



## **COVID-19 Crisis: What is the Role of Telehealth?**

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### **Authors' contributions**

*This work was carried out in collaboration between both authors. Author FT managed the literature searches, synthesized the results, and wrote many sections of the manuscript. Author ABS, designed the study, wrote the protocol, participated in literature searches, and wrote many sections of the manuscript. Both authors read and approved the final manuscript.*

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### **ABSTRACT**

**Background:** The adverse outcomes of COVID-19 on the healthcare system has prompted the enactment of social distancing and self-isolation or quarantine to minimize the spread of the contagious virus. The need for social distancing and isolation has made telehealth a game-changer in the war against COVID-19.

**Objectives:** The objectives of this study were: (1) To evaluate the current trends of using telehealth during COVID-19 pandemic, (2) To discuss regulatory and policy changes related to telehealth at the service provider level, (3) To analyze recommendations by professional organizations, and (4) To evaluate challenges and recommendations for best practices.

**Methods:** This is a narrative review. Most current information (focused on the measures that the healthcare system has adopted to integrate telehealth in the coronavirus response measures) was

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obtained from peer-reviewed journals and the website of payers, pharmacies, and professional organizations.

**Results:** Response and management of COVID-19 has seen a surge in the use of telehealth and mobile applications. Health insurance providers have reformed their payer policies to integrate telehealth in COVID-19 response. Waiving premiums, co-pays, and cost-sharing are the most common changes across the industry. For example, Cleveland Clinic has reported a 1,665% increase in the number of telemedicine visits, recording 60,000 visits in March compared to 3,400 before coronavirus. The expansion of telehealth in the era of COVID-19 has presented practical challenges stymying progress.

**Conclusion:** Telehealth is indisputable in promoting social distance, which is a proven public health promotion intervention for curbing the spread of coronavirus.

*Keywords: Coronavirus; COVID; SARS; telehealth; telemedicine; mobile health; social distancing.*

## 1. INTRODUCTION

Coronavirus disease of 2019 (COVID-19) pandemic had a profound effect on the United States (US) healthcare system as the number of infected persons increase. COVID-19 as an infectious disease caused by the novel coronavirus known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) [1]. Although COVID-19 causes mild to moderate symptoms in most of the infected persons, the situation is severe in those underlying medical problems, including cardiovascular disease, diabetes, cancer, and chronic respiratory disease. Inadequate supply of medical personnel and equipment, as well as insufficient hospital beds, exemplify the burden of COVID-19 on the existing healthcare infrastructure [2]. The adverse outcomes of COVID-19 on the US healthcare system has prompted the enactment of social distancing and self-isolation or quarantine to minimize the spread of the contagious virus [3]. The need for social distancing and isolation has made telehealth a game-changer in the war against COVID-19.

Social distancing has been instrumental in curtailing the spread of COVID-19, which brings forward the critical role of telehealth in optimizing care for patients while minimizing exposure and transmission. Telehealth entails the use of digital information and communication technologies (ICTs) to support remote access to healthcare services [4]. Telehealth encompasses the use of computers, smartphones, and other electronic devices to enhance communication between patients and their primary care providers without the constraints of place and time [5]. The defining features of telehealth illustrates how the electronic platform could optimize care while upholding the public health promotion principle isolation and social distancing. Therefore, the

purpose of this paper is to explore the application and contributions of telehealth in the era of coronavirus. The paper will specifically focus on the measures that the US healthcare system has adopted to integrate telehealth in the coronavirus response measures.

## 2. MATERIAL AND METHODS

This is a narrative literature review. We used triangulation methodology to collect the data from multiple sources. The most current information (focused on the changes in the healthcare system to integrate telehealth in the coronavirus response measures) was obtained from peer-reviewed journals, the website of payers, pharmacies, and professional organizations. The keywords used for search include *coronavirus, COVID, SARS, telehealth, telemedicine, mobile health, and social distancing*.

