

# Telehealth, Rural America, and the Digital Divide

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**T**HE CORONAVIRUS pandemic pushed nearly the entire world, seemingly overnight, to operate remotely: education, e-commerce, cultural events, legislative affairs, and more. Medicine as well pivoted rapidly to telehealth services, especially in primary care.

This move was lauded by many: it enabled health care professionals to continue to “see” their patients for management of both chronic and acute conditions (Gray et al., 2020). It enabled the evaluation of coronavirus symptoms without direct contact (Augenstein, 2020). It allowed clinicians to continue to monitor COVID-19-affected patients who were on home isolation (OSF HealthCare, 2020). Anecdotally, “no-show” rates dropped and it provided an opportunity to check in on elderly and other vulnerable patients (Cubanski, 2020) who live alone. While some studies showed that patients preferred in-person care, phone and video visits were valued and considered a comfortable mode of interaction (The Larry A. Green Center, 2020).

The US government was quick to loosen some restrictions—thought to be only

temporary—to allow practicing across state lines, to provide telehealth services to patients in settings beyond rural areas, and for physicians to provide telehealth services from the safety of their own homes. In addition, reimbursements for telehealth services and virtual visits, coupled with payment parity to in-person visits, eased the transition away from clinics to limit exposure (American Medical Association, 2020).

But not everybody loved it. From mundane complaints of patients making telehealth visits while shopping (Lin, 2020) to annoying technical glitches to more serious system-wide issue such as cyberattacks (Kaiser Health News, 2020) and fraudulent use, as well as the considerable financial investments needed to implement telehealth, the pivot to telehealth did not escape some criticism and challenges.

Efforts to implement telehealth are not new, of course, and have been around for years, especially related to the potential benefit in rural areas. Telehealth can be a solution for transportation issues, for the limited access to specialty care, for the closing of rural practices and hospitals, and for the dwindling rural health care workforce.

There are provider-facing models, designed to assist rural medical staff. Others are patient-facing, offering synchronous and asynchronous physical and behavioral health services.

For example, projects have looked to telehealth to help close health care access gaps due to hospital closures in rural areas (Kaiser Health News, 2019), to assist with the provision of prenatal care (Rural Health Information Hub, 2019a) for women who otherwise

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would have to travel hundreds of miles to the nearest maternal health provider, to improve medication-assisted treatment access to those suffering from opioid use disorder, to enable remote monitoring of patients in their homes (Rural Health Information Hub, 2019b), and even to assist with critical care management inside short-staffed rural hospitals and intensive care units (Agency for Healthcare Research and Quality, 2014).

A few model programs have shown promise, such as the Extension for Community Healthcare Outcomes (ECHO) model that originated in New Mexico and that leverages teleconferencing technology to allow specialists to mentor primary care providers in rural areas (Robert Wood Johnson Foundation, n.d.). In addition, the Veterans Health Administration Office of Rural Health implements tech-forward programs, such as Teleprimary Care Hubs and Telerehabilitation, to deliver care to rural Americans (Veterans Health Administration, 2019).

Adoption and implementation, however, are challenged by what is known as the “digital divide” (Mullangi et al., 2019; Ramsetty & Adams, 2020). The digital divide refers to difficulty by certain populations to use the Internet. It is related to the availability of and access to the hardware required to engage in activities like telehealth, such as computers, laptops, tablets, and smartphones. It is also related to the availability of and access to technology and infrastructure that enable cyber engagement: electricity, Wi-Fi, and high-speed Internet connections (Perrin, 2019; Perrin & Duggan, 2015).

Communities that have been most affected by the digital divide include women, the elderly, people with disabilities, poor people, people of color, immigrants, those with low-tech literacy, and, of course, those who live in rural areas (Drake et al., 2019; Perrin, 2019).

What remains one of the greatest challenges to overcome is the broadband infrastructure (Drake et al., 2019). According to the Federal Communications Commission, 22% of Americans in rural areas and 28% of Americans in tribal lands lack broadband coverage—as opposed to 1.5% of Americans in urban areas,

a gap that has narrowed since 2015 (Federal Communications Commission, 2016).

So what needs to happen to make telehealth succeed and to close service and outcome gaps in rural America?

Technology and infrastructure are key. Nothing will happen without, first and foremost, the creation of a robust and effective broadband infrastructure in rural America. There is also a need to design, invest in, purchase, and install devices and software to enable communication and remote monitoring in rural practices. We must ensure sufficient funding to rural practices to purchase and implement the technology necessary to provide quality telehealth services. Some funding mechanisms exist, but they are very limited (Universal Service Administrative Company, n.d.; U.S. Department of Agriculture, n.d.).

