



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.

## Health Equity and Telemedicine in Gastroenterology and Hepatology



Kara Wegermann,<sup>\*</sup> Yuval Patel,<sup>\*</sup> and Julius Wilder<sup>\*,‡</sup>

<sup>\*</sup>Division of Gastroenterology, Department of Medicine, Duke University School of Medicine, Durham, North Carolina;

<sup>‡</sup>Duke Clinical Research Institute, Durham, North Carolina

The coronavirus disease 2019 (COVID-19) pandemic created an unprecedented challenge for providers in gastroenterology (GI) and hepatology. The World Health Organization declared COVID-19 a pandemic in March 2020, abruptly changing the entire landscape of health care for gastroenterology and hepatology. The COVID-19 pandemic resulted in lockdowns and adoption of social distancing, which reduced access to care. Liver clinic visits decreased significantly.<sup>1</sup> Most concerning, this reduction was seen even among those with advanced liver disease (cirrhosis) and hepatocellular carcinoma.<sup>1</sup> Similar reductions in use of ultrasound and magnetic resonance imaging occurred.<sup>1</sup>

### Implementation of Telemedicine

To adapt to the pandemic, most of health care moved toward the use of telemedicine, defined broadly as the use of technology to provide care. Telemedicine is beneficial for reaching certain rural communities, reducing costs, ensuring patient follow-up evaluation, and even improving metrics such as time to waitlist for transplant candidates.<sup>2</sup> Before the COVID-19 pandemic, the use of telemedicine in GI and hepatology was rather sparse. Telemedicine infrastructure for medical centers was not fully developed and its use was primarily for specific disease management protocols such as hepatitis C treatment.<sup>3</sup> A major barrier to telemedicine uptake in medicine broadly has been reimbursement.<sup>4,5</sup> Before the COVID-19 pandemic, reimbursement made investment in telemedicine infrastructure untenable for private practices and academic health centers because of the cost to create the infrastructure necessary to implement it compared with the low reimbursement rates. However, in the midst of the pandemic, the Centers for Medicare and Medicaid Services increased reimbursement, including telephone visits being reimbursed at the same rate as televideo visits. These changes combined with the need to provide care for patients in the midst of the COVID-19 pandemic compelled health systems and providers to adopt telemedicine. The response was significant across the health care spectrum, with telemedicine being

embraced by providers in GI and hepatology at reported rates greater than 90%.<sup>6</sup> This included both academic medical centers and private practices.

### Disparities in Internet Access and Telemedicine

Although telemedicine does provide a valuable tool for engaging patients and providing care when barriers to in-clinic visits exist, there are significant challenges in its use, particularly when considering populations that are more vulnerable. These challenges are related to social determinants of health such as race, ethnicity, and socioeconomic status, and potentially can exacerbate health disparities that already exist. One disparity of particular relevance is access to the internet, a necessary component to take advantage of telemedicine. Although trends in internet access disparity within the United States have improved over the past 5 years, significant disparities persist including age, sex, race, ethnicity, income, and education.<sup>7</sup> Simply having internet access does not equate to being able to engage in telemedicine. There is also significant heterogeneity with respect to the bandwidth and speed of internet. Hence, even when individuals have internet access, the quality of their internet access can be quite variable, precluding them from being able to successfully engage in a televideo clinic visit.<sup>7</sup>

The COVID-19 pandemic worsened known barriers to internet access. For example, socioeconomic status has long been known to be a major reason for disparities in internet access. The introduction of cell phone technology has improved access across levels of socioeconomic status, but cost remains a primary reason for disparities in internet access.<sup>7</sup> The COVID-19 recession has negatively

**Abbreviations used in this paper:** COVID-19, coronavirus disease 2019; GI, gastroenterology.

Most current article

© 2021 by the AGA Institute  
1542-3565/\$36.00

<https://doi.org/10.1016/j.cgh.2021.04.024>

impacted job growth and income. These negative economic trends, combined with job loss and decreased wages, means more individuals are unable to afford the cost of internet, and more people are at risk of losing internet access or having interruption of internet services.