## 3. RESULTS

Healthcare systems have made significant efforts to scale-up the use of telehealth in routine care with limited success in most of the cases. Financial reimbursements, willingness from clinicians, and (re)organization of the healthcare system are prominent factors that have contributed to the slow and fragmented application of telehealth in routine care settings. However, COVID-19 has challenged the status quo by highlighting the invaluable role that telehealth could play in routine care [6]. Therefore, the purpose of the results section is to highlight and explore how healthcare systems and health agencies have responded to the COVID-19 crisis using telehealth.

### 3.1 Current Trends in Telehealth

Response and management of COVID-19 has seen a surge in the use of telehealth and mobile

applications. The World Health Organization (WHO) set the pace by launching the WHO Academy app and the WHO Info app. The WHO Academy app ensures that healthcare professionals have remote access to information about COVID-19, including virtual workshops, training, tools, and guidance on how to manage patients and how healthcare professionals can protect themselves. The app is empowering healthcare professionals across the world to learn and share knowledge about COVID-19 directly. The app also has an imbedded feature that use the phones GPS to provide hyperlocal information for contact tracing [7]. Furthermore, the WHO Info app targets millions of people with timely access to information about latest development and news on COVID-19. The Info app also guides patients through the signs and symptoms of coronavirus, as well as directing them to local testing centers where necessary, feasible or applicable [8].

Moreover, Unacast, a location data start-up company, has developed interactive Social Distancing Scoreboard that empowers organizations assess the effectiveness of social distancing at the local level. The Scoreboard is in response to the Centers for Disease Control and Prevention (CDC) and WHO recommendation on social distancing as the most effective way of curbing the spread of coronavirus [9]. The company tracks mobile signals and interactions to create an index score that compares social distancing at the community level prior and after COVID-19. The Scorecard has an interactive map that shows letter grades to every county and state in the US. The Scorecard is part of the Unacast's new COVID-19 Location Data Toolkit aimed at leveraging mobile phone location data to show COVID-19 patterns and trends [10]. Fig. 1 illustrates the increasing uptake of medically oriented mobile apps among the top-five ranking apps in the US. The figure exemplifies the growing shift in mobile health (mHealth) initiatives to inform the population and prevent the spread of COVID-19.

Health Recovery Solutions (HRS) has introduced first telehealth COVID-Kit that is available for all health care providers. The COVID-Kit has pre-downloaded COVID-19 Clinical Pathways, which include a screening tool, surveys on symptom management, customized education, and clinical best practices on COVID-19 [12]. PatientConnect Mobile application has seen the highest demand because of its ability to reach more people and support them during the COVID-19 crisis. The

mile app is a Bring Your Own Device (BYOD) solution that expands access across the entire patient population [13]. Whoop, a Boston-based fitness tracker maker, has also launched the Cardiogram app to track and monitor the body's response to COVID-19. Cardiogram is a heart health app that allows Apple Watch users to monitor how their body is responding to COVID-19 [14,15]. The emergence of apps specific to COVID-19 underscores the evolving role of telehealth, which has prompted regulatory and policy changes.

### 3.2 Regulatory and Policy Changes

Table 1 shows how health insurance providers have reformed their payer policies to integrate telehealth in COVID-19 response. Waiving premiums, co-pays, and cost-sharing are the most common changes across the industry, as illustrated in Table 1 [16]. Blue Cross Blue Shield policy change has waived cost-sharing for telemedicine across both lockdown and partial reopening states [17]. The Centers for Medicare and Medicaid Services (CMS) has assumed a leading role in promoting the adoption of telehealth. The CMS commenced its efforts by expanding telehealth benefits for Medicare beneficiaries. A sweeping change introduced by CMS entails waiving cost-sharing for telehealth services [18,19]. Regulatory and policy changes endorsed by CMS have had a profound effect on the reimbursement of telehealth services. For example, the CMS has reevaluated payments under the Accelerated and Advance Payment (AAP) Programs, in addition to relaxing requirements for COVID-19 testing [20-22].

