THE FUTURE OF TELEHEALTH ROUNDTABLE:

The Potential Impact of Emerging Technologies on Health Equity

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Contents

Executive Summary

The advent of COVID-19 brought numerous challenges to care delivery, forcing health professionals to think innovatively to facilitate timely care while maintaining compliance with shelter-in-place ordinances. After a national emergency was declared on March 13, 2020, state and federal governments took action to quickly respond to the rising COVID-19 infection rates. Health systems scrambled to implement and scale virtual modalities of care delivery, including telehealth, and experienced both successes and unique challenges. Regulatory and legislative actions, and those taken by private insurers, temporarily increased access to telehealth through expanded provider eligibility, payment parity, site neutrality and relaxed state licensure policies. But current public health emergency (PHE) waivers and associated flexibilities are at risk of sunsetting if legislation is not passed to make them permanent.

Telehealth can offer convenience and improved access for patients through virtual and telephonic visits by reducing the need to take time off work, secure child and elder care and find transportation. Telehealth also offers wide-ranging opportunities for flexibility and innovative improvements in health care delivery by enabling new models for low-acuity care and chronic disease management. However, virtual care can also exacerbate existing health disparities because access to the requisite technology, broadband and digital literacy varies widely among patient populations. Without intentional action to help mitigate digital access barriers, permanent expansion of telehealth could have the unintended consequence of reinforcing existing inequities in health access in our highest risk and most underserved communities.[1]

In 2020, the National Committee for Quality Assurance (NCQA) hosted a Taskforce on Telehealth Policy to assess early findings and experiences under flexibilities granted by Congress and the Centers for Medicare & Medicaid Services (CMS) during the public health emergency. Its goal was to build consensus among diverse stakeholders on recommendations that will help realize telehealth's potential to drive well-coordinated, patient-centered, value-optimized care.[1] While health equity in the delivery of telehealth services was not a focus, it was identified as a key area that requires further discussion. Toward that end, in October 2021, NCQA hosted a roundtable discussion to facilitate dialogue on the future of virtual health care delivery in a post-pandemic world, one that both fosters equitable access for all and upholds standards of high-quality care. The COVID-19 pandemic has had a devastating impact on communities of color and has shed light on long-standing health disparities, and health care leaders, innovators and decision makers have realized that these disparities must be addressed.

NCQA invited a multidisciplinary panel of experts in telehealth practice, technology, regulation and policy, with an emphasis on backgrounds in health equity or health technology. Panel members provided commentary on hypothetical (fictional) patient case studies highlighting equity issues related to urban and rural broadband access, patient privacy, language barriers, digital literacy and licensure. In response to these examples, panelists were asked to expand on identified barriers and suggest strategies and solutions that would affect promotion of equity in telehealth services.

"Telehealth can be a gateway to different models of care that have the potential to transform patients' relationships with the health care system."

Peggy O'Kane, President and Founder of NCQA

[1] Taskforce findings and recommendations are highlighted in a white paper: Taskforce on Telehealth Policy (TTP)—Findings and Recommendations—NCQA.

In setting the groundwork for the roundtable's discussion, Peggy O'Kane, NCQA President and founder, noted the importance of transforming the relationship between the U.S. health care system and patients. As health professionals, policymakers and insurers move toward use of new technologies and expansion of telehealth, they must be cognizant of how new care models may differentially and negatively affect people of color and disadvantaged groups.

In addition to responding to the challenges highlighted by the case examples, roundtable participants identified challenges to delivering optimal and equitable care via telehealth and digital tools (below). Achieving equitable access and use of telehealth requires intentional and high-impact strategies that resonate across multiple levels of the health care system and across industries. Participants shared promising opportunities and emerging practices to facilitate equitable delivery of patient-centered, culturally sensitive, technologically enabled care to meet patients where they are and respond to their needs. One participant noted that the U.S. is currently in a climate of openness to structural changes and investments in telehealth advancement and asked how the U.S. can leverage this climate to make changes that allow equitable access to telehealth.

Through review and discussion of the fictional case studies, three primary opportunities to promote equitable access in telehealth delivery were identified and organized around a central principle of prioritizing patient-centered care for all populations (FIGURE 1). A running theme throughout was that equitable and innovative care delivery should always place the patient at the center; thus, the design of technology and digital tools that facilitate care delivery must prioritize patient preferences and needs. The corners of the triangle in Figure 1 represent opportunities to promote equity and improve quality in telehealth delivery—identified as key themes by roundtable participants.
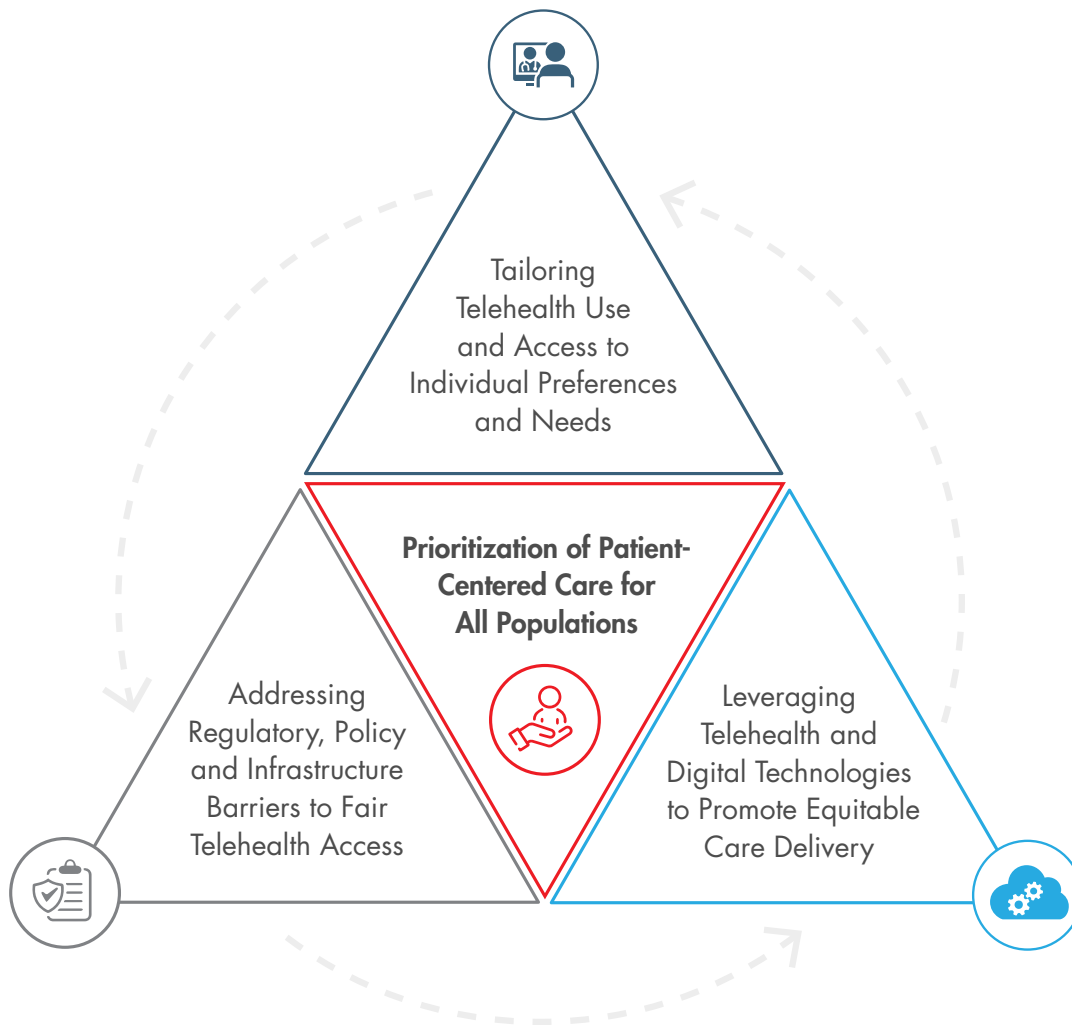
Case examples and discussion highlighted barriers to equitable telehealth access and use