Disparities in telemedicine engagement already have been shown in GI and hepatology. Across types of GI outpatient clinics, black patients and patients older than age 60 years are much more likely to rely on telephone visits and significantly less likely to engage in the use of online portals for telemedicine.<sup>5</sup> Telemedicine engagement in hepatology clinics has been shown to be impacted by multiple social determinants of health according to a recent study by our group. We found that increasing age was associated with a telephone visit or no visit vs a televideo visit. Furthermore, black race was associated with nearly twice the odds of completing a telephone visit instead of a video visit, compared with non-Hispanic whites. Insurance status also was important. Medicaid and Medicare were associated with increased odds of completing a telephone visit compared with private insurance. Having Medicaid as primary insurance also was associated with increased odds of incomplete visits.<sup>5</sup>

Reduced uptake of telemedicine and specifically televideo in minority and poor populations is concerning for a number of reasons. First, the use of televideo (as opposed to telephone) is recognized as an important telehealth tool to build rapport, and can be extremely helpful when assessing the physical well-being of a patient visually.<sup>5</sup> Second, the COVID-19 pandemic has impacted people of color and of lower socioeconomic status disproportionately.<sup>5,8</sup> This is a group known to be at greatest risk of chronic disease and related adverse outcomes in GI and hepatology.<sup>8,9</sup> Finally, not only are minorities at greatest risk of contracting COVID-19, but baseline disparities in GI and hepatology are exacerbated when these same patients contract COVID-19. During the pandemic, hospitalizations and deaths for black patients have been higher compared with non-Hispanic whites among patients with chronic liver disease. Among patients with chronic liver disease who become infected with COVID-19, racial disparities with respect to hospitalizations and deaths are even worse. Therefore, the group most likely to contract COVID-19 and have negative outcomes related to their chronic liver disease are the very ones least likely to benefit from a tool created to navigate the barriers to care during the COVID-19 pandemic.<sup>10</sup>

## Health Equity in Telemedicine

Moving forward, even after the pandemic is over, telemedicine will be an established tool for providing

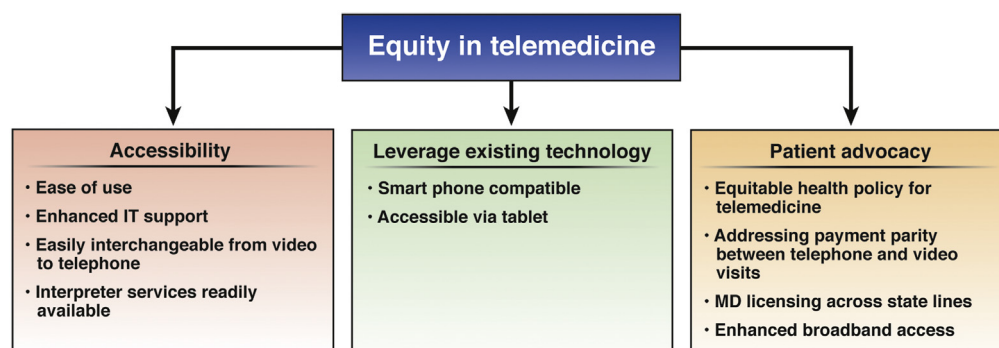
care to GI and hepatology patients. Health care providers must consider how to overcome barriers such as internet access, which contribute to disparities in telemedicine. Failing to address these social determinants of health creates differential access to this valuable health resource, potentially exacerbating established health disparities. It is important to emphasize that equity does not mean everyone gets the same, equity means everyone receives the services and resources needed to ensure they have access to the same quality health care. Often, this means prioritizing those communities most in need. When providers, health systems, and communities do this, telemedicine can be leveraged as a tool for addressing disparities in health care. To achieve health equity, health systems and providers must build an infrastructure to support telemedicine services for vulnerable populations, leverage cell phone technology for televideo visits, and advocate for telehealth policy that enhances access.

For one, health systems must build an infrastructure for telemedicine that is accessible for everyone (Figure 1). The telemedicine platform should be seamless and intuitive. Although privacy is important, the process of ensuring a secure connection must not be so complicated that logging in becomes prohibitively cumbersome. To ensure a successful telemedicine visit, information technology support should be available to help patients during the log-on process as well as provide support to navigate technical issues that may arise during the telemedicine visit. The telemedicine infrastructure also must allow for easy transitioning to a telephone/cell phone visit if video fails because of internet capability. This will help avoid incomplete visits resulting from internet bandwidth issues that are more likely to occur with video. Interpreter services also should be integrated into the telemedicine infrastructure so that non-English speakers are able to engage in telemedicine visits.

Second, infrastructure for telehealth must include an interface that works with smart phones (Figure 1). Cell phone technology has revolutionized how we engage the internet. Smart phones have become ubiquitous tools for communication. Such a design not only increases the ways through which individuals can engage in telemedicine, but it also allows for one to do so whether they are at home or at work. Instead of having to decide whether they will miss work for an appointment, a patient could take a break at work to do their telemedicine visit. Here, smart phone technology bridges the digital divide and addresses a known barrier to many vulnerable populations: making it to their scheduled clinic visits.