Accelerated or advanced payment ensures that providers have access to emergency funding when public health emergencies or disasters disrupt the submission and processing of claims [22]. The CMS regulatory changes have also promoted telemedicine by ensuring flexibility around telehealth services. Notable areas of flexibility include remote supervision of clinical staff by physicians and relaxing prior rules that mandated video conferencing as a condition for reimbursing telehealth visits [18]. Reimbursement for telehealth services now includes telephone calls. The CMS has also issued temporary flexibility around telehealth platforms, including Skype and Face Time. The CMS as expedited payment for the telehealth services [20]. Other policy adjustments include flat-rate payment for both telehealth services and in-person services; increased number of services

covered under telehealth; and cross-state delivery of telehealth services by physicians licensed in one state [21,22].

### 3.3 Changes at the Service Provider Level

Providers of healthcare services across the US adopting and encouraging telehealth. For example, Cleveland Clinic has reported a 1,665% increase in the number of telemedicine visits, recording 60,000 visits in March compared to 3,400 before coronavirus [30]. NYU Langone Health has also reported a 1,700% increase in daily virtual visits, which is a historic rise from 50 daily visits before COVID-19 to 900 daily as of

March 23, 2020 [31]. The Austin Regional Clinic has been conducting virtual visits for 50% of its patients compared to ChenMed's, 90% [30]. These findings reveal two issues. First, the unprecedented policy changes have both expanded access to and promoted telehealth services. The policy changes have also ensured the availability of remote patient monitoring services. Second, the policy changes have the behavior of both patients and physicians, as evidenced by a surge in the use of mobile health apps and solutions, as well as a significant increase in the uptake of telehealth services across the country [32-34].

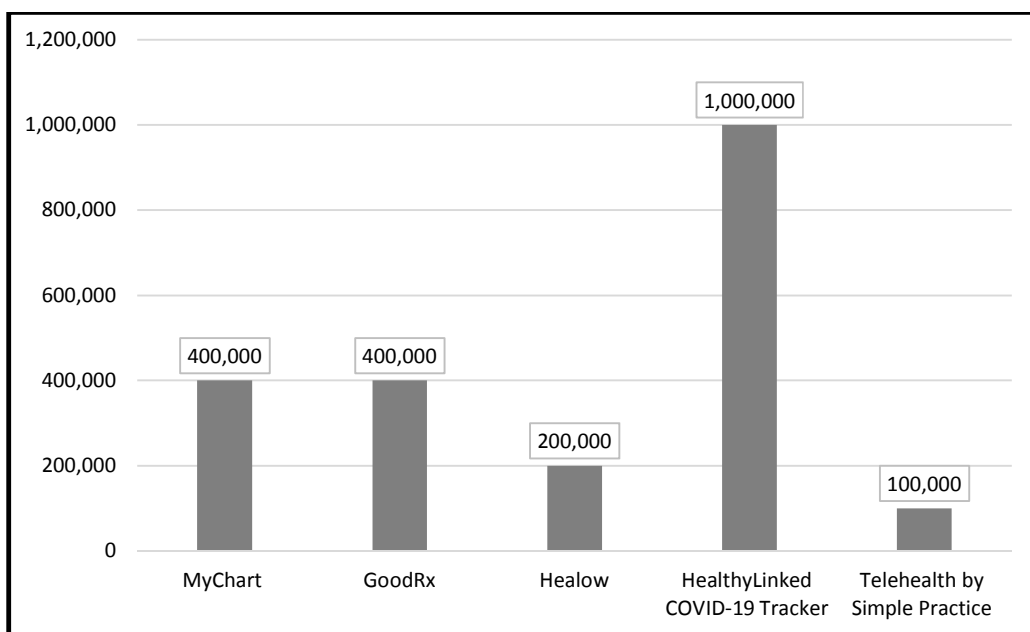


Fig. 1. Number of Downloads for Top-Five Ranking Apps in the US [11].

