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Equity in virtual health:

Meeting the equity imperative through intentional design and deployment

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Over the past decade, sectors across the health care industry have invested considerably in virtual and digital health—in the first quarter of 2021 alone, digital health captured $8.3 billion in corporate funding (venture capital, debt, and public financing). The area is poised for tremendous growth, as COVID-19 accelerated adoption and incubated vast opportunities for virtual health to improve access to services while delivering safe and convenient care.

Health equity is the fair and just opportunity for every individual to achieve their full potential in all aspects of health and well-being. Today, the United States faces significant health disparities across many dimensions that are evidence of systemic structural inequities affecting both individual and community health and well-being (these inequities are explored in further detail below). These disparities are also reflected in virtual health care; however, this moment in the industry also presents an enormous opportunity to drive change for the better and unlock value while doing so.

If virtual health programs are designed intentionally with equity as a guiding principle, virtual health could improve access, continuity of care, and care management. These shifts could transform care delivery to be more convenient, accessible, and efficient—ultimately leading to improved outcomes. Beyond the social benefits of improving care, prioritizing equity in virtual health would also help health care organizations achieve a competitive advantage and unlock value by enabling personalized care for expanded customer segments. To activate this equitable future, organizations should begin by understanding the three main arenas of virtual health inequity:

1. Infrastructure and access;
2. Digital engagement and cultural competency; and
3. Technology development and analytics.

What is virtual health?

At-a-distance interactions that are leveraged to further the care, health, and well-being of consumers in a connected, coordinated manner.
To be considered virtual health, all communications and information transfers must occur through non-physical means either synchronously or synchronously. Virtual health is unique, as it encompasses engagement across the overall health journey beyond just the act of care and includes the entire ecosystem of prospective and current consumers including their caregivers, families, providers, employers, and producers.

Virtual health equity as an imperative: Why equity drives value

Market, regulatory, and moral incentives for prioritizing equity in virtual health are beginning to align. COVID-19 dramatically accelerated the adoption and reimbursement of virtual health, particularly among Medicare and Medicaid populations. The Centers for Medicare & Medicaid Services (CMS) decision to expand reimbursement for virtual care in the face of the pandemic has opened the industry's door to the more than 100 million Americans covered under those programs. These populations are very different in terms of race, income, and age than those covered under private insurance: Medicaid serves a 60% non-white and 36% low-income population, compared to the 35% non-white and 27% low-income population covered by employer-sponsored insurance. Medicare's population is by its very nature more elderly than the employer-sponsored market. Federal and state policymakers are taking steps to make expanded reimbursement permanent for this diverse population—in fact, some states (like Wisconsin) already have.

The vast rural, elderly, low-income, and racially and ethnically diverse populations covered under Medicare and Medicaid have historically faced disparities in access to not only virtual health but the health care industry at large. These shifts in coverage—combined with expanded internet access among rural, lower-income, and racially and ethnically diverse communities due to investments in broadband infrastructure and 5G—mean the virtual health industry needs to be ready to serve new and more diverse customer segments. Prioritizing equity in the design and delivery of virtual health will allow organizations across the industry to meet these segments' needs and reap tremendous benefits, including:

Meeting a moral imperative:

As outlined in Deloitte's *Activating health equity* report, there is a moral imperative facing the health care industry to ensure equitable care for all.[i] Significant differences persist in health-related outcomes—such as life expectancy, birth outcomes, and chronic disease—across many dimensions, including race, gender, age, location, disability status, and sexual orientation. The pandemic dramatically underscores these differences—evidenced by the roughly three times higher rates of hospitalization due to COVID among Black, Hispanic, and American Indian or Alaska Native populations.[ii] These disparities are evidence of systemic structural inequities that affect both individual and community health and well-being. Unless all actors, including the health care ecosystem, take an active role in understanding and dismantling these unjust systems, health inequities will continue to widen.