Third, we must focus resources on patient advocacy (Figure 1). The COVID-19 pandemic forced insurers as

# PRACTICE MANAGEMENT: THE ROAD AHEAD, *continued*



**Figure 1.** Achieving health equity in telemedicine will require investment in accessibility, technology, and advocacy. IT, information technology.

well as health systems to make the changes necessary for telemedicine given the constraints amidst the quarantine. However, because telemedicine will be an important part of health care services moving forward, health systems and providers must collaborate with medical societies, patient advocacy groups, and health insurers to create health policy that supports telemedicine and ensures it is available for all. This begins with guaranteeing reimbursement for telemedicine by health insurers at a level that incentivizes health systems and private practices to invest in their telemedicine infrastructure. Furthermore, there should be payment parity between telephone and video visits. Many populations, especially those that are more socially vulnerable, may be capable of only telephone visits, and lower reimbursement rates create a disincentive for providers to offer this as an option for telemedicine. Another key advocacy goal is to amend health care laws concerning the practice of telemedicine across state lines. Because of the pandemic, many states enacted medical licensing laws allowing the use of Zoom (Zoom video Communications, San Jose, CA), FaceTime (Apple Inc, Cupertino, CA), and other applications for providers to offer telemedicine services including out-of-state providers with valid medical licenses in other states. Given the ongoing pandemic, these laws must remain to ensure patients who travel long distances, often for specialty care in GI and hepatology, are able to continue receiving their care via telemedicine throughout the pandemic. After the pandemic, creative ways to support these services in the future across state lines will need to be devised. Finally, advocacy involves engaging local and state health departments and government to identify gaps in internet and broadband access among the communities we serve. Here, the intersection of decreased services and increased social vulnerability should be emphasized so local government resources to improve internet and broadband access can prioritize these communities.

## Conclusions

Telemedicine is a valuable tool that has allowed us to continue to provide care for patients in GI and hepatology despite the constraints of the COVID-19 pandemic. Although it has clear benefit, there are barriers to many populations engaging in telemedicine, whether it be telephone or video-based. Given that telemedicine will remain a standard means of providing care for patients even after the pandemic ends, we must ensure that, as providers, we do all we can so that all populations can take advantage of this technology. This includes building a strong infrastructure for telemedicine, leveraging smart phone technology, and patient advocacy in telemedicine. These are vital steps to ensuring equity in telemedicine.

## References

1. Toyoda H, Huang DQ, Le MH, et al. Liver care and surveillance: the global impact of the COVID-19 pandemic. *Hepatol Commun* 2020;4:1751–1757.
2. John BV, Love E, Dahman B, et al. Use of telehealth expedites evaluation and listing of patients referred for liver transplantation. *Clin Gastroenterol Hepatol* 2020;18:1822–1830 e1824.
3. Serper M, Volk ML. Current and future applications of telemedicine to optimize the delivery of care in chronic liver disease. *Clin Gastroenterol Hepatol* 2018;16:157–161 e158.
4. Fix OK, Serper M. Telemedicine and telehepatology during the COVID-19 pandemic. *Clin Liver Dis (Hoboken)* 2020; 15:187–190.
5. Wegermann K, Wilder JM, Parish A, et al. Racial and socioeconomic disparities in utilization of telehealth in patients with liver disease during COVID-19. *Dig Dis Sci* 2021 Jan 28;1–7.
6. Keihanian T, Sharma P, Goyal J, et al. Telehealth utilization in gastroenterology clinics amid the COVID-19 pandemic: impact on clinical practice and gastroenterology training. *Gastroenterology* 2020;159:1598–1601.

# PRACTICE MANAGEMENT: THE ROAD AHEAD, *continued*

7. Greenberg-Worisek AJ, Kurani S, Finney Rutten LJ, et al. Tracking healthy people 2020 internet, broadband, and mobile device access goals: an update using data from the Health Information National Trends Survey. *J Med Internet Res* 2019;21:e13300.
8. Wilder JM. The disproportionate impact of COVID-19 on racial and ethnic minorities in the United States. *Clin Infect Dis* 2021; 72:707–709.
9. Kardashian A, Wilder J, Terrault NA, et al. Addressing social determinants of liver disease during the COVID-19 pandemic and beyond: a call to action. *Hepatology* 2021;73:811–820.
10. Wang Q, Davis, Pamela B, et al. COVID-19 risk, disparities and outcomes in patients with chronic liverdisease in the United States. *EClinicalMedicine* 2021;31:100688.

---

**Reprint requests**

Address requests for reprints to: Julius Wilder, MD, PhD, Duke Clinical Research Institute, 200 Morris Street, Durham, North Carolina 27701. e-mail: [Julius.wilder@duke.edu](mailto:Julius.wilder@duke.edu); fax: (919) 668-7164.

**Conflicts of interest**

The authors disclose no conflicts.