UNC CENTER for the BUSINESS of HEALTH

UNC CENTER FOR THE BUSINESS OF HEALTH

Coronavirus Disease 2019 and the Future of Virtual Health

Karthik Subramaniam, M.B.A. 2021
UNC Center for the Business of Health Strategic Consulting Intern

University of North Carolina at Chapel Hill
Kenan-Flagler Business School
July 2020

Coronavirus Disease 2019 and the Future of Virtual Health

Since January 2020, Coronavirus Disease 2019 (COVID-19) has infected more than 4.5 million Americans, resulting in over 150,000 deaths; reconfigured our domestic lives and the world economy; and overwhelmed the United States' (U.S.) public health and health care delivery capabilities.[1] As individuals, institutions, and municipalities struggled to quickly integrate public health best practices into economic activities and social priorities, the virus exposed fault lines in our nation's health care system(s). The government's initial response was disjointed, which led to critical delays, confusion, and, ultimately, hindered collaboration. As a result, medical institutions and providers were, and still are in some cases, unable to obtain adequate personal protective equipment (PPE), provide and administer sufficient and timely testing to identify and track the disease, and secure sufficient medical equipment to care for infected individuals.

As the virus continues to spread unencumbered across multiple states, particularly in the southeastern U.S., the backlog of deferred well-patient visits is mounting. During the initial wave of the disease, many hospitals and providers cancelled well-patient visits and elective procedures to reduce the risk of infection at the hospital, prevent unnecessary harm to otherwise healthy patients, and free up critical resources to support COVID-19 response operations. These activities, though prudent, hurt hospital budgets and created a significant backlog of deferred medical care. To address these problems, many medical providers turned to telemedicine and other mobile-friendly health care platforms that allow patients to virtually connect with providers to receive medical advice and treatment without overburdening care facilities, breaking social distancing measures, or risking exposure. This shift to virtual care, though anticipated for years, was accelerated in a few short weeks as the Centers for Medicare & Medicaid Services (CMS), federal and state policy makers, and insurers temporarily relaxed regulations and promoted virtual solutions that advanced care options beyond the health care facility.[2] This flurry of activity prompted some commentators to announce the much anticipated arrival of the future of medicine.

Though we at the UNC Center for the Business of Health are not prepared to make such a declaration, the rapid acceleration of virtual health care raises two interesting questions that we will pursue in the remainder of this paper. First, will consumers and physicians continue to use virtual health platforms consistently once in-person services are available and health care facilities return to 'normal'? Second, is virtual health a lasting business model capable of surviving in a health care marketplace and competing with traditional care options? By reviewing both the supply and demand of virtual health services, we hope to better understand the U.S. health care system's receptivity to virtual health care and the necessary changes that will follow.

Defining Virtual Health

For the purposes of this paper, we define virtual health as "continuous, connected care delivered via digital telecommunication technologies. It includes video visits and telemedicine, remote monitoring, asynchronous communication, medication adherence, and clinician- or provider-facing solutions, such as virtual consults and virtual second opinions."[3] Though popular conversations are often limited to telemedicine platforms that connect patients to care providers via the internet, we include in our definition both the direct-to-consumer modalities that enable extended care delivery as well as the provider-to-provider technologies that allow enterprise-wide integration of services and expand the individual provider's reach.[4] We also recognize the existence and potential uses of interconnected personal health care devices (e.g. watches, rings, apps, bands, etc.) that allow passive data collection and monitoring of certain health metrics or behaviors.

Emerging Trends Impacting Health Care Delivery

Prior to the spread of COVID-19, the U.S. health care system(s) was already under significant pressure due to myriad factors, including an aging population, systemic racism and structural inequalities, escalating costs, long wait

times, and the prevalence of chronic and co-morbid conditions.[5,6] However, COVID-19 introduced additional uncertainties in the health care system(s) that are likely to re-shape health care delivery beyond the present crisis. Table 1 lists four high-level trends that will impact health coverage, utilization, and financing well into the future.

