The Effects of COVID-19 on Telemedicine Could Outlive the Virus

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The coronavirus disease 2019 (COVID-19) pandemic has forced rapid and sweeping changes upon the US health care system. In response to the public health threat posed by COVID-19, several key government actions have impacted health care delivery. On March 13, 2020, the same day the president declared a national emergency,[1] the Centers for Medicare and Medicaid Services (CMS) issued a press release[2] emphasizing the agency would "aggressively" respond to the COVID-19 pandemic. On March 17, the CMS announced expanded coverage and payment[3] for virtual health services defined as:

> "Telehealth, telemedicine, and related terms generally refer to the exchange of medical information from one site to another through electronic communication to improve a patient's health."[3]

The intent of expanded telemedicine coverage is to limit spread of COVID-19 by reducing in-person contact between health care workers and patients. Under the new CMS directive,[3] telehealth services are paid at the same rate as in-person visits. Practitioners authorized to receive payments for expanded telemedicine services include physicians, nurse practitioners, physician assistants, nurse midwives, certified nurse anesthetists, clinical psychologists, clinical social workers, registered dietitians, and nutrition professionals.[3] As early as March 20, 2020, the Centers for Disease Control and Prevention recommended using telephonic-based health assessments to reduce spread of the virus in health care facilities.[4] By April 13, 2020, the Centers for Disease Control and Prevention began to actively promote widespread use of telemedicine services.[5,6] However, to ensure regulatory compliance, practitioners should become familiar with the multitude of regulatory changes that have been put into place over a very short period.[7]

The national dissemination of telemedicine services raises an important question: Will we ever go back? In the context of a fully operational telemedicine system, consider the following vignette of a routine clinical visit in the year 2025: During the course of a busy workday, a middle-aged man takes a scheduled 15-minute break. In a private setting, he logs into a triage appointment with a primary care clinician using a secure video app on his smartphone. The history of the present illness is consistent with allergic rhinitis and conservative management is recommended. Although the patient is satisfied with the efficiency of the telemedicine appointment, he knows that an in-person clinical evaluation will not be authorized by his insurance. This is disappointing because he was not comfortable talking about depressive symptoms using the telemedicine format.

Patients may benefit from telemedicine in 2025 in the form of improved access to health care.[8] They will have access to flexible appointment scheduling, time away from work will be avoided, and travel expenses associated with attending in-person appointments will be eliminated. In addition, patients will also benefit from direct cost savings. For example, Pande et al[9] have shown that behavioral health interventions implemented through telemedicine to patients with a recent cardiovascular event resulted in significantly fewer all-cause hospital admissions over a 6-month period and total annual hospital days were reduced. This resulted in overall cost savings even after accounting for total program expenditures.[9]

Telemedicine practitioners in 2025 could also experience a variety of benefits.[10] If the majority of patient encounters occur using a telemedicine format, then the number of support staff needed to manage a clinical practice will decline. Any declines in revenue could be offset by declines in fixed (ie, office space and office utilities) and variable (ie, staff salaries and benefits) costs. As a result, the profitability

of the practice will increase.[11] In addition, clinicians and health care systems will not be limited to serving patients in a defined geographic area; thus, patient catchment areas will expand.

Despite the potential benefits of telemedicine in 2025, widespread deployment could lead to unanticipated challenges.[12] Patient access to telemedicine technology could be a key limiting factor for subgroups of patients including older adults and individuals living in rural areas. Patient satisfaction and the clinician's work satisfaction could decline in the absence of in-person clinical encounters which may be particularly important for the initial visit. Similarly, patient and clinician concerns about cybersecurity could threaten the free exchange of vital information.[13] Over time, a two-tiered health care system could develop where access to in-person care is rationed or associated with high copays. The absence of a physical examination could, under certain circumstances, delay the diagnosis of a serious underlying condition. Finally, until disease- and treatment-specific evidence are available, newly diagnosed serious conditions (ie, cancer and cardiovascular diagnoses) and the initiation of complex treatments (ie, chemotherapy regimens and cardiac surgery) should be communicated in-person.

From a broader perspective, widespread use of telemedicine could impact the future of medical education and the design of clinical work spaces. For example, medical schools[14] and postgraduate medical education training programs[15] are likely to incorporate curricula about how to perform clinical evaluations using telemedicine. These clinical assessments could also incorporate data from the patient's smartphone using apps that assess symptoms over time, and devices that monitor vital signs and activity levels. The clinical office space that future clinicians will be working in could also be transformed by telemedicine.[16] Clinical work spaces will be restructured to optimize telemedicine encounters by immersing clinicians in specially designed work stations where the range of telemedicine technologies are easily assessable and seamlessly integrated into the electronic health record. This is important because telemedicine encounters can be as time-consuming as in-person visits. The immersive work station design could enhance clinician work satisfaction and improve the overall quality of telemedicine care.

Within the context of the COVID-19 pandemic, a lot has been learned about telemedicine in a short period, but many questions about the future of telemedicine, as portrayed in the clinical vignette, remain unanswered. For example, how will telemedicine impact people based on race, age, disability status, sexual orientation, and geolocation? Will telemedicine lead to an increase in capitated health care and accountable care organizations? Will telemedicine be tied to quality control initiatives and affect provider remuneration? Should the adoption of telemedicine be used and included as a quality initiative by CMS?

As noted in an anecdotal communication from an experienced telehealth practitioner:

> "Telemedicine is only a tool. Whether it is [used to conduct] a structured interview…or to monitor changes in vital signs, it is still necessary, even more than with in-person visits, that a competent and caring health care professional is at the other end of the receiving tool."

Although telemedicine cannot solve all clinical care problems or completely substitute in-person visits, the effects of rapid dissemination in response to the COVID-19 pandemic may long outlive the virus.

Abbreviations and Acronyms: **COVID-19** = coronavirus disease 2019; **CMS** = Centers for Medicare and Medicaid Services

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