- Privacy and data-sharing concerns.
- Lack of flexibility in delivery modalities that enable broad use of telehealth by all patients, families and caregivers.
- Insufficient technical capabilities to promote culturally appropriate language translation.
- Lack of tools and resources to relieve socioeconomic barriers to telehealth use and access.
- Lack of tools and resources to facilitate telehealth access by those with learning/ intellectual, physical and cognitive disabilities.
- Lack of broadband access (digital redlining).
- Antiquated federal legislation/regulations.
- Restrictive reimbursement and coverage policies.
- Restrictive and disparate state licensure laws.
- Disjointed technology interface solutions that place a burden on patients and clinical teams.

The first opportunity, *Tailoring Telehealth Use and Access to Individual Preferences and Needs,* addresses challenges related to individual patient and/or clinician factors that impact telehealth access and use, such as digital literacy, English proficiency, finger/hand dexterity, comfort level with sharing video, socioeconomic status. Individual factors are important to consider when conceptualizing and designing telehealth and other digital solutions, and call for awareness and intention on the part of funders, technology developers and implementers of health care technology.

The bottom corners of the triangle can be thought of as foundations necessary for achieving patient-centered care and addressing challenges at the individual level. For example, *Addressing Regulatory, Policy and Infrastructure Barriers to Fair Telehealth Access* covers regulations that govern broadband access and infrastructure, and policies that determine clinician eligibility for licensure in multiple states. These structural challenges are worsened by inherent and societal biases that are misaligned with priorities to address unfair policies and regulations. If collective bias cannot be removed, infrastructure will always be built on unfair rules that create disparate outcomes for marginalized populations.

The third corner of the triangle, *Leveraging Telehealth and Digital Technologies to Promote Equitable Care Delivery*, represents an opportunity to use telehealth applications and other digital tools to close gaps in care and drive health equity forward. Related to designing technology with individual preferences in mind, there must also be a distinct effort to ensure that technologies fit in workflows, identify and address patient needs, produce interoperable/ usable data for health equity research and closing gaps and are part of broader organizational strategies that intentionally address health equity issues.

FIGURE 1: Opportunities to Promote Equity and Improve Quality in Telehealth Delivery. *Patient-centeredness is health care that establishes a partnership among practitioners, patients and their families (when appropriate) to ensure that decisions respect patients' wants, needs and preferences and that patients have the education and support they need to make decisions and participate in their own care.*[2]

Introduction

The advent of COVID-19 brought challenges to care delivery and forced health professionals to think innovatively in order to facilitate timely care while maintaining compliance with shelter-in-place ordinances. After a national emergency was declared on March 13, 2020, state and federal governments quickly responded to the rising COVID-19 infection rates. Health systems scrambled to implement and scale virtual modalities of care delivery, including telehealth, and experienced both successes and unique challenges. Regulatory and legislative actions, and those taken by private insurers, temporarily increased access to telehealth through expanded provider eligibility, payment parity, site neutrality and relaxed state licensure policies. But current public health emergency (PHE) waivers and their associated flexibilities are at risk of sunsetting if legislation is not passed to make them permanent.

Early data suggest telehealth relieved travel burden, reduced missed appointment rates, increased access to behavioral care, reduced skilled nursing facility transfers to hospitals, boosted transitional care management and enabled patients to choose virtual visits across a much broader range of services.[3] The shift to telehealth in the U.S. during the pandemic was dramatic: In January 2020, less than 1% of primary care visits in Medicare occurred virtually; by April, nearly half did. In the fall of 2020, nearly two-thirds of Medicare beneficiaries reported that their provider offered telehealth appointments, up from 18% pre-pandemic. According to a market report, there were 10 times more telehealth visits in March 2021 than in March 2020, and the number of covered telehealth visits at the health insurer UnitedHealth Group rose from 1.2 million visits in 2019 to 34 million in 2020.[4]

While evidence suggests that telehealth improved access to and quality of care even before the pandemic, the reliance on virtual modalities during it revealed clear gaps in telehealth access and use among underserved populations. The COVID-19 pandemic has shed light on long-standing health disparities and the devastating effect on underserved populations, compounding the impact of access barriers to telehealth as well. Native American, Alaskan Native, Black and Hispanic communities across the U.S. experienced the highest COVID-19 hospitalization and mortality rates when compared to the White population.[5] Several key factors play a role in these disparities. Social risk factors such as unstable housing and low-paid, public-facing jobs (e.g., home health worker, grocery store clerk) affect a person's ability to socially distance. Cultural differences and language barriers affect patient-provider relationships and patient trust of health care systems, politicians and government agencies, leading to vaccine hesitancy and further spread of misinformation. Racial and ethnic minorities also face issues such as lack of health insurance, transportation, childcare and the ability to take time off work to visit a provider.[6]

The U.S. senior population also faces challenges in accessing telehealth services. A recent analysis of the 2018 American Community Survey found that 26% of Medicare beneficiaries lack access to a desktop, laptop or smartphone at home.[7] Furthermore, seniors often encounter barriers related to technological literacy, cognitive decline and physical disability.[8]

Health care leaders, innovators and policymakers have realized that virtual care delivery is here to stay and have therefore prioritized addressing gaps in telehealth access and use. Recognizing emerging challenges in the delivery and use of telehealth in diverse populations and offering ideas and solutions to address barriers and achieve health equity were topics of discussion for the NCQA Future of Telehealth Roundtable. This report summarizes the discussion and recommendations from the panel of experts.

Defining Telehealth

Telehealth is broadly defined as the use of electronic and telecommunications technologies to deliver clinical health care services, patient education, public health and health administration; therefore, telehealth covers services delivered by videoconference, remote patient monitoring and store-and-forward (also known as "asynchronous telemedicine"). Federal agencies do not have synonymous definitions for telehealth and use different terms to refer to virtual health care.

- According to the definition from the Centers for Medicare & Medicaid Services (CMS), telehealth is the use of telecommunications and information technology to provide access to health assessment, diagnosis, intervention, consultation, supervision and information across distance. CMS also uses the term "telemedicine" to refer to a subset of telehealth; specifically two-way, real-time interactive communication between patient and physician/practitioner at the distant site.[9]

- The Health Resources and Services Administration (HRSA) defines telehealth as "the use of electronic information and telecommunications technologies to support and promote long-distance clinical health care, patient and professional health-related education, public health and health administration." Several types of technologies or capabilities fall under telehealth, including videoconferencing, the internet, store-and-forward imaging, streaming media and terrestrial and wireless communications.[10]

- The Food and Drug Administration also uses the term "digital health" to refer to a broader category of mobile health (mHealth), health information technology (IT), wearable devices, telehealth and telemedicine and personalized medicine.[11]

The most common types of telehealth include:

- **Virtual Visits:** Live, synchronous, interactive encounters between a patient and a health care provider via video, telephone or live chat.