Table 1. Four Emerging Trends Impacting Care

Trend	Description
Enrollment Shifts in Health Coverage Interrupting Normal Care Patterns and Relationships	Since January 2020, more than 40 million people in the US have filed for unemployment benefits, and many have also lost their employer-sponsored health coverage.[7] Many health plans are experiencing significant enrollment shifts as members transition from employer-sponsored insurance to COBRA, Medicaid, or subsidized coverage sold on the public insurance exchanges. This will invariably interrupt patient-provider relationships and change the way patients interact with the health care system.
Deferred Medical Services Diminishing Hospital Financial Flexibility	American health care utilization significantly diminished during the COVID-19 pandemic out of an abundance of caution by patients and health care providers. This caused a severe drop in spending in several categories of health care services, particularly high revenue elective surgical procedures. According to the Bureau of Economic Analysis, overall health care expenditures were down 12% in March 2020 relative to last year.[8] This will harm hospitals, particularly rural facilities, and may force closures or reductions in service offerings.
Projected Increases in Future Medical Spending Disrupting Issuer Budgets and Risk Models	As economies and health care facilities return to 'normal' operations, patients will begin pursuing medical services to address delayed medical treatment. We anticipate a large volume of non-critical, elective care that will result in increased costs throughout the health care system(s). Alight, a leading human capital and enterprise business solutions company, estimates health care costs to increase by as much as 14% in 2021 for Fortune 500 companies.[8] This will be further exacerbated by sick individuals seeking to address illnesses that worsened during the pandemic due to neglected or deferred care.
Regulatory Flexibility and Government Funding Incentivizing Care Transformation	The U.S. Department of Health and Human Services recently awarded $20 million to six recipients, through the Health Resources and Services Administration, to improve telehealth infrastructure and assist telehealth practitioners with licensing and credentialing.[9] The Federal Communications Commission announced a total of $200 million in funding earmarked for telehealth in the Coronavirus Aid, Relief, and Economic Security (CARES) Act, several rounds of which have already been disbursed to health systems nationwide.[10] Additionally, the Centers for Medicare & Medicaid Services (CMS) issued multiple waivers, providing flexibility (e.g., geographic location, type of health site) during the pandemic and granting payment parity between telehealth and in-person clinical care for Medicare.[11]

These four trends will create additional pressure and incentives in the health care financing and insurance system to provide innovative, cost-effective solutions that ensure timely access across a broad, geographically-dispersed population. Though virtual health will not solve any one of these problems independently, it has potential to expand the reach and capacity of the health care system to address patient needs, generate non-traditional revenue for hospitals, decrease overall costs of care, and form new relationships between patients and providers.

Virtual Health Before and During COVID-19

In November 2019 – January 2020, the Deloitte Center for Health Solutions collaborated with the American Telemedicine Association to survey health care industry executives about their expectations for virtual health over the next twenty years. Fifty percent of respondents expressed the opinion that at least a quarter of all outpatient care, preventive care, long-term care, and well-being services would move to virtual delivery by 2040. Seventy-five percent predicted that industry-wide investments in virtual health will significantly increase (by more than 25 percent) over the next decade; ninety-four percent expect data and interoperability solutions will improve to allow widespread data sharing; and eighty-eight percent predicted wearable devices will be further integrated into care delivery.[3] In

summary, the majority of health care executives were optimistic about the potential of virtual health care products and services to transform the current delivery system, even before the pandemic upended the status quo.

Though health executives acknowledge the potential of virtual health care to expand access, integrate care delivery and care management, and reduce costs in the system, actual consumer adoption of virtual health has lagged. While some patients find virtual health care services convenient, removing the wait time, commute, and stress of a typical health care visit, others prefer traditional medical practices that prioritize a personal connection between a patient and their provider. This patient-provider relationship, which is built on physical connection, continuity of care, and trust, is interrupted, rather than enhanced, by technologies that seek to improve efficiency and convenience. This creates a barrier to behavior change that may be insurmountable for some patients and providers. However, COVID-19 forced individuals and providers to adopt virtual health modalities and care practices out of necessity as traditional care options were neither available nor safe. As a result, a recent poll found 23% of U.S. adults used telehealth services in the first six months of the COVID-19 pandemic, and multiple telemedicine platforms reported rapid increases in utilization.[2]

We highlight four examples of how organizations incorporated innovative virtual health or non-health care facility-based health care management/diagnostic options in response to challenges created by COVID-19.