Capturing value in the market:

The market for federal and state-driven health care spending is enormous—it reached $3.8 trillion in 2019 and is expected to grow to $6.2 trillion by 2028.[iii] To succeed in this expanding market, broadly accessible and consumer-centric virtual health options are critical. Virtual is an essential care modality for Medicare and Medicaid recipients who struggle to access medical care due to barriers that virtual health can help address. For example, Medicaid members in rural areas are more than 20 times more likely to report delaying medical care due to lack of transportation than those with private insurance.[iv] Medicaid members are also more likely to report difficulty obtaining appointments—an issue virtual modalities can alleviate by connecting patients to providers across the state or country.[v] Lastly, virtual modalities have been used to amplify access to culturally competent care for diverse populations—a critical capability for Medicare and Medicaid's diverse consumer base.[vi]

While virtual is a critical modality in the publicly funded health care space, the industry will need to understand and respond to the needs of Medicare and Medicaid's highly diverse population (in terms of age, race and ethnicity, and socioeconomic status) to succeed in the market. As noted in the sections below, different segments of this diverse population face many barriers to accessing and utilizing virtual health services. Capturing the full promise of this market will require breaking down those barriers through an emphasis on equity and consumer centricity.

Furthermore, a focus on equity will be key to remaining competitive in a disrupted industry. Moving forward, consumers will continue to demand the convenience of virtual care: a Deloitte survey revealed that 82% of those using virtual health services claimed to be satisfied with the experience,[vii] and 80% noted they are likely to schedule future virtual appointments even after the pandemic ends.[viii] While consumer sentiment remains strong, only 10% of providers indicated they have the capabilities they need to successfully conduct virtual health visits, indicating an imbalance between consumers' demands and providers' ability to supply.[ix] Technological innovators such as Amazon and other disruptors are quickly filling and innovating around this void with on-demand services that deliver the convenience and flexibility that consumers have come to expect from other online experiences.[x] As innovators continue to enter the industry, consumers will expect the same level of convenience and intuitive user experience they encounter across other digital experiences like online shopping or social media. To deliver this type of personalized experience, virtual health actors will need to proactively understand and address the barriers traditionally underserved populations experience (these barriers are outlined in detail in the next section).

Organizations must also prepare for the future of health, where by 2040 an estimated $3.5 trillion of spending will be directed toward well-being and prevention—and in which virtual health will be a critical means of care delivery.[xi] Much of this shift is likely to be focused on personalization of care enabled by virtual health technologies that analyze each consumer's unique circumstances to assess risk and prevent adverse health conditions early. However, racism and bias in health care analytics and technology have repeatedly been shown to lead to inappropriate, and even harmful, care delivery.[xii] Additionally, inequitable access to and engagement with virtual health among older and racially more diverse populations may impede large consumer segments from accessing personalized and preventive virtual care. As America's elderly population rapidly expands and the country transitions to a majority-minority nation by the mid-21st century, the virtual health industry will need to ensure it equitably addresses diverse consumer needs to benefit from the multibillion-dollar "well-being dividend."[xiii]

Improving equity in virtual health can promote widespread economic benefits across all segments of the health care industry:

- Health plans may increase access to care for their members, which ultimately improves consumer health and well-being, promotes continuity of care, and enhances care management. Virtual health helps health plans' members stay connected to their care teams in a more personalized way that delivers proactive and preventive care aligned with the needs and preferences of different member segments.

- Providers may increase their reach to patient populations that have traditionally struggled to access care. Virtual health technologies offer an opportunity for providers to improve quality of care, health care outcomes, and patient satisfaction—all inputs into reimbursement and patient retention—through identification of the care modality that most effectively meets the needs of patients with consideration of their environment and access to resources.

- Technology companies can design digital platforms and virtual health solutions, expanding market opportunities and user adoption while also empowering customers and increasing engagement by using digital tools to deliver evidence-based information and education to a wide audience.

- Regulators can continue to advance the goal of bending the cost curve while promoting access to safe, effective care for all population segments, especially for older and lower-income individuals, by accelerating and incentivizing adoption of virtual health in rural and medically underserved areas. To safeguard quality of care and spending, regulators will also need to modernize and enforce statutes to expose fraud and abuse in care delivered virtually.

