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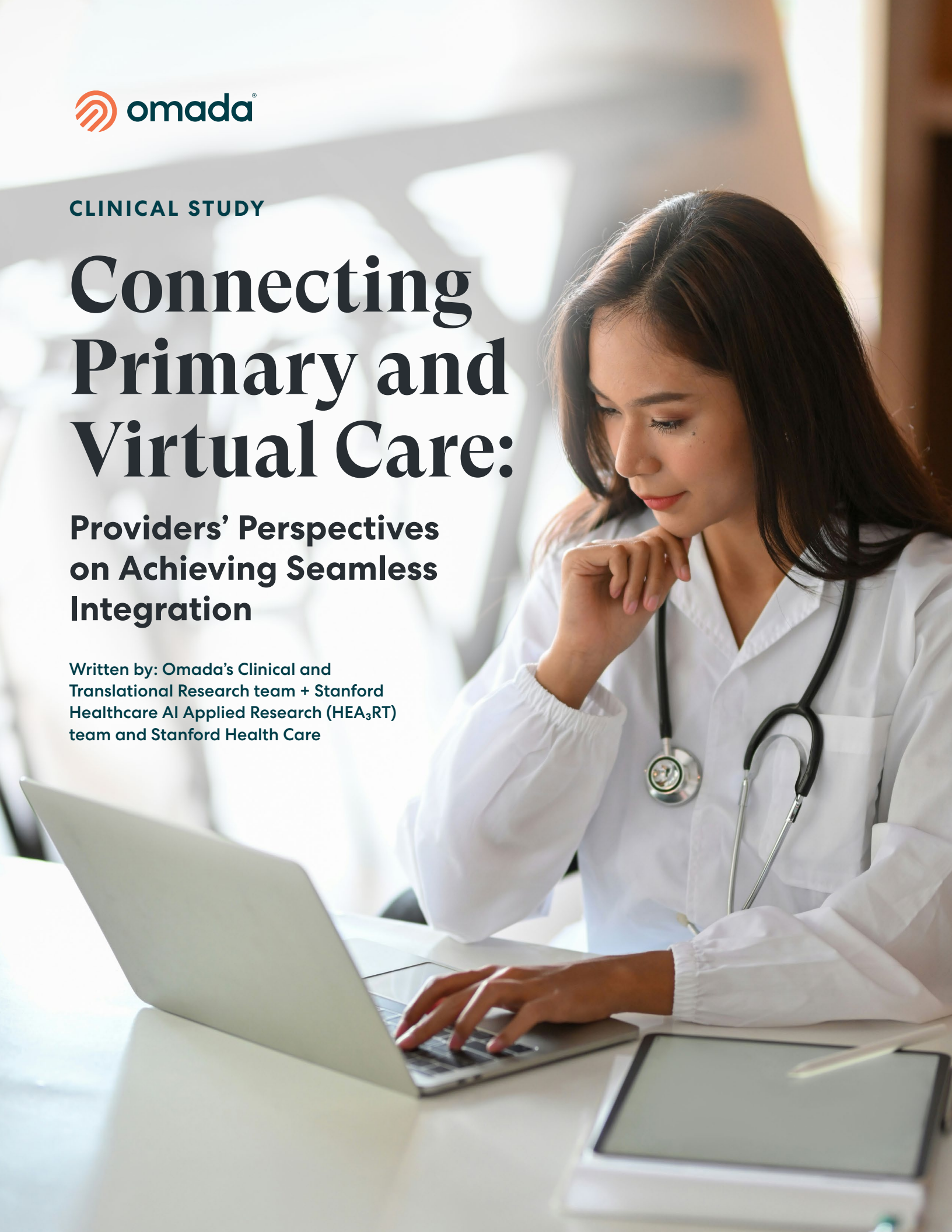
CLINICAL STUDY

Connecting Primary and Virtual Care:

