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Commentary

Telemedicine barriers and challenges for persons with disabilities: COVID-19 and beyond



Thiru M. Annaswamy, MD MA ^{a, *}, Monica Verduzco-Gutierrez, MD ^b,
Lex Frieden, MA, LLD ^c

^a VA North Texas Health Care System, UT Southwestern Medical Center, Dallas, TX, USA

^b The University of Texas Health Science Center at San Antonio, San Antonio, TX, USA

^c University of Texas Health Science Center at Houston, Houston, TX, USA

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ABSTRACT

The COVID-19 pandemic has forced a rapid adoption of telemedicine over traditional in-person visits due to social restrictions. While telemedicine improves access and reduces barriers to healthcare access for many, several barriers and challenges remain for persons with disabilities, and novel challenges have been exposed, many of which may persist long-term.

The challenges and barriers that need to be systematically addressed include: Infrastructure and access barriers, operational challenges, regulatory barriers, communication barriers and legislative barriers.

Persons with disabilities are a vulnerable population and little attention has been placed on their healthcare access during the pandemic. Access and communication during a healthcare encounter are important mediators of outcomes for persons with disabilities. Significant, long-term changes in technological, regulatory, and legislative infrastructure and custom solutions to unique patient and health system needs are required to address these barriers going forward in order to improve healthcare access and outcomes for persons with disabilities.

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Background

Access to healthcare is a significant metric for healthcare outcomes. The COVID-19 pandemic has forced a rapid adoption of virtual telemedicine instead of traditional in-person visits due to social restrictions. While telemedicine improves access and reduces barriers to healthcare access for many, several barriers and challenges remain for persons with disabilities, and novel challenges have been exposed during the COVID-19 pandemic—many of which may persist long-term.

Persons with disabilities are a vulnerable population with unique social, economic, and environmental disadvantages. They have distinct disparities that influence healthcare access, compromise their health, and ultimately lead to them having far worse healthcare outcomes than persons without disabilities.¹ 61 million adults in the U.S. live with a disability.² Persons with disabilities are older, poorer, have significantly higher rates of obesity, diabetes, heart disease and smoking prevalence, and are also less likely to

have a regular healthcare provider.² They are less likely to afford healthcare, and more likely to have unmet healthcare needs. Furthermore, rural areas have a higher percentage of persons with disabilities than urban areas.³

Previously, telemedicine functioned as an alternative to traditional in-person healthcare access. If a person with disability had barriers accessing or communicating with healthcare providers via telemedicine, they could revert to in-person care. However, with telemedicine now being the primary—and often only—means of access, these barriers must be addressed and new protections for maintaining and improving healthcare equity delivered via telemedicine need to be in place. In the era of COVID-19 and beyond, telemedicine can no longer be considered a “complement” to in-person care. Rather, it should be viewed and reviewed as an “alternative” for in-person healthcare, because its use is likely to be sustained at a much higher rate post-COVID-19⁴ even as traditional in-person healthcare visits resume. This in turn means that several adjacent issues need to be addressed. Previously, all healthcare access and communication issues for persons with disability focused (almost exclusively) on what occurred during in-person visits, with specific attention to: a) Physical setup and access to clinics, hospitals, and other healthcare facilities; b) Equipment used during delivery of healthcare for interaction between persons with

* Corresponding author. Physical Medicine & Rehabilitation Service, VA North Texas Health Care System, 4500, S. Lancaster Road, Dallas, TX, 75216, USA.

E-mail addresses: Thiru.annaswamy@va.gov (T.M. Annaswamy), gutierrezm19@uthcsa.edu (M. Verduzco-Gutierrez), lex.frieden@uth.tmc.edu (L. Frieden).

disabilities and providers; and c) Communication and patient education tools. Now, all these issues must be revisited and viewed through a new perspective with telemedicine currently being the *primary* means and likely to remain a *highly relevant* means of healthcare access beyond COVID-19.