Table 1. Payer Policy Changes for Telehealth Services (as response to COVID-19 Crisis)

Insurance Provider	Telehealth Policy Change
CMS [23]	Waived cost-sharing for the treatment of COVID-19 in emergency rooms or physician offices, as well as telehealth services
Aetna [24]	No co-pays for using telemedicine visits in the next 90 days; All members have access to a Nurse Medical Line
Anthem [25]	Waived cost-sharing for telehealth visits
BlueCross BlueShield [26]	Expanded access to HCP hotlines and telehealth
Cigna [27]	Waived cost-sharing for telehealth screening
Humana [28]	Waived telehealth costs for urgent care services over the next 90 days
United Health Care [29]	Waived costs for testing/diagnostic services accessed via telehealth visits

**Table 1. Contributions of Pharmacies to Telehealth Services during COVID-19 Crisis**

<b>Pharmacy</b>	<b>Telehealth Services/Offerings</b>
CVS Health [35,36]	<ul style="list-style-type: none"> <li>• MinuteClinic promoting video-based visits across many states</li> <li>• Availability of Crisis Response Lines for members affiliated with Aetna and Caremark experiencing COVID-19-related anxiety</li> </ul>
Kroger [37]	<ul style="list-style-type: none"> <li>• Availability of the Little Clinic Providers on a 24/7 basis</li> <li>• Further screening of possible COVID symptoms prior scheduling appointments for patients</li> </ul>
Rite Aid [38,39]	<ul style="list-style-type: none"> <li>• Availability of healthcare providers and pharmacists via live chat phone on a 24/7 basis</li> </ul>
Walgreens [40]	<ul style="list-style-type: none"> <li>• Available Pharmacy Chat, and online platform, on a 24/7 basis</li> <li>• Find Care app connects patients to telehealth options and local healthcare services</li> </ul>

Pharmacies are part of the healthcare system considering their role in the dispensation of medications. As such, pharmacies across the country are also using telehealth applications and services to enhance access to medicine, including remote care delivery. Table 2 illustrates the measures that pharmacies have taken to promote telehealth.

Many pharmacies change their policy as a response to COVID-19. Pharmacies increase patients' access to telehealth services. For example, Walgreens Pharmacy has introduced the digital "Order Ahead" mobile app, which promotes a drive-through shopping or purchase experience [40]. Additionally, CVS Health has introduced the MinuteClinic that allows patients across most states to conduct video visits [36]. The two examples show how pharmacies have adopted telehealth solutions to expand testing coverage, promote digital support, and integrate telehealth in its service offerings.

### 3.4 Recommendations by Professional Organizations

Many professional organizations across the US have also recommended telehealth services to combat the spread of COVID-19 [41-43]. The American Medical Association (AMA) collaborated with states and medical societies to ensure patient access to healthcare services while protecting physicians during the pandemic [41]. AMA provided many recommendations for legislators and regulators to consider while they are working to address healthcare plan coverage and patient access to healthcare services. AMA has recommended the expansion of telemedicine to address COVID-19 pandemic. Notable recommendations include permitting telemedicine for first-time visits and

covering/paying telemedicine visits related to COVID-19 with no cost-sharing (i.e., no co-pays, no co-insurance, and no deductibles) [41]. In addition, AMA recommended to suspend annual limits applied on telemedicine services [41]. Furthermore, through telemedicine, patients can have access to the physician of their choice if this physician make telemedicine available. On the other hand, AMA recommended telemedicine to be temporarily covered under physician's medical liability.

Physician associations are also promoting the integration of telemedicine in COVID-19 care. For example, the American Academy of Family Physicians (AAFP) has allowed opioid treatment through telehealth with a waiver. Similarly, the American College of Physicians (ACP) has introduced an online program aimed at supporting physicians who intend to begin or expand telemedicine [42,43]. Fig. 2 shows the uptake of telehealth, as reported by physician associations.