- **Chat-Based Interactions:** Asynchronous online or mobile app communications to transmit a patient's personal health data, vital signs and other physiologic data or diagnostic images to a health care provider to review and deliver a consultation, diagnosis or treatment plan at a later time.

- **Remote Patient Monitoring:** The collection, transmission, evaluation and communication of individual health data from a patient to their health care provider from outside a hospital or clinical office (i.e., the patient's home) using personal health devices including wearable sensors, implanted health monitors, smartphones and mobile apps. Remote patient monitoring supports ongoing condition monitoring and chronic disease management.

- **Technology-Enabled Modalities:** Telehealth and virtual care solutions also provide for physician-to-physician consultation, patient education, data transmission, data interpretation, digital diagnostics (algorithm-enabled diagnostic support) and digital therapeutics (the use of personal health devices and sensors, either alone or in combination with conventional drug therapies, for disease prevention and management).

AMERICAN TELEMEDICINE ASSOCIATION
TELEHEALTH TAXONOMY[12]

For the roundtable, NCQA used the term "telehealth" to cover the umbrella of technologies related to providing care to patients in an alternate setting. In this context, telehealth can overlap with mobile health but is not interchangeable, because mobile health is delivered exclusively via mobile devices (smartphones, tablets) and telehealth may use other devices (such as laptops) for delivery. The term "telehealth" is generally used interchangeably with "telemedicine," although telemedicine usually focuses on medical practice via remote means.

Methods

When convening the Future of Telehealth Roundtable, NCQA invited participants with backgrounds in health equity and health technology, two areas that have received attention during the COVID-19 pandemic and were relevant to the roundtable's focus. NCQA believed that diverse perspectives would allow panelists to outline solutions to challenges affecting access to and use of telehealth and that often prevent people from realizing the benefits of telehealth. The panel reviewed a set of three fictional case studies illustrating barriers to telehealth use or access, and addressed a set of questions to unpack specific challenges and potential solutions.

The case studies highlighted realistic issues and challenges faced by individuals seeking care through virtual modalities, and often focused on virtual visits. Although fictional, their intent is to spur discussion on challenges and opportunities to improve telehealth for diverse populations facing a variety of health and social challenges. They are summarized below. Refer to **Appendix 1** for the full case studies.

Case 1. Emanual, a 52-year-old man, awaiting liver transplant with end stage liver disease, limited income, limited access to cellular and internet services. He lives in a small rent-controlled apartment with his wife and children, in an urban neighborhood with unreliable broadband internet. He needs to meet with a transplant hepatologist regularly to remain eligible for the transplant waitlist. *Highlighted challenges: Housing insecurity, poverty, urban broadband, privacy violations.*

Case 2. Mrs. Reed, a 72-year-old woman and Medicare beneficiary with diabetes and arthritis as well as visual and cognitive impairments and uses a continuous glucose monitoring (CGM) device. She lives in a rural area with unreliable cell and internet service and relies on a family member for caregiver support and to provide transportation for medical visits. Eligibility for the CGM device requires regular in-person visits with the prescribing provider. *Highlighted challenges: Disability; remote monitoring, unreliable broadband, rural access.*

Case 3. Thuy, a 62-year-old woman who is generally healthy but has mental health needs. English is not her first language, and she accesses behavioral healthcare via a virtual platform but has limited technology and computer skills. She moved out of state to live with her son and experienced a lack of continuity in mental health care. *Highlighted challenges: Social isolation, technology fluency, English proficiency, licensure.*
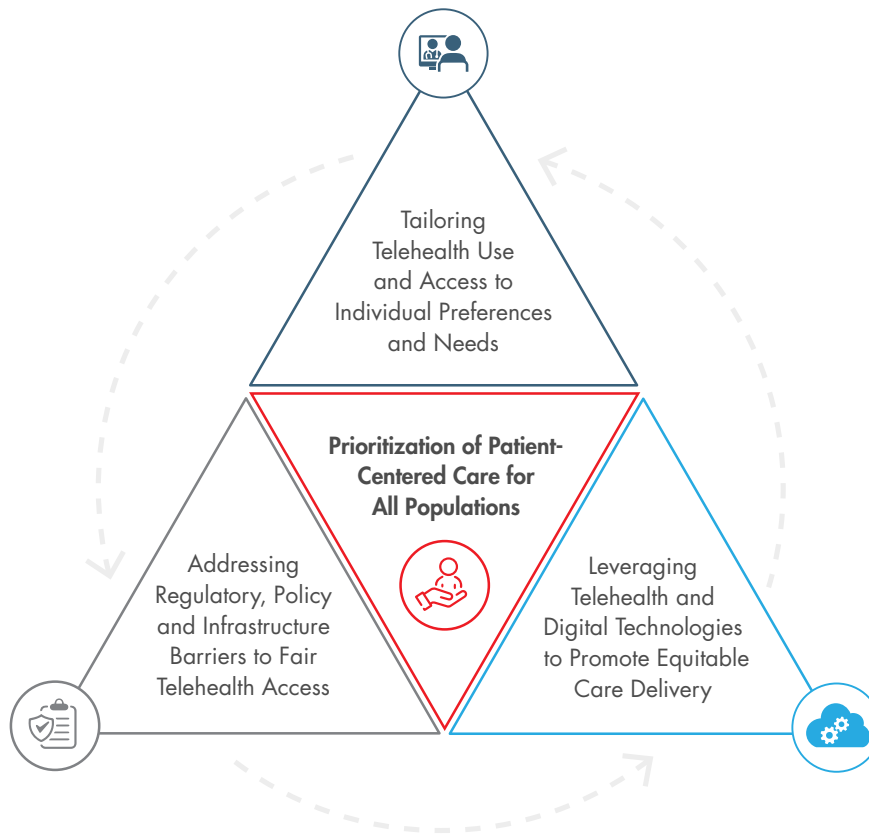
The questions below were posed by NCQA to generate discussion among roundtable participants. Questions were tailored to the case study examples and highlighted challenges.

1 What are the main barriers to telehealth use that are illustrated by the cases? What are potential opportunities?

2 How can clinicians and their teams use or integrate existing services/resources to eliminate barriers related to [specific challenge]?

   a. Are there challenges to using/integrating existing resources with telehealth?

3 Are there potential resources or tools that need to be developed?

4 What are potential standards or policies that could be developed to help eliminate telehealth barriers related to [specific challenge]?

Originally planned as an in-person meeting in Washington, DC, the roundtable was held virtually in October 2021 because of the continuing COVID-19 pandemic. It was recorded, and this report is based on the meeting transcript and post-meeting discussion among NCQA staff and a contracted writer.

