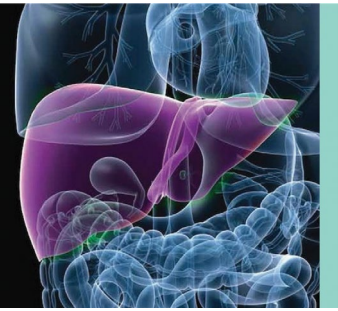


# Telemedicine and Telehepatology During the COVID-19 Pandemic

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Telemedicine has always had the potential to improve access and reduce the costs of health care. Because of the coronavirus disease 2019 (COVID-19) pandemic, telemedicine has now become a critical way to deliver clinical care.<sup>1</sup> Early in the pandemic, the Centers for Disease Control and Prevention (CDC) recommended that ambulatory facilities delay elective visits to mitigate SARS-CoV-2 transmission among patients and health care workers.<sup>2</sup> Hospitals and health systems across the United States appropriately canceled nonurgent clinic visits and procedures, which led to a sudden and urgent need to shift to alternative health care delivery models for triage, assessment, and patient care.<sup>2</sup> Telemedicine, which includes office visits and other medical services provided at a distance using interactive two-way telecommunications systems (i.e., real-time audio and video),<sup>3</sup> has the potential to limit the exposure of patients and health care workers to the clinic environment, help preserve the limited supply of personal protective equipment (PPE), and reduce the backlog of deferred patient care resulting from the COVID-19 pandemic response. In

turn, this may mitigate the risks for decompensation, morbidity, and loss to follow-up that could result from delayed care for patients with liver disease.<sup>4</sup> A few prescient hospital systems had already implemented telemedicine programs prior to the pandemic, but the vast majority had not, due in large part to federal and state regulatory and reimbursement limitations.

There are many reasons why telemedicine had not gained a foothold in the United States prior to the COVID-19 pandemic. The Centers for Medicare and Medicaid Services (CMS) places substantial barriers to the use of telemedicine by restricting it to patients who reside in rural areas and who must travel to a local medical facility (e.g., doctor's office, hospital, dialysis facility, or skilled nursing facility) to receive telemedicine services from a doctor in a remote location.<sup>3</sup> Most private payers cover some telemedicine services, and many states have enacted parity laws that require private payers to reimburse the same amount for telemedicine services as analogous in-person services. In many cases, however, reimbursement for telemedicine

Abbreviations: CDC, Centers for Disease Control and Prevention; CMS, Centers for Medicare and Medicaid Services; COVID-19, coronavirus disease 2019; HIPAA, Health Insurance Portability and Accountability Act; PPE, personal protective equipment.

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services is lower than in-person services. In addition to the regulatory and reimbursement issues, implementation of telemedicine is limited by technology requirements, such as Health Insurance Portability and Accountability Act (HIPAA)-compliant audiovisual equipment. As a result, telemedicine adoption has been slow.

US lawmakers recognized the critical need to remove barriers to telemedicine care during the COVID-19 crisis. The Coronavirus Preparedness and Response Supplemental Appropriations Act (H.R. 6074) was signed into law on March 6, 2020, and provides a temporary waiver of many of the CMS restrictions and requirements regarding telemedicine services during the COVID-19 public health emergency.<sup>5</sup> Specifically, the bill waives the rural area requirement and the originating site restrictions, allowing the patient to be located anywhere, including their home, and telemedicine services will be paid at the same amount as in-person services. On March 17, 2020, the Health and Human Services Office of Civil Rights announced that it would not impose penalties for the good faith provision of telemedicine during the COVID-19 public health emergency, even if the technologies used may not fully comply with HIPAA requirements.<sup>6</sup> Recently, on April 30, 2020, the CMS announced it would temporarily increase payments for telephone visits to match in-person and video visits.<sup>7</sup> Barriers to interstate licensure have largely been lifted. Most states have temporarily waived interstate licensure requirements, whereas others have enabled rapid provision of medical licensure during the current public health emergency.

When these barriers to telemedicine were removed, providers, hospitals, and health systems rapidly embraced telemedicine or scaled up existing programs to meet the sudden demand for remote, synchronous patient care. As a result, there has been a sudden and substantial increase in telemedicine visits for urgent and nonurgent ambulatory care both related and unrelated to COVID-19, and patient satisfaction for telemedicine care has been consistently high.<sup>8</sup>

The CDC identifies patients with liver disease and immunosuppressed patients to be at higher risk for severe COVID-19.<sup>9</sup> It is therefore imperative that we minimize exposure of patients with liver disease and liver transplant recipients to the health care environment. “Telehepatology,” or telemedicine for advanced liver disease, has the potential to facilitate care of this vulnerable population during this critical time.<sup>10</sup>

Despite its promise, telehepatology is not a panacea. Some patients with new physical symptoms or recent hepatic decompensation are best evaluated in person but may avoid seeking medical care due to social distancing policies or concerns about exposure to COVID-19 in the health care setting. Patients in need of liver transplantation may be challenging to evaluate because of the need for physical examination, frailty assessment, building rapport, and observing interactions among family members and other caregivers. It is difficult to initiate a potentially lifelong provider-patient relationship via video. In the nontransplant setting, telemedicine may be challenging for new patients without an established patient-provider bond or who require discussions about serious illness or end-of-life conversations. More prospective data are needed in these settings.