From a regulatory perspective, efforts are already underway to ensure reimbursement for telehealth services for remote patient monitoring, to have the Centers for Medicare & Medicaid Services make reimbursement even more flexible (Mensik, 2020; Wicklund, 2020) so that teams of providers can build their patient interactions around real time and even certain asynchronous telehealth services, to allow for reimbursement for annual wellness visits and checkup visits to be provided to beneficiaries in their home through telehealth, to amend licensure for telehealth programs, and to support for interventions such as the Interstate Medical Licensure Compact, which seeks to overcome licensure barriers by creating a reciprocity framework that allows health professionals to deliver telehealth care in different states (Interstate Medical Licensure Compact, n.d.).

Continued outcome-based research is also critical. Federal and state governments must continue to launch programs that evaluate model telehealth interventions and technology that enable rural clinicians and hospitals to connect with health care experts and specialists that can deliver high-quality care to medically complex patients with urgent needs and to increase the capacity of rural providers to provide care in their communities.

Finally, technology and regulations aside, it is critical that we look at this issue through a health equity lens and address telehealth success not only from the technological standpoint, or the regulatory perspective, but also through efforts to close the digital divide and support vulnerable population with telehealth adoption (Antonio & Petrovskaya, 2019; Brewer et al., 2020; Mullangi et al., 2019).

This will require efforts to expand tech-literacy training to vulnerable populations on the use of the hardware (computers, mobile devices, smartphones), as well as how to effectively use the Internet and troubleshoot. With nearly one-third (29%) of rural residents not having a smartphone (Pew Research Cen-

ter, 2019), it will require funds to help rural patients acquire smartphones or programs for the purchase, donation, or exchange of devices that enable telehealth in patients' homes. Involving representatives from target populations in all stages of development, including in a process of technological "co-design," will be crucial to ensure usability, patient-centered care, and a higher likelihood for adoption (Morrison, 2019).

Beyond health care, in a world where these 21st-century skills, the hardware, and the technology are needed for schooling, e-commerce, e-business, worshipping, and social engagement, such interventions may help address the social determinants of health in general and reduce inequities all around.

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## REFERENCES

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- Agency for Healthcare Research and Quality. (2014). Clinicians in tertiary hospital monitor critical care patients in rural facilities via telemedicine, leading to reductions in mortality, length of stay, patient transfers, and costs. *AHRQ Health Care Innovations Exchange*. Retrieved from <https://innovations.ahrq.gov/profiles/clinicians-tertiary-hospital-monitor-critical-care-patients-rural-facilities-telemedicine>
- American Medical Association. (2020). *CARES Act: AMA COVID-19 pandemic telehealth fact sheet*. Chicago, IL: American Medical Association. Retrieved from <https://www.ama-assn.org/delivering-care/public-health/cares-act-ama-covid-19-pandemic-telehealth-fact-sheet>
- Antonio, M. G., & Petrovskaya, O. (2019). Towards developing an eHealth equity conceptual framework. *Studies in Health Technology and Informatics*, 257, 24–30.
- Augenstein, J. (2020, March 16). Opportunities to expand telehealth use amid the coronavirus pandemic. *Health Affairs*. Retrieved from <https://www.healthaffairs.org/doi/10.1377/hblog20200315.319008/full>
- Brewer, L. C., Fortuna, K. L., Jones, C., Walker, R., Hayes, S. N., Patten, C. A., & Cooper, L. A. (2020). Back to the future: Achieving health equity through health informatics and digital health. *JMIR MHealth and UHealth*, 8(1), e14512. doi:10.2196/14512
- Cubanski, J. (2020). *Possibilities and limits of telehealth for older adults during the COVID-19 emergency*. Menlo Park, CA: Kaiser Family Foundation. Retrieved from <https://www.kff.org/coronavirus-policy-watch/possibilities-and-limits-of-telehealth-for-older-adults-during-the-covid-19-emergency>
- Drake, C., Zhang, Y., Chaiyachati, K. H., & Polsky, D. (2019). The limitations of poor broadband Internet access for telemedicine use in rural America: An observational study. *Annals of Internal Medicine*, 171(5), 382–384. doi:10.7326/M19-0283
- Federal Communications Commission. (2016, March 18). *Mapping broadband health in America*. Washington, DC: Federal Communications Commission. Retrieved from <https://www.fcc.gov/health/maps>
- Gray, D. M., Joseph, J. J., & Olayiwola, J. N. (2020). Strategies for digital care of vulnerable patients in a COVID-19 world—Keeping in touch. *JAMA Health Forum*, 1(6), e200734. doi:10.1001/jamahealthforum.2020.0734
- Interstate Medical Licensure Compact. (n.d.). *Interstate Medical Licensure Compact* home page. Retrieved June 22, 2020, from <https://www.imlcc.org/>
- Kaiser Health News. (2019, July 8). As rural hospitals continue to close, patients are turning to telehealth for desperately needed care. *Kaiser Health News*. Retrieved from <https://khn.org/morning-breakout/as-rural-hospitals-continue-to-close-patients-are-turning-to-telehealth-for-desperately-needed-care>
- Kaiser Health News. (2020, May 8). Health tech roundup: Will new rules expanding telehealth be permanent? Cyberattacks hack for COVID-19 data. *Kaiser Health News*. Retrieved from <https://khn.org/morning-breakout/health-tech-roundup-will-new-rules-expanding-telehealth-be-permanent-cyberattacks-hack-for-covid-19-data/>
- Lin, K. (2020, May 20). Telemedicine tales: Let's reschedule when you're not shopping. *Medscape*. Retrieved from <http://www.medscape.com/viewarticle/930716>