Opportunities and Solutions to Address Disparities in Telehealth Delivery

Through review and discussion of the case studies, three primary opportunities to promote equitable access in telehealth delivery were identified and organized around a central principle of prioritizing patient-centered care for all populations (FIGURE 1). A running theme throughout the discussion was that equitable and innovative care delivery should always place the patient at the center; thus, the design of technology and digital tools that facilitate care delivery must prioritize patient preferences and needs.

FIGURE 1: Opportunities to Promote Equity and Improve Quality in Telehealth Delivery. *Patient-centeredness is health care that establishes a partnership among practitioners, patients and their families (when appropriate) to ensure that decisions respect patients' wants, needs and preferences and that patients have the education and support they need to make decisions and participate in their own care.*[2]

The corners of the triangle in Figure 1 represent opportunities to promote equity and improve quality in telehealth delivery—identified as key themes by roundtable participants.

The first opportunity, *Tailoring Telehealth Use and Access to Individual Preferences and Needs*, addresses challenges related to individual patient and/or clinician factors that impact telehealth access and use, such as digital literacy, English proficiency, finger/hand dexterity, comfort level with sharing video, socioeconomic status. Individual factors are important

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Roundtable participants also discussed specific solutions for each opportunity (TABLE 1). The targeted stakeholders for solutions range from policymakers and health system leaders to technology developers. Roundtable participants agreed that achieving equitable telehealth access and use requires engagement across industries and multiple levels of the health care system.

Tailoring Telehealth Use and Access to Individual Preferences and Needs	
OPPORTUNITIES	PROPOSED SOLUTIONS
1. Prioritize language and cultural humility	• Use medically accurate and culturally sensitive natural language processing to facilitate translation in patient's preferred language. • Recognize family and cultural dynamics and limitations in willingness and ability to perform translation services, incorporating third-party translator services when needed.
2. Appreciate the role of digital literacy in virtual care delivery	• Recognize the digital literacy learning curve and tailor resources and training to individual patient needs (e.g., preferred language). • Prioritize patient and provider comfort-level when choosing care delivery options. • Leverage community resources and partnerships to train patients to improve digital literacy.
3. Optimize telehealth for people with disabilities	• Assess for visual, cognitive, intellectual, mobility and functional needs to facilitate successful telehealth use. • Design and implement digital tools for the margins (and get it right for the majority).

Addressing Regulatory, Policy, and Infrastructure Barriers to Fair Telehealth Access

OPPORTUNITIES	PROPOSED SOLUTIONS
1. Ensure equitable broadband infrastructure	• Address digital redlining through within-county collection of broadband access data and across sociodemographic groups. • Promote community and corporate partnerships to improve broadband access and connectivity.
2. Review and update legislation/regulations that stymie telehealth expansion and continuation	• Update the Health Insurance Portability and Accountability Act of 1996 (HIPAA) to reflect current practices while ensuring patient protections. • Review regulatory and payment frameworks that require in-person visits for establishing care and treatment eligibility. • Review and update the Telephone Consumer Protection Act (TCPA) to reflect current communication channels (e.g., SMS notification) and to promote ease-of-use requirements.
3. Review and update telehealth payment policies to incentivize equitable access to care	• Promote telehealth as a care delivery option through continuing telehealth payment parity policies. • Review how standards of care, quality measurement and clinical guidelines are perpetuating inequities by requiring in-person visits. • Revisit and reverse policies that prohibit audio-only telehealth for services where audio-only is feasible and/or for patients living in areas without reliable broadband access.
4. Consider how licensure limitations impact patient-centered care delivery	• Expand multi-state licensure and reciprocity rules (including licensure waivers for interstate telehealth-only registration). • Encourage medical boards to streamline and standardize licensure processes, where possible. • Encourage states to pass legislation to join the Interstate Medical Licensure Compact.

Leveraging Telehealth and Digital Technologies to Promote Equitable Care Delivery

OPPORTUNITIES	PROPOSED SOLUTIONS
1. Develop, implement, and integrate digital technologies that address health equity issues	• Develop tools that are interoperable across clinical portals and telehealth platforms. • Develop products with the intent to promote ease-of-use and access for clinicians and patients. • Leverage digital tools to promote care coordination between visits and addressing social determinants of health.
2. Monitor the impact of new digital technologies on health equity and access to care	• Gather patient data outside context of patient visit, through use of allied health professionals or using artificial intelligence (AI) to understand when patients need to be engaged. • Expand research on use of devices (e.g., remote patient monitoring) in different clinical scenarios and with underrepresented groups.

Roundtable Discussion Themes: Opportunities and Solutions

This next section of this report describes the opportunities and proposed solutions in detail and incorporates additional context from roundtable discussions.

Tailoring Telehealth Use and Access to Individual Preferences and Needs

1. Prioritize language and cultural humility

Cultural humility, sometimes referred to as "cultural competence," can be defined as "the process by which individuals and systems respond respectfully and effectively to people of all cultures, languages, classes, races, ethnic backgrounds, religions, spiritual traditions, immigration status, and other diversity factors in a manner that recognizes, affirms, and values the worth of individuals, families, and communities and protects and preserves the dignity of each."[12] Roundtable participants emphasized that delivery of culturally competent care prioritizes using a patient's preferred language whenever possible. Providers have struggled with incorporating translators (e.g., professional services, family members) in telehealth visits, often encountering issues with connectivity or experiencing residual noise and echo.

Advanced telehealth platforms can overcome challenges to incorporating translator services by building in automatic translation capabilities for multiple (even hundreds) languages—a solution that has been in more demand since the start of the COVID-19 pandemic. But roundtable participants noted that built-in solutions (e.g., captioning, subtitles) are produced through natural language processing (NLP) methods and can result in medical terminology translation errors or culturally inappropriate translations, especially for less common languages. Nevertheless, using NLP-based "machine translation" has incredible potential for virtual care delivery and for addressing patient-provider communication challenges attributed to language barriers.[2] Providers can expect future improvements to health care applications of machine translation as researchers and developers work to ameliorate issues and improve culturally competent care.

Roundtable participants reemphasized the importance of prioritizing patient preferences as an aspect of cultural humility. A patient may choose to use a third-party translator or a built-in machine translation, depending on their comfort level or on factors that might be unknown to the provider. Ultimately, the provider's goal should be to accommodate the patient's preference or otherwise provide advance training and education in the patient's preferred language if a remote/ virtual modality is necessary (in the event of shelter-in-place ordinances).

"One has to be very careful about cross-cultural interpretation and how the individual might respond to the doctor. Different cultures respond differently. […] One has to be culturally humble and willing to accept that there are differences."