### 3.5 Challenges and Recommendations for Best Practices

The expansion of telehealth in the era of COVID-19 has presented practical challenges stymying progress. The main concern is that routine care continues to suffer as most attention goes to COVID-19. A previous survey was conducted in 50 states plus American Samoa. This survey covered small practices, practices owned by an academic medical center, and practices owned by healthcare professionals. Findings from a survey involving 713 primary care physicians, nurses, and physician assistants have shown that 19% of providers no longer offer routine care. More than 75% of the respondents reported that the inability of patients to use telehealth is a

significant barrier. Furthermore, 72% reported having patients who cannot access telehealth because they lack computers or an internet connection [44,45]. These findings highlight the need of lining-up multiple variables to ensure that telehealth persists for both practitioners and patients. Second, policy and behavioral changes across multiple stakeholders are necessary to sustain the adoption of telehealth by healthcare providers. Third, the underlying patient population and therapy areas will have a profound effect on adoption. Most importantly, favorable patient perceptions about telehealth calls for improvements in both quality and adoption [46,47].

Telehealth reduces the direct contact between healthcare workers and patients, and hence reduces the risk of COVID-19 spread. Telehealth encourages physical distancing while patients still have access to healthcare services provided by physicians without in-person contact. There were many recommendations by professional organizations that encourage using telehealth for the benefits of both, patients and physicians [41-43]. In addition, regulatory and policy changes support using telehealth, which in turn, encourage physical distancing [17-28].

#### 4. DISCUSSION

Telehealth demonstrated critical value in the delivery of care in times of public health emergencies like COVID-19 pandemic. Telehealth is especially invaluable in the era of coronavirus from two perspectives. First, the use of telehealth offers an invaluable opportunity for remote assessment and delivery of care for

patients already infected with coronavirus or those who are afraid of contacting COVID-19 through person-person contact [48]. Second, telehealth ensures convenient and sustained access to routine care without the risk of exposure among the non-infected, especially those with greater risk of infection. Older adults with preexisting conditions have a higher risk of infection by coronavirus and experiencing life-threatening or fatal symptoms [49]. Therefore, telehealth is vital in such cases since it ensures that older adults continue receiving routine care without being exposed to congested hospital and medical practices.

The role of telehealth is indisputable in promoting social distance, which is a proven public health promotion intervention for curbing the spread of coronavirus. Findings from the review have confirmed a significant increase in the adoption of telehealth tools to enhance COVID-19 response while minimizing the risk of spread. The use of mobile phone applications is the most critical application of telehealth. The WHO and technological companies are developing mobile phone application to leverage the use of telehealth in the management of patients with COVID-19, as well as creating awareness about the virus spread and symptoms. Mobile apps are particularly effective in contact tracing and generation of critical data that informs clinical decisions. The results have shown that the use of mobile apps has surged among both patients and healthcare providers. Nonetheless, telehealth will only be effective if it is integrated in the US health services, including the removal of legislative and practical barriers [50].

