google
- Icario
- Misfit/Fossil
- Monj
- New Ocean Health Solutions
- Noom
- Omada
- Physitrack
- Orbit Telehealth (f.k.a.Telespine)
- Twill
- Vida Health

On-Demand Urgent Care

- Amazon/One Medical
- DispatchHealth
- EZaccessMD
- Medpod
- Nice Healthcare
- Optum Virtual Care
- StationMD

Oncology

- Canopy
- Jasper
- Kaiku/Elekta
- Navigating Cancer
- Reimagine Care
- SmartBridge Health

Dermatology & Wound Care

- Azova
- CaptureProof
- CarePICS
- Corstrata
- Curology
- DermatologistOnCall
- Digital Diagnostics
- DirectDerm
- eKare
- iDoc24 (f.k.a. First Derm)
- MyWoundDoctor
- Telemedicine Solutions
- Tissue Analytics/Net Health Systems
- WoundMatrix
- Woundtech

Diabetes

- DarioHealth
- Entra Health/CRF
- Glooko
- GlucoMe
- Glytec
- Lark Health
- Omada
- Onduo/Sanofi/Verily
- One Drop
- Senseonics
- Solera Health
- Teladoc/Livongo
- Telcare/BioTelemetry/Philips
- Trividia Health
- Virta Health

TARGETED DISEASE STATES

Respiratory

- Adherium
- Cohero Health
- Propeller Health/ResMed
- ResApp Health/Pfizer
- Strados

Women's, Maternal & Neonatal

- Ava/Femtec Health
- Babyscripts
- Cleo
- Docent Health/GetWellNetwork
- Femometer
- Flo
- Gennev/Unified Women's Healthcare
- Hey Favor
- Mahmee
- Maven
- Natural Cycles
- Nursr/Thirty Madison
- NUVO Cares
- Ovia Health/Laboratory Corporation of America
- Owlet
- Pacify/Advantia Health
- PeriGen
- ProgenyHealth
- Wildflower Health

Eye Care

- 20/20 Now
- EyeNuk
- Digital Diagnostics
- Icare
- Insight Optics
- IRIS
- Notal Vision
- Retmarker/Meteda
- Visibly

Sleep

- Better
- Doxy
- Enso
- Reso
- Singu
- Somn

Cardiac

- Alive
- Biotr
- Card
- Card
- Endo
- Hear
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- SHL
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Dentist

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- Pract
- The
- Tele
- Wea
- Yapi

Gastroi

- Oshi
- Sona
- Tele
- Viva

INTEGRATION

WORKFORCE OPTIMIZATION (see p. 16-17)

VIRTUAL CARE PLATFORMS

- | | | | |
|---------------------------------------|-------------------------------------|--------------------------------------|---|
| • Access TeleCare (f.k.a SOC Telemed) | • Docty Inc. | • Medici | • SnapMD/ VirTrial/ Signant Health |
| • Alina TeleHealth | • Doxy.me | • MediSprout | • Suquino |
| • AMD Global Telemedicine | • Eceptionist | • Medpod | • swyMe |
| • Amwell | • Epic/KeyCare | • Mend | • Teladoc Health/ InTouch Health /TruClinic |
| • Azalea Health | • eVisit | • MyTelemedicine | • TeleHealth365 |
| • Beam Healthcare | • Firefly Health | • Oneview Healthcare | • TeleSpecialists |
| • Cloudbreak/ UpHealth | • FONEMED/ SE Health | • PatientClick | • TytoCare |
| • CureCompanion | • Global Partnership for Telehealth | • Rhinogram | |
| • Dictum Health | • GlobalMed | • SimpleVisit | |
| | • Hatch | • SmartCare/ Vanco Payment Solutions | |
| | • Hifinite | | |

PATIENT ENGAGEMENT

- | | |
|----------------------|-----------------|
| • Accolade | • Locus Health |
| • Ada | • mPulse Mobile |
| • AllyHealth/PES | • My mHealth |
| • Babylon Health | • Orbita |
| • Evive Health | • Quantum |
| • Force Therapeutics | • Sharecare |
| • GetWellNetwork | • VIM |
| • GYANT | • Wanda Health |
| • IntellaTriage | • Wellbe |
| • K Health | • Xealth |
| • Limeade | |