Iverson C. Bell, MD - Psychiatrist, Psychiatry Training Director, University of Tennessee Clinical Health

2. Appreciate the role of digital literacy in virtual care delivery

A patient's tendency to choose and comfortably use telehealth or other virtual modalities of care delivery can be closely tied to their level of digital literacy, which can be defined as the ability to use information and communication technologies to find, evaluate, create and communicate information, requiring both cognitive and technical skills.[15] Successful use of telehealth platforms depends on a certain level of digital literacy to navigate multiple steps outside the telehealth call, including connecting to the internet; navigating email and a web browser; downloading an application; calibrating additional hardware such as a camera, microphone and speakers; and updating security and privacy settings. Digital literacy challenges can often be affected by age; physical limitations (e.g., finger dexterity); learning disabilities; cultural and societal norms that restrict access and use of technology; lack of experience using technology and digital tools/applications; and lack of targeted resources and education to facilitate improving digital literacy. Digital literacy challenges disproportionately affect older adults, racial and ethnic minorities, and people with low socioeconomic status.[16]

Roundtable participants shared examples and best practices for overcoming digital literacy challenges. Part of tailoring education and resources to the specific needs of individual patients may involve partnering with community organizations that have the right resources and staff. For example, one roundtable participant's organization, the Alaska Native Tribal Health Consortium (ANTHC), partners with Southcentral Foundation and more than 180,000 Alaska Native and American Indian people living in Alaska to provide comprehensive medical services at the Alaska Native Medical Center. ANTHC's telehealth capabilities allow specialty care services that are hard to obtain in remote areas of Alaska—a care delivery challenge that long predates the COVID-19 pandemic. Part of that assistance involves proactive patient outreach and tailored, step-by-step technology training based on patients' needs and preferences (e.g., language).

Another roundtable participant discussed how the Veterans Administration (VA) enables veterans to leverage telehealth and other digital health solutions by distributing hardware and offering "white glove" assistance that walks through the steps for successful virtual connectivity with providers. Consistent dedicated patient assistance requires implementing clinical workflows that support telehealth and virtual care delivery, and clear communication pathways between the patient's home and the clinic. Since the pandemic, numerous resources and tools have been developed to assist providers with equitable telehealth implementation, training and patient education.[17]

> "At the Veteran's Administration (VA), we see older veterans that have various challenges accessing telehealth. One way the VA has tried to mitigate some of these issues is through mailing iPad devices to veterans who do not have a device to use."

> *William W. Hung, MD - Geriatrician and Associate Director of Clinical Programs, Geriatric Research Education and Clinical Center, James J Peters Veterans Affairs Medical Center*

[2]Natural language processing (NLP) refers to the branch of computer science—or, more specifically, artificial intelligence (AI)—concerned with enabling computers to process human language in the form of text or voice data to 'understand' its full meaning, complete with the speaker or writer's intent and sentiment.[13] "Machine translation" adds an additional layer to NLP by automatically converting one natural language into another, preserving meaning of the input text and producing fluent text in the output language.[14]

Roundtable participants reiterated that patient-centered care prioritizes patient preferences, which means that some patients, even those with adequate training and/or digital literacy, may still prefer in-person visits or audio-only telehealth. Participants also noted that if digital health approaches are payer incentivized for clinician use but are not preferred by patients (e.g., due to low digital literacy), then access and utilization barriers will remain and further deepen disparities. But addressing digital literacy challenges requires action beyond the payer and provider's purview. The roundtable agreed that there must also be collaboration between technology developers and health care organization leaders to inform patient-centered design and workflow, with the overall goal of lowering barriers to entry for underserved populations and those with low digital literacy.

3. Optimize telehealth for people with disabilities

People with disabilities face unique challenges to accessing timely and appropriate care. The recent exponential rise of telehealth use has tremendous potential for addressing key access issues facing the disability community (e.g., lack of disability-accessible public transportation); however, the benefits of telehealth for this community have yet to be realized. For example, the use of current telehealth technology requires a certain level of upper body mobility and strength and might not accommodate people with vision impairment. Patients with cognitive, physical, sensory and mental health needs may prefer to stay in their home or community-based setting, where they are comfortable and where their symptoms can be optimally managed.

One roundtable participant noted that designing digital solutions for marginalized individuals and those facing the most barriers, such as patients living with an array of disabilities and chronic conditions, will usually result in products that meet the needs of the general population. The participant provided the example of disability-accessible ramps not only being a mobility solution for wheelchair-bound patients, but also for parents pushing strollers or people on crutches. Designing for the margins is a principle of inclusive, human-centered design that emphasizes perspectives of people with the greatest needs.

To achieve full accessibility, future telehealth and digital health innovations need to focus on the specific needs faced by the disability community. Designing telehealth technology for this community may include consistently implementing standards and plug-in solutions that enable appropriate interpretation of sign language, closed captioning on the screen where services are provided and synchronous access for family members and qualified readers, interpreters and speech-to-speech translators. Additionally, people with disabilities may be less likely to own the hardware needed to access telehealth and may need additional training and assistance on configuring and using hardware to address individual accessibility needs.[18]

Roundtable participants also acknowledged that the rapid expansion of telehealth may have unintended consequences for marginalized populations, including the disability community, and that outcomes and disparities must be closely monitored.

Addressing Regulatory, Policy and Infrastructure Barriers to Fair Telehealth Access

1. Ensure equitable broadband infrastructure

Broadband connects communities to an increasingly digital world. It has transformed industries, changed the way people access goods and services and become an indispensable part of modern life. Yet despite more than three decades of public and private efforts to expand broadband access, gaps persist. More than 18 million Americans—perhaps upwards of 42 million—still lack access to a reliable high-speed internet connection. And that does not include the millions of Americans who cannot afford available connections.[19]
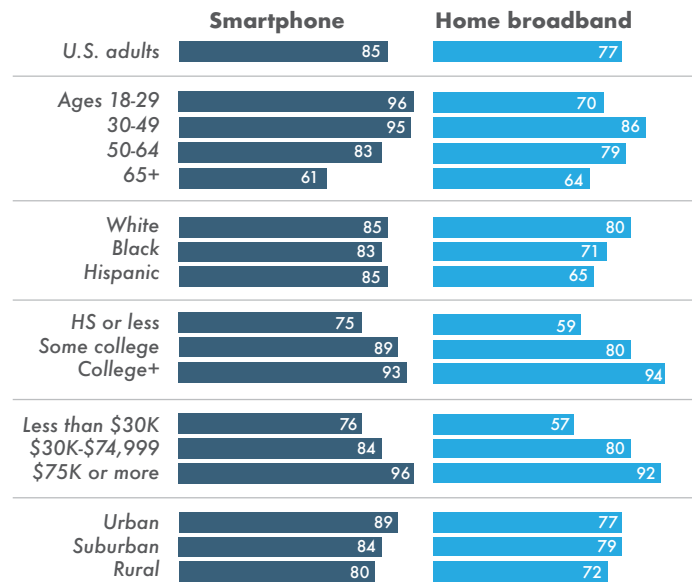
The Robert Wood Johnson Foundation defines digital redlining as "major network providers systematically excluding low-income neighborhoods from broadband service—deploying only sub-standard, low-speed home internet." The Pew Research Center report noted that households with broadband access often face lack of choice and a third of communities have only one option for broadband providers.[19] This reduces competition and the opportunity to negotiate for better service and lower costs. A disproportionate number of communities of color do not receive broadband upgrades. Roundtable participants encouraged a thorough investigation of reliable data points to identify populations affected by lack of internet/broadband or lack of technology to overcome digital redlining.

The lack of reliable broadband access requires creative and innovative solutions. Roundtable participants encouraged opportunities to expand public/private partnerships to address broadband access. During the pandemic, many parents navigated remote schooling for their children. Participants emphasized that Wi-Fi hotspots on school buses and in parking lots are workarounds that should not be considered long-term remote solutions. Participants discussed other health care examples with more optimism, such as partnerships between the VA and cellular services and Wal-Mart to boost data capacity in rural areas and provide private and safe spaces for patients to hold telehealth visits.