Understanding and addressing the uneven playing field

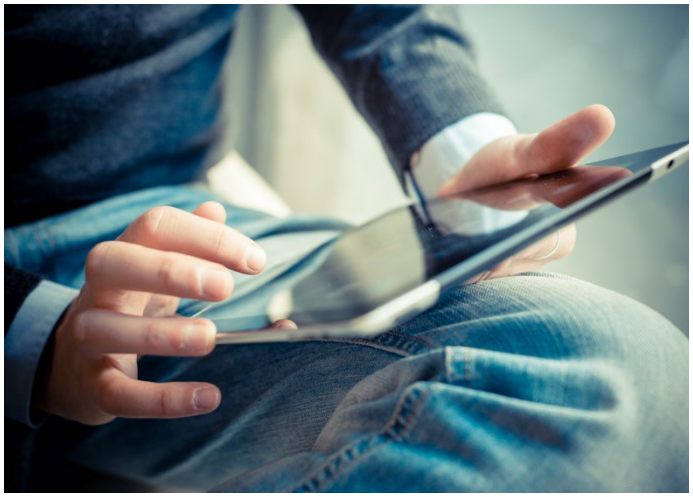
As health care leaders look to design equitable virtual health programs, they will need to better understand the three arenas where virtual health inequities play out and how to address those inequities: (I) infrastructure and access, (II) digital engagement and cultural competence, and (III) technology development and analytics.

1. Infrastructure and access

What if people could seamlessly consult their health care provider via telehealth no matter their location, income level, or background?

Virtual health solutions must be designed and deployed with careful consideration of differing levels of broadband access and availability of technology, as well as mindfulness of appropriate environments for virtual care. Twenty-five million Americans cannot access the internet at home.[xiv] Lower levels of access especially affect older Americans, Medicaid members, and those with lower incomes. In 19 states, households with a Medicaid enrollee were 10% less likely to have internet access than households without an enrollee.[xv] Adults living in households with an annual income of less than $30,000 per year are far less likely to report using the internet than households with incomes of more than $75,000.[xvi] Additionally, according to the Pew Research Center, 27% of US adults aged 65+ reported they did not use the internet in 2019.[xvii] Beyond internet access, Americans with lower levels of education, lower income levels, and who live in rural areas report lower rates of smartphone ownership.[xviii] This may mean not all populations benefit equally from the rise of 5G connections, despite the technology's enormous potential to connect the 46 million rural Americans[xix] and 13.6 million urban households without internet access.[xx]

Even with broadband and access to technology, consumers also need an appropriate physical environment to ensure privacy while receiving virtual health care. Factors such as income and culture can influence access to private spaces in which to securely receive virtual care. For example, some LGBT+ Americans may require extra privacy when undergoing virtual counseling. Access to privacy also varies across race and ethnicity—when asked whether they had a private place for a telehealth appointment, 36% of Asians, 32% of American Indian or Alaskan Natives, 30% of Native Americans and Pacific Islanders, and 17% of Black and Latinx respondents reported lack of a private space.[xxi]



Digital equity

"The Infrastructure and Investment Jobs Act, recently signed into law, allocates $65 billion in new spending to improving broadband internet across the country. This investment, along with the continued expansion of 5G services nationally, could spark a sea-change in access to high-speed internet among previously underserved populations.

The legislation distributes billions in grants to states and tribes to improve infrastructure, reduce cost, provide internet-connected devices, and connect community anchor institutions to broadband. These grants aim to connect traditionally underserved communities, including Native American, Alaska Native, and Native Hawaiians, to the internet. The law also includes provisions focused on digital equity and discrimination – requiring rules and providing grants to ensure equitable access for all.

In anticipation of these infrastructure improvements and expanded 5G service, virtual health providers may begin serving expanded customer segments that are more rural, lower income, and composed of Black or Latinx families that historically have had lower levels of broadband usage than other populations. Demographics of Internet and Home Broadband Usage in the United States | Pew Research Center Players in the virtual health space should invest in understanding the needs of these historically underserved populations. Such investments could potentially include improvements in culturally competent care, including improving workforce diversity, and virtual health literacy resources.