Providers' Perspectives on Achieving Seamless Integration

Written by: Omada's Clinical and Translational Research team + Stanford Healthcare AI Applied Research (HEA_3RT) team and Stanford Health Care



Background

There has been a notable shift in healthcare delivery over the past few years since the onset of the COVID-19 pandemic, with an **increasing reliance on virtual care services**. The uptick in virtual care solutions comes as the healthcare sector grapples with the growing **prevalence of chronic diseases** in the U.S. and simultaneous **shortage of medical personnel**, driving opportunities for virtual care programs to provide ongoing support to patients between clinic visits. Despite the numerous **advantages** that these programs offer for chronic disease management, there is still **significant potential** to improve the accessibility and integration of virtual care with traditional healthcare systems.

Research suggests that the future of digital medicine depends on interoperability and the efficient exchange of health data between organizations and institutions using diverse information technology platforms for medical advancements, clinical research and patient care coordination. However, medical data are often housed within siloed databases, incompatible systems and proprietary software. Many healthcare providers subsequently have trouble accessing their patients' comprehensive medical history, especially when patients are treated in different states or visit facilities with different health records systems. Limited access to these data undermines efficient patient care, contributing to inefficiencies such as redundant testing and excessive time dedicated to locating pertinent information, which significantly affects those with chronic conditions who need regular monitoring and treatment. These challenges can **impact** patient satisfaction and engagement, causing some patients to seek additional options, such as virtual care programs.

Studies have shown that virtual care programs can be effective solutions for chronic disease management, yielding improved clinical outcomes (e.g., better blood pressure control) and reduced costs of medical care. While such research is promising, integrating virtual care programs with the foundational services provided by conventional, in-person **primary care** could further enhance patient management. For example, the primary care setting is typically the first point of care for patients seeking medical treatment and where most clinical and chronic disease management services are delivered. Primary care providers play a crucial role in coordinating medical services, facilitating specialist referrals when necessary, and integrating virtual care solutions for comprehensive management of chronic conditions.

Omada for Hypertension

The Omada for Hypertension program is a digitally delivered hypertension self-management program that pairs asynchronous human support through health coaches and hypertension education specialists with a virtual platform that is accessed either through a website or through an app available on web-enabled devices (e.g., smartphone and tablet). The program offers both a hypertension education curriculum and comprehensive lifestyle self-management support using behavior change techniques, in addition to a cellularly connected cuff for blood pressure monitoring and a cellularly connected digital scale for measuring body weight.

Nevertheless, additional research is warranted to explore seamless collaboration between conventional primary care and virtual care services to enhance clinical outcomes, especially since no clinical trials have yet evaluated their combined impact on managing chronic conditions throughout the care continuum. To fill this gap, Omada and the Stanford Healthcare AI Applied Research Team (**HEA$_3$RT**) team are collaborating on a pragmatic randomized controlled trial (RCT)

assessing the effectiveness of the Omada for Hypertension program compared to standard of care for management of hypertension, a **prevalent condition** that affects nearly half of the adult population in the U.S.

What do medical providers think about virtual care?

Phase One of the qualitative study was conducted to gather providers' early insights on virtual care while their patients began enrollment in the program.

Phase Two will be carried out towards the end of the trial period to gain additional perspectives.

A total of **25 primary care providers** (PCPs) and **four clinical pharmacists** were surveyed from November 2023 to February 2024 as part of Phase One, with six of the PCPs also participating in follow-up interviews.

As an extension of the RCT, the first round of a two-phase qualitative study was conducted to better understand providers' perspectives on the acceptability, utility, barriers and opportunities associated with virtual care programs like Omada's.