- Mensik, H. (2020, May 1). *CMS rolls back more Medicare, telehealth regs for providers working through pandemic*. Washington, DC: Healthcare Dive. Retrieved from <https://www.healthcarediver.com/news/CMS-second-round-COVID-rollbacks/577199>
- Morrison, C. (2019, May 9). *Technology isn't enough: Co-designing patient-centered telehealth*. Boston, MA: Institute for Healthcare Improvement. Retrieved from <http://www.ihl.org/communities/blogs/technology-isnt-enough-co-designing-patient-centered-telehealth>
- Mullangi, S., Kaushal, R., & Ibrahim, S. A. (2019). Equity in the age of health care information technology and innovation: Addressing the digital divide. *Medical Care*, 57, S106–S107. doi:10.1097/MLR.0000000000001033
- OSF HealthCare. (2020, April 28). *On the street with an OSF pandemic health worker*. Peoria, IL: OSF HealthCare. Retrieved from <https://newsroom.osfhealthcare.org/on-the-street-with-an-osf-pandemic-health-worker/>
- Perrin, A. (2019, May 31). *Digital gap between rural and nonrural America persists*. Washington, DC: Pew Research Center. Retrieved from <https://www.pewresearch.org/fact-tank/2019/05/31/digital-gap-between-rural-and-nonrural-america-persists>
- Perrin, A., & Duggan, M. (2015, June 26). Americans Internet access: Percent of adults 2000-2015. *Pew Research Center: Internet, Science & Tech*. Retrieved from <https://www.pewresearch.org/internet/2015/06/26/americans-internet-access-2000-2015/>
- Pew Research Center. (2019, June 12). Demographics of mobile device ownership and adoption in the United States. *Pew Research Center: Internet, Science & Tech*. Retrieved from <https://www.pewresearch.org/internet/fact-sheet/mobile/>
- Ramsetty, A., & Adams, C. (2020). Impact of the digital divide in the age of COVID-19. *Journal of the American Medical Informatics Association*. doi:10.1093/jamia/ocaa078
- Robert Wood Johnson Foundation. (n.d.). *Project ECHO: A national telehealth model for rural care*. Princeton, NJ: Robert Wood Johnson Foundation. Retrieved June 22, 2020, from <https://www.rwjf.org/en/how-we-work/grants-explorer/featured-programs/project-echo.html>
- Rural Health Information Hub. (2019a, November 8). *Rural Project summary: UAMS IDHI high risk pregnancy program*. Retrieved from <https://www.ruralhealthinfo.org/project-examples/681>
- Rural Health Information Hub. (2019b, December 23). *Rural Project summary: Bridges to care transitions—Remote home monitoring and chronic disease self-management*. Retrieved from <https://www.ruralhealthinfo.org/project-examples/1016>
- The Larry A. Green Center. (2020). *COVID-19 patient primary care survey: Series 2 fielded May 22-25, 2020*. Retrieved from <https://static1.squarespace.com/static/5d7ff8184cf0e01e4566cb02/v/5ed8d0aee466db36472145a3/1591267502699/C19+Patient+Series+2+National+Summary+with+comments.pdf>
- Universal Service Administrative Company. (n.d.). *Getting started: Choosing which RHC program is right for you*. Washington, DC: Universal Service Administrative Company. Retrieved June 22, 2020, from <https://www.usac.org/rural-health-care/get-started>
- U.S. Department of Agriculture. (n.d.). *Community facilities direct loan & grant program*. Washington, DC: U.S. Department of Agriculture Rural Development. Retrieved June 22, 2020, from <https://www.rd.usda.gov/programs-services/community-facilities-direct-loan-grant-program>
- Veterans Health Administration. (2019, March). *Telehealth fact sheet*. Washington, DC: Veterans Health Administration Office of Rural Health. Retrieved from [https://www.ruralhealth.va.gov/docs/ORH\\_Telehealth\\_Fact\\_Sheet.pdf](https://www.ruralhealth.va.gov/docs/ORH_Telehealth_Fact_Sheet.pdf)
- Wicklund, E. (2020, May 1). *CMS expands COVID-19 telehealth reimbursement to therapists, phone services*. Danvers, MA: MHealthIntelligence. Retrieved from <https://mhealthintelligence.com/news/cms-expands-covid-19-telehealth-reimbursement-to-therapists-phone-services>