Healthcare facilities are using virtual visits to triage patients and control patient flow: Many hospitals have instructed patients with suspected coronavirus symptoms or exposure to call their doctors or use telemedicine options before presenting in the emergency department or urgent care clinic. The Cleveland Clinic, University of Washington (UW), NYU Langone, Oregon Health Sciences University (OHSU), Medical University of South Carolina (MUSC), and Rush University Medical Center are all advising patients with suspected coronavirus symptoms to begin their care journey through a virtual triage center or care pathway.[2]

Laboratory companies are promoting the efficacy and convenience of home-based testing: As drive through testing labs help local communities provide medical testing outside the hospital or treatment facility, we have also seen a rise in the promotion and acceptance of home-based testing. Today, consumers already have the ability to test themselves for a wide range of potential health problems, from strep throat to urinary tract infections. In the future, home-based tests will provide physicians and care managers additional options to move the point of care out of the hospital and will add to the suite of services patients can expect to receive from the comfort of their home.

Organizations are using smart devices to support early detection of disease in employees: A key challenge in the United States has been the ability of organizations to quickly identify and test individuals who may have been exposed to the virus. Though rapid testing is limited, multiple high-profile organizations have identified smart devices that track early symptoms through passive data collection. The National Basketball Association (NBA) teamed with a health technology company to provide a "smart ring" to players as part of the league's plan to protect players from the coronavirus while resuming the 2020 season.[12] The ring tracks key health data through passive data collection, including heart rate, respiration rate, body temperature, and sleep patterns to assess an individual's health. This data, which is monitored closely by each team's medical staff, can help the league identify an individual's compromised health status in the absence of rapid medical testing.[1]

[1] We recognize the limitations of many smart devices to provide reliable, medically accurate data. However, we included this example to demonstrate a shift in consumer and organizational perspectives about health care and health maintenance. Along with many of the health executives from the Deloitte study cited above, we also believe smart devices will become increasingly more integrated in future health care delivery and maintenance.

Physicians are using virtual tools to connect care across providers: As the virus interrupted physician schedules and normal routines, many care providers turned to virtual platforms to coordinate care and engage other medical practitioners. For example, physician workflow and networking platforms such as Doximity saw an increase in utilization in the early months of the virus.

Each of the examples above highlights a specific instance where virtual health or non-traditional care methods are being used to solve specific problems caused by COVID-19. Combined, these examples represent a larger trend by organizations and health care providers to offer more non-traditional care options that extend health care services beyond the walls of the hospital using emerging technologies. All the while, these changes are rapidly raising consumer consciousness, incorporating new flexibilities into care delivery, and increasing a technology-literate public's familiarity with the various virtual health options. As a result, consumer preferences are changing. In a recent study by Sage Growth Partners, fifty nine percent of survey respondents said they are more likely to use telehealth services now than in the past, and thirty three percent would switch their physician in order to have greater access to virtual care.[13]

Challenges to Broad Virtual Health Adoption Post COVID-19

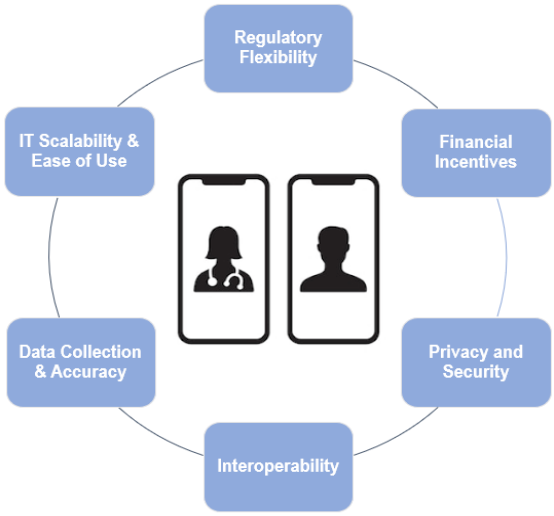
While there are compelling reasons to believe that virtual health will remain a popular treatment option for many segments of the American population, the business model must overcome significant challenges if virtual health is to become a viable alternative to traditional medical services. The current health care delivery system, though affected significantly by COVID-19, treats telemedicine and virtual health options as supplemental care options rather than primary services. As a result, the health care industry writ large, will need to adopt significant reforms to fully embrace virtual health care. We list a few of the major challenges that industry leaders must confront in Table 2.