Broadband adoption varies substantially by education, household income; some differences less pronounced for smartphone ownership

% of U.S. adults who say they have or own the following

	Smartphone	Home broadband
U.S. adults	85	77
Ages 18-29	96	70
30-49	95	86
50-64	83	79
65+	61	64
White	85	80
Black	83	71
Hispanic	85	65
HS or less	75	59
Some college	89	80
College+	93	94
Less than $30K	76	57
$30K-$74,999	84	80
$75K or more	96	92
Urban	89	77
Suburban	84	79
Rural	80	72

Note: Respondents who did not give an answer are not shown. White and Black adults include those who report being only one race and are not Hispanic. Hispanics are of any race.
Source Survey of U.S. adults conducted Jan. 25-Feb.8, 2021.
Mobile Technology and Home Broadband 2021

PEW RESEARCH CENTER

While overall broadband access should be improved through the Infrastructure Investment and Jobs Act signed into law in November 2021, roundtable participants noted a lack of reliable and granular data to demonstrate which

"The digital divide is much bigger than most people understand. People often think 'Well, yeah there's no broadband in rural areas,' but digital redlining also means that there is no broadband in suburban and urban areas where broadband companies don't feel they're going to be able to make enough money. It's really important for us to understand how big the issue of lack of broadband access actually is by digging into all the data that's available. Most of the data that gets reported out is super underestimated."

Sinsi Hernández-Cancio, JD
Vice President for Health Justice, National Partnership for Women and Families

underserved populations or geographic areas need to be prioritized. One participant noted that broadband access for underserved communities is often worse than some studies estimate; reasons include the tendency to measure access at the county level, rather than looking at disparate access within counties. The new legislation includes a $65 billion investment for improving the nation's broadband infrastructure; helping contain internet service costs by creating price transparency and by boosting competition; and creating a permanent federal program to help more low-income households access the internet.[20]

On the other hand, improving affordability of, and therefore access to, low-quality internet services does not address the inequitable broadband infrastructure problem (location/positioning of satellites, prevalence of fiber optic cables), as one roundtable participant noted. To begin understanding the true extent of broadband access disparities, there must be a systematic effort to collect household-level data on high-speed internet availability, subscription, cost and use. While the American Community Survey questionnaire fields some of these questions and provides aggregated results at the state and county levels, there is still a need to understand access within individual counties. As one participant noted, in-county broadband access disparities are often masked by county-level estimates.

"If we had more reliable data points to show exactly which patient populations are impacted by lack of access to broadband and technology, we can provide technical assistance [at the provider level] to help some of these patients - such as providing devices and leveraging community partnerships. So, there are a lot of opportunities, but I think data is a very important piece here."

Anthony Jordan - Deputy Division Director, Strategic Partnerships Division, Office of Quality Improvement, Bureau of Primary Healthcare, HRSA

2. Review and update legislation/regulations that stymie telehealth expansion and continuation

When policymakers enacted extensive restrictions on the use of telehealth, technology was less mature and use cases were limited. Prior to the pandemic, assumptions about patient safety, program integrity (fraud, waste, abuse), quality and cost were cited as reasons for the restrictions.[3] It is imperative to bring policy into alignment with current practice, and with the future of digital technology in mind, to facilitate equitable access and utilization of digital health technologies. Roundtable participants noted the need to create safeguards for patient privacy and fraud prevention without creating additional barriers to care for people who already experience access issues.

Participants brought up opposing points that highlight the tension between ensuring that protections are in place and keeping outdated policies that function as barriers to utilizing telehealth technologies. During the pandemic, policies under the Health Insurance Portability and Accountability Act of 1996 (HIPAA) were relaxed to allow providers flexibility in implementing virtual care delivery solutions quickly, which was important for patients managing multiple chronic conditions and dealing with emergency medical situations. But one flexibility—the ability to use non-HIPAA compliant telehealth platforms (e.g., FaceTime and Skype) without penalty—is less than ideal for preserving patient privacy and protections.

One participant noted that the flexibility during the public health emergency speaks to the immediate need for updating HIPAA regulations to reflect current and future uses of technology to deliver care, as well as for promoting the implementation of adaptable telehealth programs that are HIPAA-compliant, equitable and user-friendly for all. Roundtable participants also noted that the advent of digital health devices (e.g., "wearables") has presented another challenge with regard to third-party data collection and sharing. While real-time tracking of health information collected from devices has positive implications for timely intervention, there is uncertainty about who has access to the data, how data are used, whether patients are truly informed of third-party use and whether PHI de-identification policies are adequately and consistently followed.

A roundtable participant mentioned the limitations of the Telephone Consumer Protection Act of 1991 (TCPA), which is federal legislation that requires organizations obtain advance permission before sending unsolicited text messages to individuals. This participant advocated for updating the legislation by sharing an example where outdated TCPA policies prevented the use of texting for relaying time-sensitive COVID-19 updates and resources to patients early in the pandemic. Updating policies to better reflect current communication methods may especially benefit individuals who experience challenges obtaining accurate and timely public health information.

> "We need to bring policy into line with current times. And if we did that, it would take us a long way toward the goals we have. Policy needs to be pulled into 2021 with the look to the future."
>
> *Abner Mason - Founder & CEO, SameSky Health (formerly ConsejoSano)*

3. Review and update telehealth payment policies to incentivize equitable access to care

Reimbursement challenges top the list of physician-cited barriers to maintaining telehealth after COVID-19, followed by technology challenges for patients and liability concerns.[21] Approximately 40% of consumers say their health system or insurance provider does not offer telehealth services, while another 35% said they are unaware if any services are offered.[22] Understanding how reimbursement policies introduce challenges for historically marginalized populations is essential to breaking down structural barriers to telehealth access.

CMS implemented telehealth flexibilities under section 1135 waivers to alleviate strain on the health care system during the pandemic. Among them is payment parity: reimbursement of office, hospital or other visits furnished through telehealth (video and audio only) at the same payment rate as regular, in-person visits. In addition, originating site rules were relaxed to allow telehealth visits to include the patient's home (or any location) for receipt of telehealth services. Roundtable participants expressed concern, however, over whether flexibilities will exist after the pandemic is over, and emphasized that coverage of telehealth is different from payment parity, both of which are important levers for utilization and access. As of March 2022, only six states have laws that govern private payer payment parity for telehealth services, according to the Federation of State Medical Boards (FSMB).[23] Participants also expressed particular concern over the reversal of audio-only telehealth coverage policies that were implemented early during the pandemic, which would disproportionately impact telehealth access for people without reliable broadband services or who experience barriers related to digital literacy.

> "The reimbursement should be based on the service provided. Audio, video, in person, it should not matter."

Cindy Roleff, MS, BSN, RN-BC - Telehealth Program Development Director, Alaska Native Tribal Health Consortium

Some roundtable participants acknowledged that not all visits can be made virtual without potentially compromising quality and standards of care (e.g., proper evaluation and treatment of injuries, management of multiple chronic conditions for patients with cognitive decline). The tension between the desire to keep the patient safe at home while providing evidence-based, high-quality care is a focal point of discussion among health care thought leaders and policymakers. Roundtable participants noted logical solutions that may include a hybrid approach of in-person and home health visits, combined with telehealth and other virtual modalities. The future state of care delivery has the potential to support a number of modalities based on individual patient preferences.