Some reported benefits of telemedicine for persons with disability include lower cost of care, lower transportation costs, improved medication reconciliation communication, less exposure to communicable diseases especially during a pandemic, and decreased need for paid personal assistance services.⁵ However, given the current spotlight on telemedicine, the time is ripe to systematically assess the benefits, risks, and opportunities for healthcare encounters via telemedicine for persons with disabilities.

Barriers and challenges

There is a need to systematically address the following issues:

Infrastructure and Access Barriers: A huge obstacle for appropriate utilization of telemedicine is that broadband—fast internet—is inaccessible in many rural and low-income communities (even in cities) where many persons with disabilities live, largely due to the absence of infrastructure. There has traditionally not been enough investment in these communities mostly because there are neither legal requirements nor financial benefits or incentives for private providers and network companies to provide such access.⁶ Despite subsidies and assistance programs to make such technology affordable for those people who may have infrastructure available, telemedicine access for persons with disabilities living in these communities is likely suboptimal. In addition, user interface issues such as screen reader, sign language, captions, magnification, color, and contrast also need to be addressed. Bioperipherals, such as devices that measure blood pressure and other vital signs need to be customized for use in tele-evaluation of persons with disabilities.⁷ Design and development of novel bioperipherals is needed to enhance clinicians' ability to tele-examine persons with disabilities who may have manual dexterity or physical mobility problems that interfere with their ability to interact with such bioperipherals.

Operational and Systems Challenges: Telehealth platforms are akin to electronic medical records with inherent software and hardware costs with significant resources currently being channeled to improve its "quality of experience". In addition, healthcare systems and providers are under increased stress to maintain clinical productivity via telemedicine. It is unclear how these new costs will be commoditized; there is a risk that a proportion of such costs may be transferred to vulnerable populations such as persons with disabilities who may not be able to afford them. In addition, many healthcare institutions, including academic institutions and facilities that depend greatly on graduate medical trainees have not integrated telemedicine into their routine healthcare delivery as seamlessly as some private practices. This has significantly impacted access to telemedicine for populations such as persons with disabilities who often rely on healthcare delivered through trainees (via safety net health insurance programs such as Medicaid and Medicare).

Logistical Challenges: Traditional in-person healthcare is often seamlessly coordinated with ancillary healthcare services such as laboratory testing and diagnostic studies that often need to be timed in advance of such visits. Because these ancillary services still require persons with disabilities to go in-person to a testing center navigating and coordinating such logistics can be particularly challenging.

Regulatory Barriers: During the healthcare emergency due to the COVID-19 pandemic, several telemedicine regulatory barriers have been eased such as practicing across state lines, local

credentialing and privileging issues, prescription and controlled substances regulations, and billing rules. Once we move past the state of emergency, it is unknown if these rules will be reinstated. For example, persons with disabilities currently receive telemedicine care across statelines due to travel restrictions during COVID-19 because of waived restrictions. However, it is unclear if they will continue to be able to receive such care once those waivers expire, if they have travel limitations due to their disability and need to receive telemedicine care across statelines. There is a need for a permanently legislated, coherent, standardized, nation-wide telehealth regulatory framework instead of a hodgepodge of conflicting local, state, insurance, and federal regulations.

Communication Barriers: Most telemedicine platforms do not have custom features to ease healthcare communications for persons who are deaf or blind or for persons with cognitive disabilities. Furthermore, there is a dearth of patient education materials for persons with language and literacy challenges. Providers who are utilizing telemedicine may not understand and be able to address the accessibility issues with their patients even if the system is designed correctly. Web accessibility standards that accommodate persons with disabilities need to be enforced on telemedicine platforms.⁸

Legislative Barriers: The Americans with Disabilities Act (ADA) was passed before the Internet became a widely used public service. The design standards of the ADA address physical spaces including healthcare facilities, but not virtual spaces or services such as telemedicine.⁹ In principle, the ADA's coverage extends to the Internet and its virtual world. However, the law does not prescribe standards for accessibility or directions for making websites accessible. The World Wide Web Consortium publishes accessibility guidelines,¹⁰ but these are voluntary and not legally enforceable. The lack of regulations under the ADA that specifically address web accessibility and dictate the technical standards and implementation timelines for compliance leaves businesses, advocates and courts at odds. There is a pressing need to promulgate pertinent regulations under the ADA. Consistent regulations should be issued under Section 504 of Rehabilitation Act of 1973 and Section 1557 of the Affordable Care Act. Technology companies that design and distribute telemedicine products must be subject to these laws, by considering them and their products as healthcare—not technological—organizations and products.