CLINICAL COM

- ABOUT Healthcare
- AGNITY/ Transaction Network Services
- AristaMD
- Audacious Inquiry / PointClickCare
- CaptureProof
- Connexall
- Cureatr
- DocBookMD/ Medici
- GenerationOne
- Hucu.ai

AL CARE

erNight
ViaWeb
oData
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ular Sleep
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Cor
icity
iac Designs
ioMedix
otronix
tbeat Health
tflow
Bionic
thm Technologies
ys
watch/BioTelemetry
lips
MD
entice
ston Scientific
io
Telemedicine
Connect

ry
et DDS/Legwork
iceTek/Doctible
TeleDentists
dentistry
ve

ntestinal
Health
eMD
belly Health
nte Health

FACILITY BASED SOLUTIONS

Hospital-Based Solutions

- Access Telecare (f.k.a. SOC TeleMed)
- Amwell
- AirStrip
- Avel eCare
- Beam Healthcare
- Blue Sky Telehealth
- Eagle Telemedicine
- EmOpti
- Hicuity Health
- ProgenyHealth
- REACH Health
- InTouch Health/ Teladoc Health
- RTNA
- TeleSpecialists
- VeeOne Health
- VitalConnect
- Virtual Medical Staff

Clinical Trials

- AiCure
- AMC Health
- Clinical Ink/RTI International
- doc.ai/Sharecare
- Hifinite Health
- Teckro
- THREAD
- VirTrial/Signant Health

Second Opinion

- 2nd.MD
- AllyHealth/PES
- AristaMD
- Atropos Health
- Best Doctors/Teladoc Health
- DocPanel
- Included Health
- MAVEN Project
- MORE Health
- RubiconMD/Oak Street Health
- SecondOpinions /USARAD/Nanox
- Sitka
- Summus

Lab & Pathology

- Everly Health/Everlywell, Inc./PWNHealth
- Gestalt
- LabConnect
- Leica Biosystems
- Ro/IGGBO/Workpath
- Versant Diagnostics

LAST MILE SOLUTIONS

(see p. 32-33)

CARING IN PLACE

SMART AGING SOLUTIONS

(see p. 26-27)

Safety/Wander/ADL

- Healthsense/ GreatCall/Best Buy
- SafelyYou
- Vigil Health Solutions/ Assa Abloy
- VirtuSense Technologies

Mobile Caregiver Solutions

- CellTrak
- Honor Technology
- Synzi/AMN Healthcare
- Vesta Healthcare
- WellSky Personal Care

REMOTE MONITORING SOLUTIONS

(see p. 28-29)

PERS

- Connect America/ 100 Plus/Philips
- Electronic Caregiver
- Life Alert
- Lively/Best Buy
- Medical Guardian
- MobileHelp
- QMedic
- SilverSphere/Sentrics

SOCIAL DETERMINANTS OF HEALTH (SDOH)

(see p. 20-21)

Remote Physical Therapy

- Giraffe Healthcare
- Hinge Health
- Physera/Omada
- Physitrack
- Plethy
- RecoveryOne
- SWORD Health

Adherence & Compliance

- AdhereTech
- AiCure
- Assured Independence
- Ayogo Health
- Cadence
- Electronic Caregiver
- Emocha Health
- Fitango Health
- HealthPrize
- Livindi
- Mango Health/TrialCard
- MedaCube
- MedMinder
- Medisafe
- Reflexion Health
- Wellth

TELE-BEHAVIORAL SOLUTIONS

(see p. 24-25)

DECENTRALIZED CLINICAL TRIALS

(see p. 30-31)

ON & ACCESS

DIGITAL PATIENT NAVIGATION (see p. 18-19)

COMMUNICATION

- Klara/Modernizing Medicine
- Medigram
- Mobile Heartbeat/HCA
- PeraHealth
- PerfectServe
- Spok
- TigerConnect
- Vido/Enghouse Systems
- Voalte/Hillrom
- Vocera/Stryker
- XFERALL