Paths to equity:

Partner with local resources:

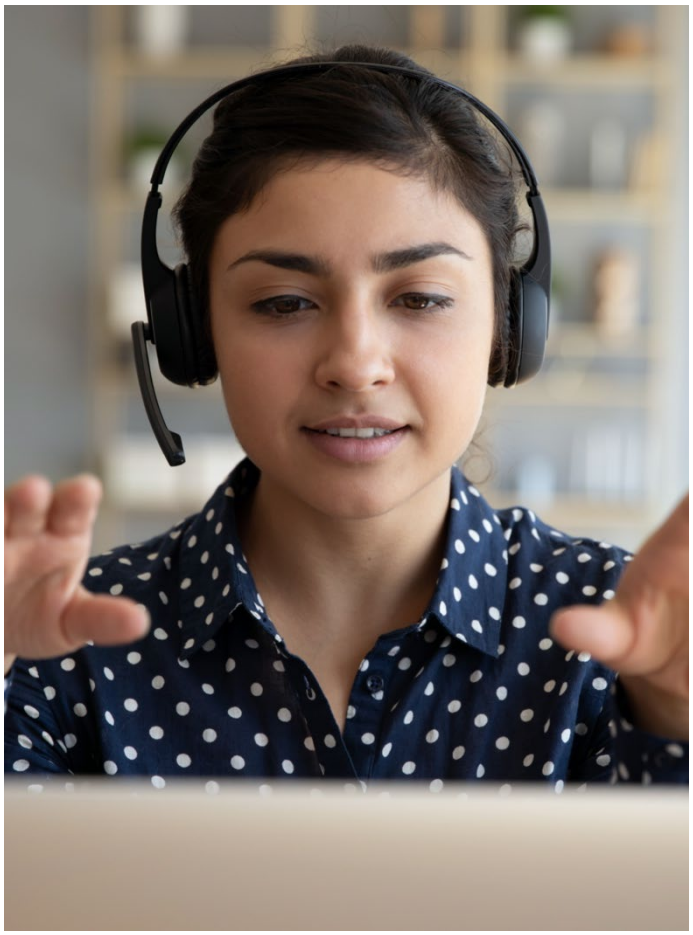
Work with schools, shelters, libraries, community health centers, and more to set up “Connectivity Zones” where those without reliable internet service at home can go to receive needed virtual care.

Fund or provide technology directly:

Devote resources to bringing virtual health-enabling equipment and/or reliable Wi-Fi to patients or members who need it. Such investments may transform how individuals successfully manage chronic conditions from home.

Offer technical and culturally competent support:

Extend care team composition or capabilities to assist in the setup and use of technology, and ensure staff is culturally competent. Such support can enable effective remote patient monitoring and hospital at-home services.



2. Digital engagement and cultural competence

What if finding and using virtual health technology was as easy and intuitive as using social media apps, regardless of language, culture, geography, and age?

Populations leveraging virtual health solutions have varied levels of digital and health literacy, cultural and language barriers, accessibility needs, and self-advocacy and care team advocacy.