What we've learned

Findings from this study indicate that the majority of the providers sampled (76%) were confident about recommending virtual care programs to their patients, with levels of confidence ranging from moderately to extremely confident [Figure 1]. Furthermore, the majority of those surveyed (83%) expressed they would be somewhat to extremely likely to use biometric data (e.g. weight, blood glucose and blood pressure) from an outside source during a visit if it were imported into a patient's electronic health record (EHR), despite requiring extra clicks or steps to access the report [Figure 2]. Over 90% of providers conveyed that they would refer to the data primarily for medication titration, monitoring during visits, and guiding discussions with patients [Figure 3]. "Provider's convenience" and "value to their practice" were their top-ranked criteria for exchanging data with virtual care programs and incorporating it into patient care, highlighting the importance of practical considerations alongside data integration [Figure 4].

Figure 1. Providers Value Virtual Care

64%

believe there is a role for virtual programs themselves to connect with patients

76%

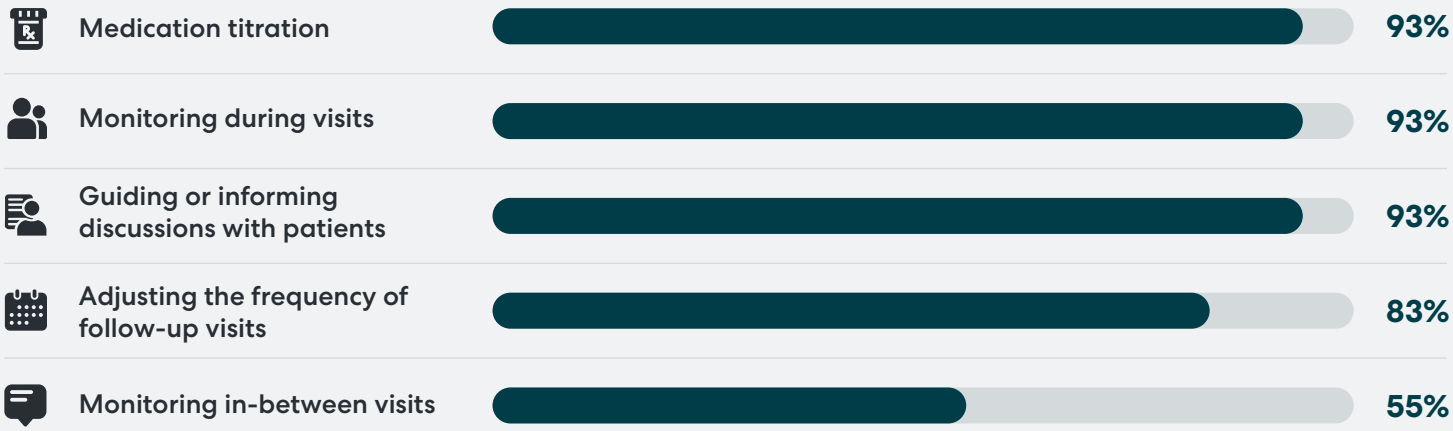
expressed confidence in recommending virtual programs to patients

Figure 2. Providers will Utilize Imported Biometric Data

83%

are likely to use biometric data from outside source (even if additional steps are required)

Figure 3. How Biometric Data Would be Utilized



Additionally, while 76% of providers indicated that they would not want to be notified each time their patients' biometric data or summary reports from outside sources are uploaded to Epic™—the EHR utilized at Stanford Health Care—those interested in that feature offered recommendations for streamlining the process. Their suggestions included presenting the data regularly on a set schedule, for abnormal values only, and/or right before an upcoming patient visit.

Figure 4. Top-Ranked Criteria

#1 Convenience

#2 Value to their practice

Challenges and considerations

While most PCPs are willing to recommend virtual care programs to their patients, they shared concerns during interviews about insufficient knowledge about virtual care programs and the complexities of exchanging and utilizing data from outside sources that may use different EHR platforms. Educating providers about the virtual care sector and specific program details could significantly improve their capability to evaluate and determine the appropriate virtual care solutions for their patients. Moreover, factors such as system interoperability, timeliness of the data, ease of finding the data, succinctness of the data, and its trustworthiness would enhance their willingness to provide referrals. Providers must also find value in the virtual program data to feel confident about incorporating that data into their care delivery. Having access to biometric data from virtual programs at key moments, such as right before patient visits, could substantially increase the likelihood of providers integrating it into routine clinical practice.