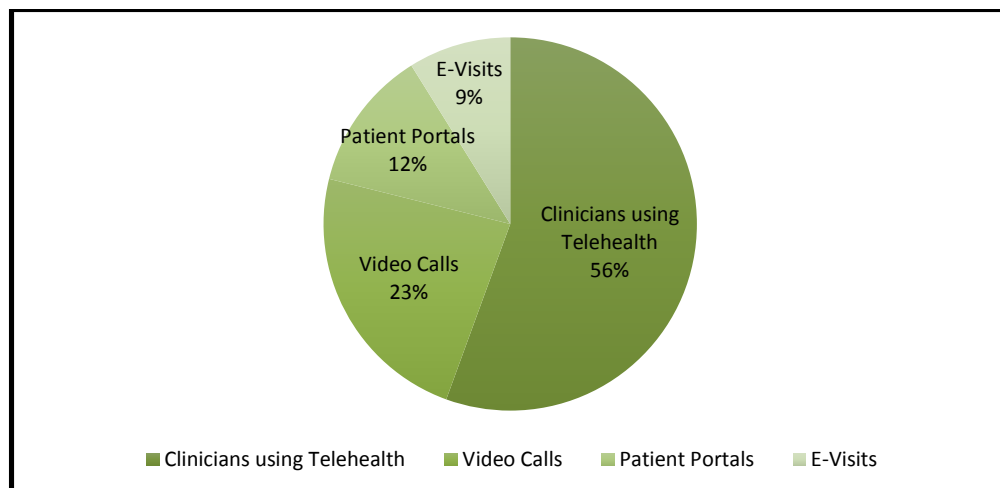


Fig. 1. The Uptake of Telehealth Services by Providers and Patients

Policy changes have played a fundamental role in promoting the adoption and widespread use of telehealth in the context of COVID-19. The CMS has been at the forefront in setting the agenda for policy changes that promote telehealth across healthcare providers, as well as lay the foundation for reimbursing telehealth services. The analysis has revealed that CMS policy changes have focused specifically on expanding telehealth benefits for Medicare beneficiaries by waiving cost-sharing for telehealth services and increasing access to accelerated or advanced payments. Payers have also adopted a similar approach by waiving premiums, co-pays, and cost-sharing requirements. These measures have supported increased adoption of telehealth by both healthcare providers and pharmacies across the US. The analysis has shown that professional organizations, including physician associations, are also encouraging healthcare providers to integrate telehealth in routine care of patients with and without COVID-19.

The unprecedented increase in the uptake of telehealth has also presented practical challenges and barriers that must be addressed to sustain progress. Limited accessibility and inability to use telehealth are the most pressing concerns for healthcare providers. Consequently, there is an urgent need of aligning multiple variables for telehealth to persist for both patients and practitioners. For example, socioeconomic and demographic factors; therapeutic area and disease state; therapy mode of administration; and the need for a diagnostic test or procedure must align for the patient. On the other hand, reimbursement dynamics; electronic medical record integration; ease of billing; and access to patient tools and financial assistance must also line-up for the providers. Policy and behavioral changes across stakeholders in another issue to consider to sustain the adoption of telehealth. A notable area is enhancing integration with patient electronic records, remote monitoring, mobile health apps, and diagnostics. Reimbursement dynamics must be addressed to ensure sustainability considering that the current policy changes are short-term.

## 5. CONCLUSION

The purpose of the paper was to explore the application and contributions of telehealth in the era of coronavirus. The paper focused specifically on the measures that the US has taken to promote telehealth and its use in the delivery of health care as cases of COVID-19

increase. Findings from the analysis have shown that regulatory organizations, payers, and professional bodies have proposed and enacted comprehensive changes to encourage the adoption of telehealth tools at both the provider and patient levels. However, the policy changes are temporary in response to the COVID-19 pandemic. A major concern is that the sustainability of the changes depends on the ability of regulatory agencies, payers, and providers to successfully integrate telehealth in routine care. The current changes have offered a reprieve at a moment when the US healthcare systems is under significant strain from coronavirus. The challenge now lies in ensuring that telehealth will be a norm even after COVID-19 crisis ends. The latter issue underscores the need of paying attention to reimbursement and payer policies that will sustain telehealth post-coronavirus.

## 5.1 Study Limitations

This is a narrative review with broad scope and specific goals. This review evaluated the current trends of using telehealth during COVID-19 pandemic, discussed regulatory and policy changes related to telehealth at the service provider level, analyzed recommendations by professional organizations, and evaluated challenges and recommendations for best practices. While the scope of this review is broad, other scopes (e.g., comparing the recovery rate before and after using telehealth, investigating the symptoms of home isolated patients, COVID-19 diagnostic tests, and specific COVID-19 strain, etc.) were not covered by this review. Future studies are needed to look at those scopes mentioned above. Another limitation includes the geographical focus. This study focused on the measures that the US healthcare system has adopted to integrate telehealth in the coronavirus response measures. Therefore, the study results cannot be generalized and extended to other countries.

## CONSENT

It is not applicable.

## ETHICAL APPROVAL

It is not applicable.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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