SCHEDULING

- Amion/Doximity
- Clearwave
- DocASAP
- Kyruus
- Lightning Bolt Solutions/CareWire/ PerfectServe
- Mend
- Tangier/Qgenda
- SCI Solutions/R1
- Solv
- Zocdoc

DATA INTEGRATION

- b.well
- Curai Health/ First Opinion
- Forcura
- Human API
- Seqster

MANAGED SERVICES PROVIDERS

- CareWorx Fully Managed/ Telus
- K4Connect

PHARMACY

- Alto
- Hims & Hers
- Pear Therapeutics
- PharmD on Demand
- PipelineRx/ CarepathRx
- Ro
- TelePharm/ Cardinal Health
- ZeOmega

SERVICE PROVIDERS

- CyraCom
- Enzyme Health
- Healthy Bytes
- InDemand Interpreting/ Stratus Video
- NuPhysicia
- Premise Health
- SimplyWell/Virgin Pulse
- Wellness Corporate Solutions
- Wheel Health

CARE/CASE MANAGEMENT

- Casenet/Zyter
- Contessa Health/Amedisys
- eCaring/EC Acquisition Holding
- Noteworth
- ProgenyHealth
- TimeDoc Health

ROBUST M&A AND CAPITAL MARKETS ACTIVITY

What digital health targets are on the menu for the cash-rich? Prime targets are value-depressed, late-stage companies that have established product-market fit and teams with deep vertical-specific knowledge.

- These companies have often done much of the legwork in demonstrating important clinical evidence and building user bases, but may struggle with business model challenges
- Approximately 18% of total digital health M&A deals from Q1-Q3 2022 did not fit within any discrete digital health category, up from 13% of M&A deals in 2021⁴⁸
- This trend hints at the increasing relevance of retail players testing healthcare's waters by acquiring digital health startups. Making these strategic inroads in digital health can create new and diversified opportunities for non-traditional players to disrupt the status quo

TRANSFORMATIVE DEALS, PARTNERSHIPS, AND CAPITAL RAISES

Retail

- Amazon acquisition of **One Medical** and **1Life Healthcare**
- Best Buy acquisition of **Current Health**
- CVS Pharmacy acquisition of **Signify Health**
- Walgreens Boots Alliance acquisition of **Shields Specialty Pharmacy** and **CareCentrix**
- Walgreens investment in **VillageMD**
- Walmart acquisition of **MeMD**

Other Healthcare IT

- Becton, Dickinson and Company acquisition of **Parata Systems**
- Boston Scientific acquisition of **Preventice Solutions**
- Craneware plc acquisition of **Sentry Data Systems**
- Datavant acquisition of **CIOX Health**
- Fortive Corporation acquisition of **Provation Software**
- LeanTaaS acquisition of **HospitalIQ**
- Oracle acquisition of **Cerner**
- WellSky Corporation acquisition of **CarePort Health**

RPM

- Advocate Aurora acquisition of **MobileHelp**
- Babylon acquisition of **Higi**
- Connect America acquisitions of **Philips Lifeline** and **100Plus**
- ModivCare acquisition of **Guardian Medical Monitoring**
- ModivCare acquisition of **VRI**
- Philips acquisitions of **BioTelemetry** and **Capsule Technologies**

Home Health and Hospice

- Amedisys Hospice acquisition of **Contessa Health**
- Aveanna Healthcare acquisition of **Comfort Care Home Health Services**
- Byram Healthcare Centers acquisition of **Apria**
- CD&R acquisition of **Humana's hospice assets**
- HCA Healthcare acquisition of **Brookdale Senior Living's home health and hospice assets**
- Humana acquisition of **Kindred At Home**
- ModivCare acquisition of **Simplura Health Group**
- OptumHealth acquisition of **LHC Group**
- Vistria Group acquisition of **Help at Home**

Telehealth

- Accolade acquisitions of **PlushCare** and **2nd.MD**
- Avel eCare acquisition of **NightWatch**
- Cigna Evernorth acquisition of **MDLIVE**
- Epic partnership with **KeyCare**
- Grand Rounds acquisition of **Doctors on Demand**
- VillageMD acquisition of **Summit Health**