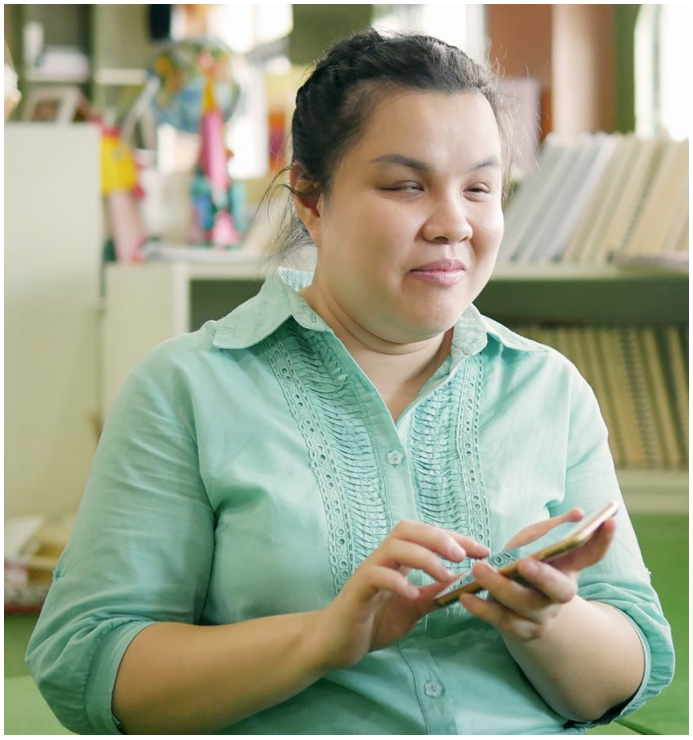
Lack of digital literacy, whether it stems from preference or lack of internet access, can impede the ability to find and use virtual care. Populations with lower digital literacy in the United States tend to be less educated and older, and more likely to be Black, Hispanic, or born outside the United States.[xxii] Furthermore, studies have shown that older, lower-income, and less educated populations access health information online less frequently or are less interested in online provider interaction compared to counterparts.[xxiii] These disparities may help explain why some studies have shown these same demographic groups having lower levels of telehealth usage[xxiv] or reporting lower comfort levels of telehealth utilization compared to counterparts.[xxv]

Many consumers do not have access to services in their own language, which creates a barrier to receiving virtual care as language-discordant encounters can hinder the ability to communicate vital, nuanced clinical information.[xxvi] Sixty percent of limited-English-proficient individuals reported that the telehealth services they received were not in their preferred language. Even without the added complexity of language barriers, consumers may not understand the types of virtual health services they are eligible for and may be confused about how billing or other virtual health components are handled. Virtual health itself can be part of the solution. Providing support guides and videos and ensuring they are available in a wide range of languages may enable optimal use of virtual health solutions by diverse populations. Moreover, virtual health can directly improve consumer experience by amplifying access to culturally competent care; for example, a Danish study showed higher patient satisfaction among patients connected to providers who speak their language via telehealth as compared to patients who received care via interpreters.[xxvii] A diverse and culturally competent provider base is as equally important in virtual settings as it is in physical ones.

Furthermore, individuals with disabilities may require unique virtual health features, such as closed-captioning for consumers with hearing loss or audio-only options for consumers with vision loss. As facial expressions are an integral part of American Sign Language, video capabilities may also be a necessity. Additionally, consumers with special needs may need tailored features or programs to ensure their ability to leverage solutions. Organizations creating virtual health solutions should strive to comply with accessibility standards, such as those released by Web Content Accessibility Guidelines (WCAG), to make solutions inclusive for all users.[xxviii]

Additionally, privacy violations and fraud can disproportionally impact certain populations, leading to higher costs and improper treatment. A survey from the Ponemon Institute indicates that those who share their medical data tend to have slightly lower incomes, be slightly older, and more often are female than those who don't.[xxix] This type of security breach has inequitably distributed negative health consequences. Those who report negative medical consequences as a result of identity theft tend to more often be female and older (age 35+).[xxx] Victims with government insurance are more likely than those with private insurance to report delayed medical treatment or misdiagnosis due to identify theft.[xxxi] Inequities in whose data is stolen and the subsequent medical consequences may be related to lower digital literacy—those with less online familiarity may be more susceptible to scams and fraud. The industry should consider how to educate diverse patients on online privacy and security to ensure their consumers' safety.

To enable diverse populations to leverage virtual health solutions, organizations should design with equity in mind. This can include ensuring platforms and services are accessible in multiple languages, including features for the visual and hearing impaired, and designing intuitively for those with low digital literacy (including providers with lower digital comfort levels).



Consumer engagement & effective care

Organizations that prioritize consumer engagement play a critical role in the delivery of effective care to marginalized communities.