Table 2. Challenges Prohibiting Wide-Scale Adoption

Challenge	Description
Reimbursement Models	Telemedicine or 'virtual visits' are not historically reimbursed at the same rate as in-person services. While this is advantageous from a payer's perspective, health care providers must adapt their revenue targets and operating models accordingly. While many hospitals have adjusted expectations during the pandemic due to a lack of ability to generate revenue across all service lines, the incentive to bring patients back to the hospital and bypass telemedicine options will be hard to overcome.
Product Availability and Scalability	Though there are a number of virtual health care options, organizations and individuals do not have equal access to capital or the necessary infrastructure to support virtual care. Dr. Goldstein noted that one of the biggest challenges to broad adoption of virtual health continues to be a patient's access to internet, technology, and a camera. Individual access issues are further compounded by geography and a lack of organizational capabilities to provide high-quality, secure, reliable, and interoperable health services in resource-depleted areas.
Patient Empowerment and Physician Care Limitations	While many tech-savvy patients and providers welcome the convenience of virtual health options, some find this modality limiting and impersonal. For instance, some patients may not be able to articulate their care needs or communicate with their doctor through the computer, which could diminish their care in both perception and reality. Additionally, physicians often cite the limitations of smart devices to provide medically-accurate information or virtual platforms to measure or observe physical changes that impact treatment regimens or research studies.
Regulatory Consistency	Though the government introduced multiple regulatory flexibilities to address the COVID-19 pandemic, the future of virtual health regulation is unknown and fragmented. Regulations vary from state to state, and federal government initiatives have yet to catch up to market capabilities and provide clarity on future requirements.

These challenges are not insignificant and are unlikely to be resolved over the next few months as the health care system marshals its energy towards combatting a "second wave" of the virus. Though not insurmountable, the competitive nature of health care delivery in the U.S. limits opportunities for organizations to meaningfully collaborate to transform the health care system. Any progress to improve the virtual health business model will be slow and will require contributions and support from multiple diverse stakeholder groups, including governments, physicians, hospitals, and healthcare technology companies.

Conclusion: The Future of Virtual Health



COVID-19 is significantly changing how patients and providers approach health care, and these changes will undoubtedly impact the future of the U.S. health care system(s) well beyond the current crisis. During the pandemic, hospitals and health systems quickly adapted their operations to leverage virtual health platforms and modalities to address patient care needs and generate much-needed revenue. This resulted in broad utilization of virtual health products and increased public perception of the viability of these services as an alternative to in-person medical treatment. John League, Senior Consultant at the Advisory Board Company, a prominent health care research firm, commented on this shift in consumer perception by noting that consumers became increasingly more comfortable with virtual health services as physicians replaced traditional care practices with virtual options. In other words, patient perceptions of virtual health improved after having a positive experience with a virtual health service. Though in-person services may replace virtual care after the pandemic, he is optimistic that virtual health care will accelerate in particular medical fields and across certain population segments. However, when asked about the future viability of virtual health business models, League acknowledged the challenges ahead, particularly citing financial misalignment between providers and payers.

Dr. Goldstein shares Mr. League's optimism about the future of virtual health. He predicts that 20-30% of face-to-face visits could soon transition to virtual care, particularly due to hybrid models that allow follow-up visits to occur virtually after an in-person medical exam. This, he says, could expand geographical access to essential services and extend the reach of the hospital to rural and underserved communities. However, he acknowledged that this shift is contingent on the financial feasibility for providers to offer these services and their accessibility to the public.

Overall, the data reviewed suggests optimism that virtual health will continue to grow in popularity and extend the reach of the individual health care provider incrementally over time, thanks in large part to changes in consumer expectations and technology utilization habits. However, it is less clear that COVID-19 is ushering in a new reality of health care and a total transformation of the health care system. For example, a recent Politico article notes that telehealth visits leveled off in July 2020 after an initial surge in April and May.[14] Though organizations are likely to continue to use virtual services to extend health care access in a cost-effective and efficient manner, true transformation will require unprecedented collaboration to align financial and operational incentives in support of the public's health. This will undoubtedly be challenging; however, the promise of virtual health care is likely worth the effort.