PCPs were encouraged to share additional open-ended feedback on virtual care at the end of the study survey. They revealed concerns surrounding health equity and the prohibitive costs of programs that are not covered by an employer or health plan, particularly focusing on communities affected by **healthcare disparities**. One provider said, "I worry about equity and access for these programs and patients who historically underutilize technology in medicine." Another added, "I hope we can

provide patients with free digital devices for blood pressure and blood glucose monitoring that connect with the electronic medical record." These insights emphasize the need to ensure access and affordability in delivering virtual care, promoting inclusivity among patients and confidence among providers in using these services.

Overall, the study's findings identified three key strategies to increase virtual care program partnership with healthcare providers: 1) seamless interoperability between virtual care platforms and EHRs at large health systems, 2) the strategic and secure use of artificial intelligence (AI)/machine learning (ML) to yield actionable insights from health data that help reduce providers' workloads and facilitate referrals to virtual care programs, and 3) health equity measures built into virtual care delivery and financial coverage to improve access and affordability.

> "I worry about equity and access for these programs and patients who historically underutilize technology in medicine."
>
> — PRIMARY CARE PROVIDER

> "I hope we can provide patients with free digital devices for blood pressure and blood glucose monitoring that connect with the electronic medical record."
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> — PRIMARY CARE PROVIDER

Focusing on complementing, rather than competing with, primary care

The current study's findings suggest that there are substantial opportunities to bolster the partnership between virtual care and conventional healthcare systems, especially as it relates to efficient data exchange. Seamless and bidirectional communication between virtual care providers and conventional primary care teams has the potential to improve healthcare quality, safety, and clinical outcomes. A recent **systematic review** revealed that successful health information exchange (HIE) between providers at different organizations improves healthcare delivery, with opportunities for digital technologies to address unique challenges with collecting, monitoring and escalating critical patient data to interdisciplinary care teams. Through interoperability and continuous interaction between virtual care platforms and EHRs, biometric data could be available across multiple healthcare settings for improved transparency among patients and their providers. Optimizing HIE could enhance patient-centered outcomes by reducing medication and medical errors, unnecessary tests and services, medical costs and paperwork.

Omada currently shares data reports that include key metrics, such as average blood pressure readings, weight trends, and blood glucose levels, with members' and pragmatic RCT participants' primary care teams within Stanford Health Care. This is possible because both Omada and Stanford Health Care are healthcare providers who are treating patients in common, and the exchange of health information for continuity of care is supported by the **HIPAA Privacy rule**. This ongoing collaboration allows for continuous workflow refinement to better meet the needs of patients

and their providers. For example, after discovering that providers wanted greater visibility of data reports without sifting through faxes and manual uploads into Epic™, a process was implemented to send biometric program data to **Care Everywhere** in **C-CDA format** via an **HL7®** connection. This strategy has allowed Omada to exchange health data with Stanford Health Care via a supported interaction between Omada's EHR and Stanford Health Care's EHR for improved data ingestion and cross-functional visibility.

AI/ML opens new avenues for virtual care integration

There's no doubt that exchanging data between virtual care programs and large health systems can be expensive given the costs associated with advanced technology and labor. However, with a strategic plan and investment in AI/ML, interoperability and seamless data exchange could potentially amount to considerable time and **cost savings** for chronic disease management, as well as improved continuity of care for patients.

AI-mediated prompts within a patient's medical record could be sent to their care team if data from recorded vital signs, laboratory reports or progress notes indicate that the patient may be eligible for a virtual care program. AI/ML could also promote referrals by suggesting orders with clinical decision support, content for after-visit summaries or automated MyHealth messages if patients meet eligibility criteria for a virtual care program.