Tele-Behavioral

- Access Telecare (f.k.a. SOC Telemed) acquisition of **Access Physicians** and **Forefront TeleCare**
- Amwell acquisition of **SilverCloud**
- BayMark acquisition of **Kaden Health**
- ContinuumCloud acquisition of **CaredFor**
- Headspace acquisition of **Ginger**
- Insight & Regroup merger to form **Array**
- New Directions acquisition of **Tridium**

Innovative Provider Models

- Centene Corporation acquisition of **Magellan Health**
- CVS acquisition of **Oak Street Health**
- Signify Health acquisition of **Caravan Health**
- UniteUs acquisition of **NowPow**
- VillageMD acquisition of **Summit Health**

Senior Living

- LHC Group acquisition of **Heart of Hospice** and **Brookdale Health Care Services**
- iN2L acquisition of **LifeLoop**

Staffing

- Medical Solutions acquisition of **Matchwell**
- ShiftKey's strategic investment in **OnShift**
- Syneos Health acquisition of **Synteract**

Communication

- Carenet Health acquisition of **Stericycle Communication Solutions**
- Stryker acquisition of **Vocera**
- VoiceFriend acquisition of **Caremerge**

Payor Solutions

- EverCommerce acquisition of **DrChrono**
- Health Catalyst acquisition of **Vitalware**
- R1 RCM acquisition of **VisitPay**
- Waystar acquisition of **Patientco**

Clinical Trials

- Thermo Fisher Scientific acquisition of **PPD**
- THREAD acquisition of **inVibe**
- Q2 Solutions acquisition of **Myriad RBM**

Notable Capital Raises

- Array Behavioral Care, Carbon Health Medical Group, Cerebral, CirrusMD, CollectiveHealth, Current Health (Snap40), DispatchHealth, Eleanor Health, First Stop ealth, Florence Healthcare, Hinge Health, KeyCare, Lyra Health, Medable, Omada, Paradigm, Pearl Health, Socially Determined, Talkspace, Ro, Roman Health, Sharecare, TigerConnect, TytoCare, Workit Health, 98point6

KEY VIRTUAL CARE PARTICIPANTS: PARTNERS, INVESTORS, ACQUIRERS



Acute Care



Post-Acute Care



Home Health and Hospice



Employer Solutions



Consumer Devices and Wearables



Retail Pharmacy



Labs/CROs



Consumer Virtual Care Platforms



Next Generation Care Delivery



Payors



Next Generation Payors



Other Healthcare IT



Staffing



Devices and Diagnostics



Pharmaceuticals

NOTABLE STRATEGIC INVESTORS

- Adventist Health System
- Ascension Ventures
- AVIA
- Baxter Ventures
- Concord Health Partners
- CVS Ventures
- Echo Health
- Fresenius Medical Care Ventures
- Generator Ventures
- Google Ventures
- Heritage Group
- Intel Ventures
- Kaiser Permanente Ventures
- McKesson Ventures
- Microsoft
- OSF Ventures
- Providence Ventures
- Qualcomm
- Sandbox
- Siemens Ventures
- Stanley Healthcare
- Summation Health Ventures
- Sutter Health
- UH Ventures
- UPMC Enterprises
- Ziegler-Link•age Funds



The Ziegler Link•age Funds provide a unique platform for collaboration and innovation among its limited partner investors, primarily not-for-profit senior living providers. The Funds have a tailored focus on technology, tech-enabled services and emerging care delivery models in the post-acute and aging markets. Not only can the Funds' investor base provide informed thoughts on market needs and preferences, but it also represents a potential customer base for portfolio companies, creating a distinctive market advantage for its investments.

Learn more at: www.ziegler.com/ziegler-link-age-funds/

ZIEGLER AND THE ATA



Since 2016 Ziegler has been an active partner and supporter of the ATA and ATA Action (previously, the American Telemedicine Association, collectively referred to together as “ATA”). From 2016 to 2022, Grant Chamberlain, lead author of this white paper series, had the honor

to be a member the ATA’s Board and Executive Committee, to serve as the Finance Committee Chair, and most importantly, to sit on the Nominating Committee that brought Ann Mond Johnson, the current CEO of the organization, to her post.