The Public Library Association (PLA), the Network of the National Library of Medicine (NNLM), and the All of Us Research Program (All of Us) have partnered to create free resources for library staff to support their community's digital literacy needs. The program provides free digital literacy online learning modules, suggested curriculums, and guides for community organizations to provide health care–focused digital literacy training sessions. The information, provided in English and Spanish, is shared with the goal of helping new internet users access and navigate their health information virtually.[1]

Cityblock Health, a tech-enabled health care and social services provider, specifically targets low-income and racially diverse populations. During the COVID-19 pandemic, Cityblock established a virtual integrated care program that leveraged a variety of in-person and telehealth modalities to deliver whole-person care to communities. Initial strategies of sending web links to participate in video appointments and distributing tablets directly to members' homes fell short due to connectivity challenges and low digital literacy. In response, the pilot shifted to include the deployment of emergency medical technician (EMT) teams with telehealth technology to members' homes, with the EMT acting as an in-home extender to the telehealth clinician. This new strategy resulted in successful video visits between members and their Cityblock care teams and patient no-show rates declining from 50% to 5%.[2]

[1] National Institutes of Health, National Library of Medicine, All of Us initiative, accessed November 21, 2021.

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Paths to equity:

Tailor intuitive and accessible user experiences:

Use simple language, straightforward design, and simplified navigation when designing apps and web pages—and be sure to design for all kinds of modalities and devices, from laptops to tablets to cell phones.

Conduct targeted outreach:

Reach out to segments of the patient population that are less digitally literate to provide assistance and education.

Provide accessible educational materials:

Publish step-by-step instructional documents, visual workflows, and video tutorials that can help patients and staff smoothly navigate virtual encounters and educate consumers on online privacy and security.

Sponsor or launch localized virtual health hubs:

Connect patients to physical sites with the technological and staffing resources to assist with virtual visits.

Leverage existing social supports:

Use technology to seamlessly engage and connect social supports (e.g., family members, friends, libraries, and community organizations) in integrated platforms.

3. Technology development and analytics

What if health care analytics could predict health outcomes with the same level of accuracy for consumers of any background or identity?

As we have noted previously,[xxxii] biases in health care advanced analytics are a serious barrier to a more equitable future. Bias can increase mistreatment, undertreatment, and overtreatment—just one recent example of this phenomenon includes a biased algorithm inappropriately assigning Black women lower chances of successful vaginal birth after caesarean section. These issues, in turn, can lead to poor health outcomes for consumers and worsened financial performance for hospitals, health systems, health plans, health technology firms, and life sciences companies. Consumer sentiment acknowledges such dangers—57% of consumers believe artificial intelligence has the potential to do damage over the next 10 years due to misuse. Organizations can avoid these outcomes by building processes and procedures (as described below) to spot and combat biases before they infect their use of analytics technology.

Racism and other structural biases shape the design, development, and implementation of advanced virtual health solutions like advanced analytics, machine learning, and artificial intelligence. Because developers of these types of advanced analytics solutions use real-world data to train their technology, algorithms may inadvertently reproduce existing inequities if the underlying data mispresents the population and/or is biased. For example, research has demonstrated physicians tend to doubt Black and female patients' descriptions of their own conditions—these biases are reflected in medical records.[xxxv] If such medical records were used to train a clinical natural language processer, this algorithm may reflect similar doubts when transcribing patients' words. This could then shape physician care toward these populations, perpetuating bias. When payers, providers, and health care organizations make decisions based on the results of biased solutions, inequities can be reinforced and amplified.