In contrast, telehepatology for liver transplant evaluations may present an opportunity to more efficiently triage patients and expedite the time from referral to evaluation and listing.<sup>11</sup> It can more readily identify patients with psychosocial or other barriers to transplantation and prevent futile evaluations<sup>12</sup> (Table 1). The innovative use of telehepatology could allow some transplant evaluations to occur on-site while limiting the proximity of physicians and other team members to patients, a concept coined by our emergency medicine colleagues as “electronic PPE.”<sup>13</sup> For established patients without fibrosis, with stable chronic liver disease (e.g., viral hepatitis, metabolic-associated fatty liver disease), or with benign liver lesions, for example, telemedicine can add convenience and efficiency. For established patients with decompensated liver disease,

**TABLE 1. PROS AND CONS OF TELEHEPATOLOGY FOR LIVER TRANSPLANT EVALUATION**

| Pros   | Cons  |
|--|---|
| <ul style="list-style-type: none"> <li>• Limit exposure of patients and health care workers to SARS-CoV-2</li> <li>• Preserve PPE</li> <li>• Efficiently triage patients in need of urgent in-person evaluation</li> <li>• Expedite time from referral to evaluation and listing</li> <li>• Identify barriers to transplantation and avoid futile evaluations</li> </ul> | <ul style="list-style-type: none"> <li>• Difficult to build rapport and initiate a potentially lifelong provider-patient relationship</li> <li>• Limited physical examination (e.g., signs of decompensation, assessment of frailty)</li> <li>• Difficult to observe interactions among family members and other caregivers</li> <li>• Not suitable for all patients (e.g., very ill, difficulty with the technology or technology not available)</li> <li>• Uncertain feasibility/sustainability following COVID-19 public health emergency</li> </ul> |

telemedicine can offer rapid evaluation and avoid the need for an in-person appointment when, for example, adjusting diuretics or medications for hepatic encephalopathy. Caregivers may also be more readily available to join telemedicine visits rather than take time away from work and other duties. An example of telehepatology workflow is illustrated in Fig. 1.

As incident cases of COVID-19 decrease, we will need to adopt a gradual, stepwise approach to the “reentry” process as we start to move clinical activities toward a prepandemic state. We must continue to limit in-person patient care where it is appropriate to avoid a “second wave” of SARS-CoV-2 transmission. Even when in-person clinic visits and procedures are an option for most patients, many will still prefer telemedicine alternatives to in-person care partly out of fear of coming to the clinic or hospital.<sup>4</sup> Patients will largely dictate when they are ready to return to “business as usual,” and telemedicine will continue to be an important part of getting us there.

As we look to a future beyond the COVID-19 pandemic, we have an opportunity to consider telemedicine’s place in the routine delivery of patient care. Telemedicine has the potential to improve patient care and satisfaction, and improve the way we evaluate patients for transplantation; it need not only serve its current purpose as a temporary solution during a crisis. There are many problems

other than COVID-19 that may be solved by telemedicine, including disparities in quality and access to health care in both urban and rural areas and the escalating cost of health care.<sup>14</sup> Rather than force most patients and providers into a remote care delivery model, as we have had to do during the pandemic, we can strategically use telemedicine for both triage and routine care where it is most appropriate.

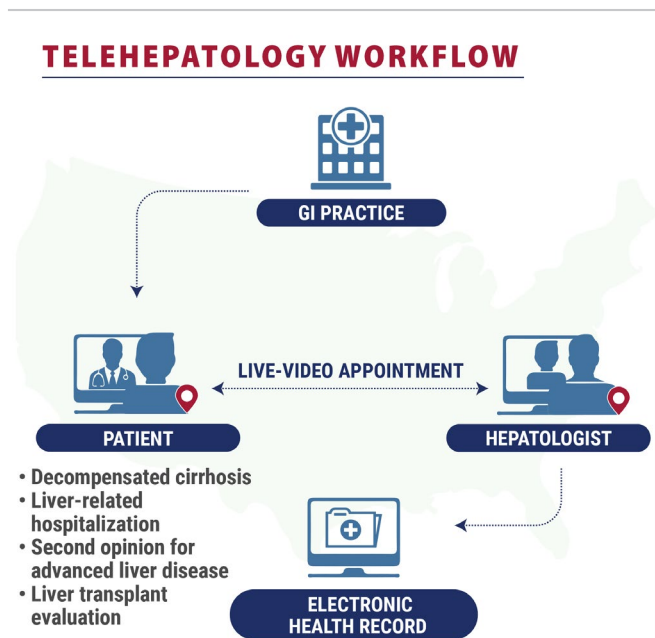
Our patients have much to gain from the widespread adoption of telemedicine during the COVID-19 pandemic and beyond. Patients are already embracing this mode of care delivery. For our part as health care professionals, we will need to learn how to more efficiently integrate telemedicine as one option in our routine care.<sup>14</sup> We will need to learn new skills for conducting telemedicine visits and develop programs to educate and mentor colleagues and trainees.<sup>8</sup> We need to implement and study care pathways for different patient populations and determine what is the right patient phenotype and “dose” of telemedicine to optimize convenience, efficiency, and patient-centeredness without compromising clinical care. These answers will undoubtedly vary because of payment strategies, patient preferences, geography, local resources, and provider acceptance, among other factors. For telemedicine to remain viable in the future, we need to advocate for legislative reform at the federal and state levels to preserve many of the current waivers that permit telemedicine services. These changes will need to be thoughtfully considered and implemented in a way that is financially sustainable and maximizes patient safety and privacy. There is reason to hope that this is possible. While the world is ravaged by COVID-19, perhaps one desirable lasting effect may be the fulfillment of the promise of telemedicine.

## CORRESPONDENCE

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**FIG 1** Example of telehepatology workflow. Courtesy Thelmeis Abreu.

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