As highlighted throughout this white paper, the virtual care industry has made extraordinary progress over the last three years to solidify Ann Mond Johnson’s vision: “Virtual Care has a three-part mission: to deliver care where and when people need it; to assure that it is safe, effective and appropriate; and to enable clinicians to do more good for more people”.

Throughout the pandemic, the ATA has been the consistent, trusted, resonating voice for the virtual care industry. Listed below are several key efforts in which the ATA acted as the catalyst for virtual care’s advancement:

- In March of 2020, the ATA Policy Council provided recommendations to the federal government, primarily the Department of Health and Human Services (HHS) and its sub-agencies such as the Center for Medicare and Medicaid Services (CMS), on actions that could be immediately taken to facilitate the use of virtual care by healthcare providers during the public health emergency. The ATA’s guidance essentially became the doctrine for many of the advancements realized in the past three years.
- The ATA formed a special interest group (SIG) for the rapid adoption of and creation of safety parameters for decentralized clinical trials – the Therapeutics Lifecycle SIG.
- The Behavioral Health SIG continued its incredible leadership role in helping the nation move quickly to virtual health and facilitated necessary evidence and guidelines for delivering critical solutions for opioid addiction and suicide prevention that was rampant throughout the pandemic.

The aforementioned examples are only a few of the efforts the staff and members of the ATA have tirelessly driven to facilitate Virtual Care becoming part of the fabric of healthcare delivery today.

Ziegler has been a cornerstone partner in the formation and advancement of ATA Action, the country’s leading policy, and advocacy voice providing a necessary resource for state and federal legislatures to work their way toward codifying the gains that have been made in virtual care adoption throughout the COVID-19 pandemic. Unfortunately, much of their time is spent playing “Whack-a-Mole” to avoid poorly drafted state legislation efforts that could put access to critical services and human lives at risk and create significant downstream costs. Federal, State and CMS leaders must take advantage of this unique moment in time to cement the gains and learnings that emerged from the Pandemic Wet Lab of the last three years. The ambiguity of whether or not PHE Waivers will become permanent has created significant inertia in deal making and investments as many boards, shareholders and management teams are awaiting clarity to ensure well-aligned business models.

Closing Remarks

While virtual care adoption across a diverse array of stakeholders has improved, there are still a number of headwinds that the industry, as a whole, needs to work through. With the right education and understanding of the capabilities that exist, we can soon live in a world where the use of technology in healthcare is ubiquitous, and virtual care and digital tools to access care are consistently available, trusted, and safe for everyone.

Ziegler hopes that the *Deconstructing the Telehealth Industry* white paper series has been a valuable resource for all healthcare stakeholders to appreciate the breadth of the applications of virtual care in today’s healthcare ecosystem and its ability to close many of the gaps and systemic inequities readily apparent in our historic models.

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GLOSSARY

- ACO = Accountable Care Organization
- ADHD = Attention-Deficit/Hyperactivity Disorder
- AI = Artificial Intelligence
- AMI = Any Mental Illness
- APRN = Advanced Practice Registered Nurse
- AR = Accounts Receivables
- CCM = Chronic Care Management
- CMS = Centers for Medicare & Medicaid Services
- COPD = Chronic Obstructive Pulmonary Disease
- CPT = Current Procedural Terminology
- DCT = Decentralized Clinical Trials
- DE&I = Diversity, Equity & Inclusion
- DTC = Direct to Consumer
- DTx = Digital Therapeutics
- ED = Emergency Department
- EHR = Electronic Health Record
- EMR = Electronic Medical Record
- ER = Emergency Room
- FDA = U.S. Food and Drug Administration
- FQHC = Federally Qualified Health Center
- HCC = Hierarchical Condition Category
- HCIT = Healthcare Information Technology
- HHS = United States Department of Health and Human Services
- HIE = Healthcare Information Exchange
- HIPAA = Health Insurance Portability and Accountability Act
- ICU = Intensive Care Unit
- IDN = Integrated Delivery Network
- IT = Information Technology
- L&D = Labor and Delivery
- LGBTQ+ = Lesbian, Gay, Bisexual, Transgender, Queer or Questioning+
- LTAC = Long-term Acute Care
- LTC = Long-term Care
- M&A = Mergers & Acquisitions
- MAT = Medication-Assisted Treatment
- MDE = Major Depressive Episode
- ML = Machine Learning
- MSK = Musculoskeletal
- NLC = Nurse Licensure Compact
- NORD = National Organization for Rare Disorders
- NP = Nurse Practitioner
- OEM = Original Equipment Manufacturer
- OSHA = Occupational Health and Safety Administration
- OT = Occupational Therapy
- PA = Physician Assistant
- PACE = Program of All-Inclusive Care for the Elderly
- PACS = Picture Archiving and Communication System
- PCP = Primary Care Provider
- PHI = Protected Health Information
- PT = Physical Therapy
- RAF = Risk Adjustment Factor
- ROI = Return on Investment
- RPM = Remote Patient Monitoring
- RTM = Remote Therapeutic Monitoring
- SDOH = Social Determinants of Health
- SIG = Special Interest Group
- SUD = Substance Use Disorder
- V.A. = The U.S. Department of Veterans Affairs