Participants also agreed that requiring initial in-person visits to establish a patient/provider relationship and periodic in-person visits to maintain eligibility for certain treatments and/or devices places an unnecessary access burden on patients in remote areas or living with disabilities. As quality measures and standards of medical care are updated and developed, in-person visit requirements should be evaluated and telehealth options considered, where appropriate.

4. Consider how licensure limitations impact patient-centered care delivery

Telehealth enables expanded reach and accessibility, especially in areas with clinician shortages, and offers the opportunity to match patients with providers based on patient preferences and needs, including factors like primary spoken language, cultural background, race and ethnicity and specialty/specific clinical expertise. The advantage of virtual care platforms, including telehealth, is the ability to overcome transportation and geographic barriers. Roundtable participants emphasized the importance of patient-provider concordance to encourage patient trust and to build rapport, which can go a long way in improving patient well-being and outcomes. For example, the ability to address issues specific to LGBTQ+ patients may require specific training, experience and understanding/empathy that is harder to come by in rural service areas. Evidence also shows that race and ethnicity concordance between Black and Hispanic physicians and patients can significantly improve patient satisfaction and patient-reported receipt of preventive care services and reduce emergency department use and hospitalizations.[24,25] Roundtable participants noted

> "I'm in DC. I can almost see Virginia. I live really close to Maryland. So, I'm licensed in three states just to do my regular job. I know many of you are licensed in many more than that and I think patients want this. But I don't think there's enough cultural demand inside of the provider workforce. NCQA and HRSA and other folks can be really effective at gathering people like us to share our data and what our experiences are."

Ethan A. Booker, MD - Medical Director, MedStar Telehealth Innovation Center, MedStar Health

that optimizing state licensure laws to allow providers to practice in multiple states is key to realizing the full potential of telehealth and its facilitation of patient-centered care.

In response to clinician shortages during the pandemic, many states implemented state licensure waivers to allow out-of-state practitioners to practice in-state via telehealth ("interstate telemedicine") and/or to apply for temporary licensure in the state. As state-specific "state of emergency" declarations have begun lapsing, some waivers tied to the public health emergency have also started to expire without plans for renewal, resulting in restrictive, pre-pandemic licensure policies. Realizing the benefits to patients of multi-state licensure and interstate telemedicine, however, four states (AZ, WV, KS, CT) have either made the licensure waivers permanent or have created permanent licensure pathways for out-of-state practitioners.[26]

Other states have passed legislation to join the Interstate Medical Licensure Compact (IMLC), an agreement among 34 states, the District of Columbia and the Territory of Guam to work toward streamlining multi-state licensure by routing a single application process through the IMLC.[27] While the IMLC significantly streamlines the burdensome application process, there are still barriers to multi-state licensure after eligibility is confirmed and the application is approved, including obtaining licensure from and paying licensing fees to each state where a physician intends to practice. The VA has a more centralized licensure model, passed by Congress in 2018, where VA physicians may practice under any VA license at any VA facility, regardless of location, as long as they are licensed in one state.[28]

"High-quality telehealth care can be delivered through both video-based and non-video-based practices, and regulations on those types of engagements right now vary from state-to-state. So, being able to have some regulatory consistency across the United States would be very helpful, both from an access perspective and also from a compliance perspective, to make sure that there's no confusion among the providers that are providing care."

Cynthia Horner, MD, FAAFP - Medical Director, Amwell

Leveraging Telehealth and Digital Technologies to Promote Equitable Care Delivery

1. Develop, implement and integrate digital technologies that address health equity issues

The pandemic has highlighted long-standing structural inequities that have put underserved and marginalized communities at greater risk of COVID-19 related hospitalization and death. The consequences of the pandemic, such as social isolation, financial insecurity, stigma/fear and misinformation, have also disproportionately impacted vulnerable populations. The most vulnerable individuals would experience the greatest benefits from digital tools and technologies that help ensure care coordination and continuous communication with providers and loved ones—but digital tools and technologies are not often designed with the most vulnerable populations in mind. Additionally, software and phone applications commonly require the user to have the latest devices and upgrades, which can be a connectivity barrier for low-income individuals or those who struggle with digital literacy.

Roundtable participants recommended leveraging technologies with low barriers to entry for use in health care. They noted the importance of simplicity and inclusivity when designing and developing digital solutions and incorporating feedback from the clinical care team, patients and families throughout a product's lifecycle.

Participants also emphasized ways in which digital tools and technologies could be used to enable care coordination and care management between visits, in addition to addressing patient needs holistically during visits, such as through documentation of and referral for social determinants of health (e.g., housing and food insecurity). However, participants noted that from an operational perspective, there is a need to develop interoperable digital tools that can be easily integrated into workflows and support streamlined care processes, quality improvement and reporting.

"If healthcare was empowering, holistic, and outcomes-driven – and emphasized the experience of the patient all the way through – digital health technologies would be designed very differently."

Sheri Dodd, MSc
Vice President and General Manager, Medtronic Care Management Services.

2. Monitor the impact of new digital technologies on health equity and access to care

In addition to improving access to care, telehealth has spurred the use of wearable and digital technologies that enable virtual care. Remote patient monitoring offers the ability to gather patient data longitudinally and outside the context of a visit. Clinicians can access the remote data and integrate data into care management plans. The availability of remote data allows allied health professionals to play a role in reviewing patient data, monitoring relevant data points and providing clinical input and outreach when a need is identified.

Roundtable participants also noted the existence of artificial intelligence programs to analyze data transmitted from a continuous glucose monitor or digital blood pressure cuff. Clinical data can trigger a notification when a result is outside normal limits and can be escalated for clinician review. Automatic reminders can be sent to patients based on clinician programming. Patients can engage with smartphone health apps that keep track of aspects of daily living that affect health, such as nutrition data. The detailed, long-term monitoring these tools provide can identify early signs of disease and has the potential to improve preventive care and provide more personalized care.[4]

Some roundtable participants offered words of caution regarding the rapid expansion of remote monitoring tools. After overcoming the initial barrier of gaining access to self-monitoring devices, some devices need to be regularly calibrated by a professional (technician or clinician) in order to be safely and appropriately used for intervention and behavior change (e.g., dietary and exercise habits). Some patients may not have the health literacy or training needed to interpret complicated outputs from their devices, much less be able to act on the information by incorporating a behavior change, which introduces potential patient safety concerns. Participants were also concerned that clinical algorithms used to develop tracking and notification devices and software may not always be reviewed and validated by experts, potentially introducing bias and further deepening disparities in patient outcomes. Participants recommended continuous provider and patient training and 24/7 technical assistance to increase device usability and appropriate use and application of data outputs. There may also be unpredictable, unintended consequences of using new digital tools and devices in vulnerable populations, which calls for greater diversity and inclusivity in clinical trials and closer monitoring to ensure harm mitigation and avoid ethics violations.