Appendix A. References

1. Cases in the U.S. (2020). Retrieved July 20, 2020, from https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/cases-in-us.html

2. Weigel, G. (2020, May 13). Opportunities and Barriers for Telemedicine in the U.S. During the COVID-19 Emergency and Beyond. Retrieved July 8, 2020, from https://www.kff.org/womens-health-policy/issue-brief/opportunities-and-barriers-for-telemedicine-in-the-u-s-during-the-covid-19-emergency-and-beyond/

3. Fera, W., Korba, C., & Shukla, M. (2020, May 27). The future of virtual health. Retrieved June 17, 2020, from https://www.modernhealthcare.com/technology/future-virtual-health

4. Worzala, C. (2020). A Path to Virtual Integrated Care - AHA. Retrieved June 15, 2020, from https://www.aha.org/system/files/media/file/2019/02/MarketInsights_TeleHealthReport.pdf

5. American Hospital Association (2020). Hospitals and Health Systems Face Unprecedented Financial Pressures Due to COVID-19. Retrieved July 2, 2020, from https://www.aha.org/guidesreports/2020-05-05-hospitals-and-health-systems-face-unprecedented-financial-pressures-due

6. Turner-Lee, N., Karsten, J., & Roberts, J. (2020, May 14). Removing regulatory barriers to telehealth before and after COVID-19. Retrieved July 12, 2020, from https://www.brookings.edu/research/removing-regulatory-barriers-to-telehealth-before-and-after-covid-19/

7. Burrill, S. (2020). Will COVID-19 Bring us to the Future of Health Sooner Than We Expected? Retrieved July 14, 2020, from https://www2.deloitte.com/us/en/blog/health-care-blog/2020/will-covid-19-bring-us-to-the-future-of-health-sooner-than-we-expected.html

8. Alight BrandVoice: The U.S. Healthcare Crisis Is About To Get $52 Billion More Expensive. (2020). Retrieved June 17, 2020, from https://www.forbes.com/sites/alight/2020/07/06/the-us-healthcare-crisis-is-about-to-get-52-billion-more-expensive/

9. U.S. Department of Health and Human Services. (2020, April 30). HHS Awards $20 Million to Combat COVID-19 Pandemic through Telehealth. Retrieved June 9, 2020, from https://www.hhs.gov/about/news/2020/04/30/hhs-awards-20-million-to-combat-covid19-pandemic-through-telehealth.html

10. Federal Communications Commission. (2020, July 24). COVID-19 Telehealth Program. Retrieved July 11, 2020, from https://www.fcc.gov/covid-19-telehealth-program

11. Centers for Medicare & Medicaid Services. (2020). Press release Trump Administration Issues Second Round of Sweeping Changes to Support U.S. Healthcare System During COVID-19 Pandemic. Retrieved July 15, 2020, from https://www.cms.gov/newsroom/press-releases/trump-administration-issues-second-round-sweeping-changes-support-us-healthcare-system-during-covid

12. Sprung, S. (2020, June 25). Oura CEO Explains Why NBA Bought 2,000 Of Its $300 Smart Rings. Retrieved August 04, 2020, from https://www.forbes.com/sites/shlomosprung/2020/06/25/oura-nba-smart-rings-coronavirus-orlando-covid-pandemic-shaq-dell-benioff/

13. Harpaz, J. (2020, May 04). 5 Reasons Why Telehealth Is Here to Stay (COVID-19 And Beyond). Retrieved June 14, 2020, from https://www.forbes.com/sites/joeharpaz/2020/05/04/5-reasons-why-telehealth-here-to-stay-covid19/

14. Ravindranath, M. (2020, July 22). Telemedicine revolution, deferred. Retrieved July 28, 2020, from https://www.politico.com/newsletters/future-pulse/2020/07/22/telemedicine-revolution-deferred-789320?tab=most-read