Unique Challenges: Persons with disabilities may also face unique challenges specific to their type of disability while accessing healthcare via telemedicine. For example, effective communication may be challenging for persons with intellectual disability. Telephysical assessment of persons with mobility or manual dexterity disability may be challenging due to difficulties interacting with the virtual interface or bioperipheral device. Persons with communication disability such as those with neurological or speech disorders may need unique solutions for telemedicine to be effective. Similarly, the virtual interfaces need to be customized to accommodate for the disabilities of persons with mental illness or autism spectrum disorders. These unique challenges need custom solutions so that persons with disabilities are not left behind during this era of telemedicine.

Conclusion

It is evident that COVID-19 is not the great equalizer. Persons with disabilities are a vulnerable population and little attention has been placed on their healthcare access during the pandemic. Access and communication during a healthcare encounter are important mediators of outcomes. Telemedicine has replaced—rather than complemented—in-person visits during COVID-19 and its use is likely to be sustained at a high-level post COVID-19. While it has facilitated access for some, several challenges and barriers remain that must be

systematically assessed. Significant, long-term changes in technological, regulatory, and legislative infrastructure and custom solutions to unique patient and health system needs are required to address these barriers going forward in order to improve healthcare access and outcomes for persons with disabilities.

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References

1. Smith CA. Healthcare disparities in people with disabilities: is there a cure? *South Med J*. 2019;112(2):98–100. <https://doi.org/10.14423/SMJ.0000000000000928>.
2. Centers for Disease Control and Prevention. Disability impacts all of us. Accessed May 18, 2020 <https://www.cdc.gov/ncbddd/disabilityandhealth/infographic-disability-impacts-all.html>. Accessed September 9, 2019.
3. Centers for Disease Control and Prevention. *Prevalence of Disability and Disability Types by Urban-Rural County Classification – United States*; 2016. Accessed May 18, 2020 <https://www.cdc.gov/ncbddd/disabilityandhealth/features/disability-prevalence-rural-urban.html>. Accessed November 18, 2019.
4. Gilbert AW, Billany JCT, Adam R, et al. Rapid implementation of virtual clinics due to COVID-19: report and early evaluation of a quality improvement initiative. *BMJ Open Qual*. 2020;9(2), e000985. <https://doi.org/10.1136/bmjopen-2020-000985>.
5. Agha Z, Schapira RM, Maker AH. Do we want to talk about cost effectiveness as a benefit? Cost effectiveness of telemedicine for the delivery of outpatient pulmonary care to a rural population. *Telemed J e Health*. 2002;8(3):281–291.
6. Internet Options for Low and Fixed Income households. Last updated: 5/19/2020 <https://broadbandnow.com/guides/low-income-internet> Author: Tyler Cooper. Accessed May 24, 2020.
7. Scott Kruse C, Karem P, Shifflett K, Vegi L, Ravi K, Brooks M. Evaluating barriers to adopting telemedicine worldwide: a systematic review. *J Telemed Telecare*. 2018;24(1):4–12. <https://doi.org/10.1177/1357633X16674087>.
8. W3C. The website of the world wide web consortium's web accessibility initiative. <https://www.w3.org/WAI/>. www.w3.org. Accessed May 18, 2020.
9. Powers GM, Frieden L, Nguyen V. Telemedicine: access to health care for people with disabilities. *Houst J health law policy*. 2017;17:7–20.
10. Danino Nicky. W3C accessibility guidelines. Last updated: 8/7/2001 <https://www.sitepoint.com/w3c-accessibility-guidelines/>. Accessed June 14, 2020.