Conclusions

Telehealth technologies and related digital tools are increasingly being developed and implemented as a cost-effective means for delivering both primary and specialty care.[29] Virtual/ remote care proved to be a necessity during the pandemic and is now a ubiquitous modality that is here to stay and has helped redefine the possibilities of care delivery. Although some patients and providers have benefited from telehealth, there are opportunities to improve its access and use to promote health equity and quality of care. Widespread adoption has been hampered by a variety of barriers, including access to devices, digital literacy challenges and internet bandwidth speeds in rural or underserved areas.

Ease-of-use design principles, expanding broadband infrastructure, streamlining medical licensure to support interstate practice and sufficient reimbursement of telehealth services (payment parity) are essential approaches that maximize benefits and help realize the full potential of telehealth and related digital tools. Roundtable panelists emphasized prioritization of patient preferences and needs to address inequities and promote continued expansion—from privacy concerns and culturally sensitive translations to overcoming barriers faced by patients with disabilities, among other challenges. Developer and design teams should follow both a pragmatic and empathetic approach to product design that incorporates diverse end-user feedback throughout the product lifecycle, with an emphasis on the perspective of marginalized populations. They should also work with health systems to ensure that digital tools are interoperable with other technologies and are designed to fit in clinician workflows. Realizing the full potential of telehealth to promote equitable care requires collaboration across industries and continuous education, training and monitoring to ensure that technological advancements do not deepen disparities and the digital divide.

"We really have to change the way we think about health in this country. We have to put the patient at the center – not the doctors, not the insurers, not the policymakers, or anybody's particular self-interest. Putting the patient first in our policy thinking is really where we can change healthcare and make more healthy communities. "
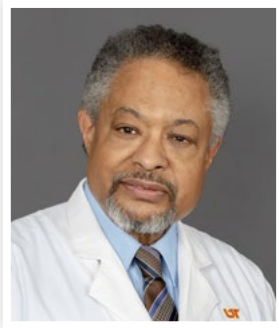
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Founder and CEO of Bayou La Batre Rural Health Clinic

Acknowledgements

NCQA appreciates the time, knowledge and perspectives of the diverse experts whose thoughtful contributions lead to the success of the Future of Telehealth Roundtable: The Potential Impact of Emerging Technologies on Health Equity.

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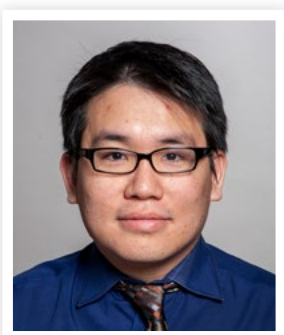
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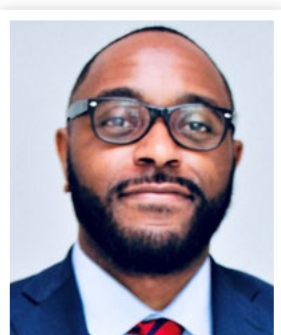
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Appendix 1: Future of Telehealth Case Studies

CASE 1.
EMANUAL: Highlighting challenges in housing insecurity, poverty, urban broadband and privacy violations

- Emanual is a 52-year-old former grocery clerk with chronic HCV, cirrhosis, end stage liver disease (ESLD), and is currently a liver transplant candidate at the nearest university hospital. He can no longer work and depends on his wife's income as a home health aide.

- To remain active on the liver transplant waitlist, and for help controlling his symptoms, he must make regular in-person visits with a transplant hepatologist and obtain regular liver panel results (labs).

- During the pandemic, he was asked to schedule his next visit through the hospital's private Zoom platform, but sometimes the broadband internet can be unreliable in his neighborhood.

- Emanual lives with his wife, their four children and his wife's mother in a small apartment. His wife's work is spotty due to the pandemic, so he is concerned about the rent.

- They can only afford one computer and one cell phone for the family.

- He uses the family computer in the living room to hold the virtual Zoom visit with the transplant hepatologist with some of his family members in the background.

- Emanual felt uncomfortable with his family overhearing parts of the conversation with the hepatologist. Due to privacy concerns of the patient and hepatologist, the virtual visit was ended early.

- The hepatologist directed a transplant coordinator to help Emanual reschedule the visit but was not able to get another visit for several months.

- He is worried that his active waitlist status was at risk, and that he would need to go to the ED for symptom control.

CASE 2.
MRS. REED: Highlighting challenges in individuals with disability, remote monitoring, unreliable broadband and rural access

- Mrs. Reed is a 72-year-old widow and Medicare beneficiary with longstanding diabetes, visual impairment, arthritis of her hands and mild cognitive impairment and requires a caregiver to help her adhere to her diabetes treatment regimen.

- Suzie is Mrs. Reed's niece and caregiver who lives on the top floor of Mrs. Reed's duplex (Mrs. Reed lives on the ground floor). Suzie has a job with irregular hours but helps Mrs. Reed as much as she can.

- Mrs. Reed is prescribed Dexcom G6, a continuous glucose monitoring (CGM) device, that transmits blood glucose data from a sensor to a durable monitor. Due to Mrs. Reed's various medical conditions, she often receives assistance from Suzie with reading and interpreting the transmitted data.

- Medicare also allows the use of a phone application in conjunction with the durable monitor. Suzie's phone is set up to receive real-time blood glucose data from Mrs. Reeds CGM device. Due to unreliable cell and internet service, important glucose data is sometimes delayed in reaching Suzie's phone application.

- Despite challenges, Mrs. Reed has generally done well with regular endocrine virtual clinical follow-up (sometimes only telephonic) and due to CGM, has appropriate glycemic control for her health status without hypoglycemia.

- To maintain Medicare eligibility for the Dexcom G6 system, Mrs. Reed must have an in-person visit with the prescribing endocrinologist every 6 months.

- Mrs. Reed's rural town is 4 hours away from the endocrinologist's clinic, and her car is unreliable, making it a challenge for Mrs. Reed and Suzie to make a trip every 6 months.

- Prior to the pandemic, Mrs. Reed missed a visit with her prescribing endocrinologist, putting her coverage at risk. During the pandemic, she was able to have phone-only visits with her endocrinologist, but there is concern that this will only be temporary.

CASE 3.
THUY: Highlighting challenges in isolation, technology fluency, English proficiency and licensure

- Thuy is a 62-year-old patient with minor asthma and back pain issues, who is otherwise physically healthy.

- She recently started group counseling sessions after feeling depressed and isolated, but her visits were cancelled abruptly due to the advent of the COVID-19 pandemic.

- After a few months, the counseling sessions were reinstated through the clinic's virtual telemedicine platform, and she was instructed to create an account in order to participate.

- Thuy's daughter translated the English instructions into Vietnamese as best as she could, due to Thuy's limited English proficiency.

- Due to never having navigated a computer on her own, Thuy's daughter still had to help her attend the first counseling session and showed her how to navigate the platform.

- Thuy missed the next virtual session because she could not remember what her daughter had shown her, and her daughter was unavailable to help her. Further, she could not make sense of the terminology in the written instructions, even in her preferred language.

- Thuy's depression worsened so she moved out of state to live with her son.

- One day, she decided to call her counselor because she began to feel suicidal. Her counselor was out of state for a wedding and wanted to help Thuy, but she was not licensed in the state.