Health care organizations can avoid reinforcing inequities by accounting for existing disparities when designing and implementing such solutions. This can increase accuracy and lead to more efficient care and improved outcomes. For example, consider an algorithm designed to predict pain levels in individuals with osteoarthritis. By diversifying their data sets and accounting for environmental factors in communities, such as stress, researchers were able to drastically improve upon standard measures of pain severity used by radiologists.[xxxvi]

As providers adopt a broader set of data to guide treatment decisions, it could lead to expanded access to care for underserved populations. Alternatively, not properly addressing existing biases in algorithms has led to reduced access to care among Black populations.[xxxvii]

Paths to equity:

Demand robust governance:

Establish data guidelines and thresholds and encourage teams to check each other's assumptions and models for quality and sensitivity. Use robust governance to protect sensitive consumer data, and retrain virtual health technologies (e.g., virtual triage systems) that are discovered to be biased. Demand transparency and explainable information when collecting data sets and training models. Reference Deloitte's Trustworthy AI framework to accelerate your understanding.

Build diverse teams:

Design (or redesign) the organization's operating model/structure to focus on team diversity. Train data scientists and developers to avoid common technology bias pitfalls within virtual health. In the absence of diverse teams, organizations that are intentional about activating equity can still risk perpetuating bias.

Apply human-centered design:

Leverage human-centered design and testing for accessibility and usability in virtual health applications and programs to help ensure equitable deployment across relevant populations. Involve multiple stakeholders—especially historically under-represented patient populations—in advanced analytics design.

Audit proactively:

Engage subject matter experts and tools to audit advanced analytics and underlying data sets used in virtual health programs. Commit to a regular cadence of external audits to detect bias and define mitigation tactics when the tool or model is launched. Recurring audits can help account for changes to consumer behaviors and as the algorithm matures.

Designing a more equitable future: Smart first steps

Pathways to equity funding

Virtual health organizations can capitalize on numerous funding pathways to accelerate equitable virtual health development. The federal government is the largest funder of equity-focused virtual health grants and programs. Agencies such as the Department of Health and Human Services (HHS), the Health Resources & Services Administration (HRSA), and the Federal Communications Commission (FCC) have devoted tens of millions of dollars to telehealth grants and funding, especially to expanding access in rural areas.[1] Given the Biden administration's prioritization of equity, such programs are likely to continue (or even expand).[2]

In addition to federal funding, venture capital and private investment is increasingly focused on health equity. As just two examples of the broader trend, take the success of the social determinants of health analytics startup Socially Determined (over $11 million in series A funding) or the recent $30 million committed to health equity ventures by the pharmaceutical company Eli Lilly & Co.[3]

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Equity must be embedded into all aspects of virtual health solution design, development, and deployment, especially within organizations' high-level priorities and strategic initiatives. This process should be intentional and human-centered (focused on impact to consumers), as we recently outlined in our virtual health care experience white paper.[xxxviii] To activate equity, leaders should:

- Adopt inclusive and diverse human-centered design (HCD) practices for technology development to ensure solutions consider underlying drivers of health, account for diverse needs, serve all populations equitably, and do not perpetuate biases (reference Deloitte's Experience-led virtual health paper for more detail on HCD for virtual health).[xxxix]
  - *For example*, define or train a subset of the workforce on human-centered design practices and consistently deploy them to equitably shape products and programs.
- Prioritize diversity and equity in the care model design, workforce training, communications strategies, and deployment of virtual health solutions.
  - *For example*, review training materials for providers for a focus on cultural competency, and revamp materials as needed.
- Adopt phased implementations that "move at the speed of trust" to drive equitable adoption of virtual health technologies and services.
  - *For example*, hold focus groups with individuals from the communities a product or program serves to listen to their needs and feedback and use their feedback to inform implementation.
- Establish policies, regulations, and standards to balance protecting consumers, driving equity, and encouraging innovation in virtual health.
  - *For example*, establish policies to regularly audit analytics technology for bias.
- Conduct ongoing monitoring of key equity metrics to understand if and how solutions, analytics, and practices impact equity.
  - *For example, monitor the number of non-English-speaking patients an organization serves and compared to the level of culturally competent, linguistically proficient resources in the organization; invest in additional resources if needed.*

As the United States continues to grapple with the disparities laid bare by the pandemic and the staying power of virtual health becomes more and more evident, it's critical that the health care industry intentionally designs virtual health programs and solutions with equity as a guiding principle.

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