At the same time, empathy and human connection are essential for delivering personalized care and facilitating effective behavior change, therefore AI must support rather than replace care teams. This consideration is especially crucial in light of widespread **concerns** among Americans about the safe, ethical and practical use of AI in healthcare. While optimistic about technological innovations, this collaboration emphasizes a human-led care team approach that integrates AI responsibly and with intention.

Health equity is a cornerstone in the effective collaboration between traditional health systems and virtual care providers

Virtual care offers **many opportunities** to improve the quality of patient care by transforming the traditional paradigm of medicine with the use of tools such as AI/ML, mobile apps, wearable devices, and telehealth. However, a **digital divide** exists among those who have access to the technology and those who don't. Affordability and location significantly contribute to the divide, particularly affecting people living in "digital deserts"—areas with little to no internet access—thereby hindering their ability to participate in telehealth services that require high-speed bandwidth wifi connection, unless other transmission methods, like cellular technology or lower-bandwidth technology, are intentionally used. This issue is compounded by **systemic biases in healthcare** that promote disparities in the quality of care and health outcomes among historically marginalized communities in the U.S., including patients who are

women, Black, Indigenous, and People of Color (BIPOC), Lesbian, Gay, Bisexual, Transgender, Queer/Questioning, Intersex, Asexual and others (LGBTQIA+), living with disabilities, and/or non-English speakers. Equitable advancements of digital technologies for virtual care must consider key **digital determinants of health**, such as internet and device access, digital literacy, as well as privacy and security concerns.

Many healthcare providers are aware of these challenges and therefore prioritize health equity as part of their decision to recommend virtual care programs. Aligned with this perspective, Omada participated in the **Institute for Healthcare Improvement (IHI)** Leadership Alliance, working alongside medical teams, patients, workforces, and communities to address inequalities in patient care and bridge gaps in treatment. As part of the IHI Quintuple Aim's vision, the **Leadership Alliance** aims to improve population health, enhance patient experiences, address clinician burnout, advance health equity, and reduce the per capita cost of care through strategic initiatives.

> **"The things that are important include access, reliability, safety of data, and equity of these programs... We need to ensure that these programs are not widening disparities."**
>
> Primary Care Provider

Furthermore, IHI and its partners have developed a **Pursuing Equity Learning Network** to encourage health systems across the U.S. to use quality improvement (QI) methods to remediate disparities in the provision of health care that are systematic, avoidable, and unjust. Accordingly, Omada has been implementing QI approaches across its programs, including inclusive member research aimed at capturing and addressing the perspectives and needs of different member demographics.

Summary and next steps

PCPs and clinical pharmacists are generally receptive to virtual care programs like Omada, recognizing their potential to enhance patient care and chronic disease management. However, biometric data exchange must be convenient, concise, valuable and strategically shared with primary care teams before patient visits for them to routinely incorporate the data into standard practice. Interoperability could also address barriers such as time constraints and referral burdens to reduce the workload for medical staff. Furthermore, advancing health equity measures to increase access and affordability of virtual care programs could boost providers' confidence to provide referrals while promoting inclusive and personalized care.

Looking ahead, the responsible integration of AI/ML technologies and the adoption of **agreements** that support appropriate data sharing to the extent allowed by law could optimize interoperability between EHRs at large health systems and virtual care platforms by streamlining data exchange. This, in turn, can facilitate more efficient referrals. The collaboration between Stanford Health Care and Omada demonstrates the value of engaging with providers and health systems to realize the value of virtual care solutions in patient care, while further developing the technology needed to advance integration. Understanding the facilitators and barriers associated with the integration of virtual health data in primary care practice helps refine communication with providers and better support their patients in between clinic visits. To build upon these efforts, ongoing collaboration, implementation, and evaluation strategies will continue to strengthen the programs.

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