LEADERSHIP TEAM



Neil Borg
Sr. Managing Director
Head of Healthcare Corporate Finance
301 828 1065
nborg@ziegler.com



Grant Chamberlain
Sr. Managing Director
312 596 1550
gchamberlain@ziegler.com



Andrew Colbert
Sr. Managing Director
212 284 5422
acolbert@ziegler.com



Chris Hendrickson
Sr. Managing Director
312 705 7286
chendrickson@ziegler.com



Brian McGough
Sr. Managing Director
312 596 1533
bmcgough@ziegler.com



Chris Rogers
Sr. Managing Director
615 982 7550
crogers@ziegler.com



Bill Claus
Managing Director
312 596 1546
bclaus@ziegler.com



Vin Ferrara, MD
Managing Director
212 284 5420
vferrara@ziegler.com



Adam Heller
Managing Director
312 596 1554
aheller@ziegler.com



Christopher Swenson
Managing Director
212 284 5410
cswenson@ziegler.com



Mark Turco
Managing Director
301 828 1069
mturco@ziegler.com



Patrick Walsh
Managing Director
615 982 7560
pwalsh@ziegler.com

ABOUT US

ABOUT ZIEGLER HEALTHCARE CORPORATE FINANCE

Ziegler has long lasting relationships with healthcare providers, information technology companies, financial sponsors and other thought leaders across the nation, giving us unique insight into emerging trends and the future direction of the healthcare industry.

WHO WE ARE

Our team has an extensive track record of putting our client objectives above all else in closing transactions. As a result, we successfully deliver tailored merger & acquisition, capital raising, restructuring and corporate partnering solutions, helping organizations identify and capitalize on exceptional and differentiated opportunities.

Ziegler's team has an unwavering dedication to the healthcare industry and includes professionals with extensive healthcare investment banking, corporate development, operational, accounting and entrepreneurial backgrounds enabling us to deliver unmatched advisory services to our clients.

PRODUCTS & SERVICES

We customize solutions to meet our clients' strategic and financial objectives, and take a true advisory approach into our engagements and long-term relationships.

- Mergers & Acquisitions
 - Sell-Side Advisory
 - Buy-Side Advisory
- Capital Raising & Recapitalizations
- Fairness Opinions & Valuations
- Strategic Partnerships & Customer Development Initiatives

SECTORS OF FOCUS

- Healthcare Services
- Hospitals & Health Systems
- Healthcare Information Technology & Outsourcing
- Senior Living & Post-Acute Care
- Physician Groups
- Virtual Care

Ziegler is a privately held, national boutique investment bank, capital markets and proprietary investments firm. It has a unique focus on healthcare, senior living and education sectors, as well as general municipal and structured finance. Headquartered in Chicago with regional and branch offices throughout the US, Ziegler provides its clients with capital raising, strategic advisory services, fixed income sales, underwriting and trading, as well as Ziegler credit analytics.

| CONTACT US

ZIEGLER

One North Wacker Drive
Suite 2000
Chicago, IL 60606

800 366 8899

askziegler@ziegler.com



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