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Health Care After the COVID-19 Pandemic and the Influence of Telemedicine

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After the first cases of coronavirus disease 2019 (COVID-19) were reported on December 31, 2019, and its causative agent, severe acute respiratory syndrome coronavirus 2 was identified, the pandemic spread to more than 212 countries, overwhelming health care systems and economies on a global scale. As of May 26, 2020, the cumulative number of confirmed cases of COVID-19 worldwide exceeded 5.4 million, and in the United States, the number of confirmed COVID-19 cases was nearly 1.7 million.¹ The large scale of the pandemic has caused health care systems to shift how they deliver care quickly and substantially. Even more changes are anticipated as the pandemic comes under control—within health care systems and from governments and payers (Table).

One major shift that has already occurred is in the use of telemedicine platforms, that is, managing patient care virtually through nonphysical encounters with the use of videoconferencing and telephone communications.^{2,3} These changes resulted from shrinking economies and the ongoing risk of severe acute respiratory syndrome coronavirus 2 exposure to patients and health care workers. Basic microeconomic theory explains the rapidity with which telemedicine is being adopted, that is, demand for a service outpaced the supply (physicians) and was associated with rising costs and risks to patients and to health care workers providing that care. With the anticipated future shortage of providers,⁴ we believe that video-based remote consultations will change health care delivery long after COVID-19. At Mayo Clinic, the sudden and unanticipated disruption of the health care

delivery model caused by COVID-19 resulted in telemedicine's being accepted by health care professionals and patients, and this new model of care will likely be fully integrated into our health care delivery platform within the next few years.

Telemedicine has allowed for continued patient care while ensuring the safety of patients and health care workers during the crisis. This was made possible largely through the relaxation of regulatory and licensure barriers that existed before the pandemic. These barriers included lack of adequate reimbursement for telemedicine visits and varying, costly, and cumbersome state requirements for licensure.

There is a great expectation that these relaxed telemedicine regulations will continue after the COVID-19 crisis is over, which will be a welcome development as telemedicine adds another dimension to providing health care that is efficient and cost beneficial for patients and for health care systems. Patients' long-term satisfaction with this new care delivery model will be driven by ongoing safety concerns related to in-person care and by logistical considerations related to travel to destination centers. Chronic conditions require repeated encounters with the health care system, which inconveniences patients and may lead to increased costs of care, missing appointments, and nonadherence to treatment plans. Telehealth provides an opportunity to maintain and to enhance these encounters in ways that will be more acceptable to patients.

For health care systems, telemedicine will become a force multiplier, given its ability to scale care, improve the efficiency of

TABLE. Anticipated Changes to Health Care After Coronavirus Disease 2019

Change	Result
Telemedicine	Improved access to medical providers Reduced costs for patients, eg, less travel, time away from work Increased humanitarian outreach to underserved populations, including those in rural and global communities
Workflows	Decreased waste through efficient workflows Streamlined services
Artificial intelligence	Reduced redundancies in medicine from accelerated use of artificial intelligence Remote monitoring to predict patients who need urgent attention Outcomes predicted for drug therapies or operations
Public health and population health programs	Increased funding for public health agencies at local and state levels Mobile tracking applications for more rapid and cost-effective contact tracing
Connected care programs	Remote monitoring of vital signs and electrocardiography, reduced rehospitalizations with tracking of medications, and less morbidity and mortality
Reimbursement	Changes to current obsolete reimbursement models Competitive rates for telemedicine and in-person visits, allowing sustainability of health care systems
Licensure	Single licensure instituted State borders eliminated for practicing medicine
Redefining health care workers	Care lines blurred between care delivered by physicians, advanced practice providers, and nurses
Malpractice	Clarity brought to malpractice insurance

workflows, and expand provider reach to underserved areas, including rural or geographically isolated populations globally. With telemedicine, in-home care can be delivered that can ensure patients comply with care plans, thus decreasing the risk of hospitalizations and consequences including cost, hospital-acquired infections, and the potential for antimicrobial drug resistance. Effective in-home care will also hopefully translate into improved care for older adults, with less disruption of family and social lives, including the inconvenience of getting to appointments for those who no longer drive and time away from work for family members caring for older relatives. In addition, the availability of telemedicine will encourage people to seek medical evaluation earlier in an illness, thus avoiding the consequences of late diagnosis and treatment that would be detrimental to their health and finances as well as to the health care system. The expansion of telemedicine will accelerate technology-based solutions for telehealth, including remote

monitoring of vital signs and acquisition of other health data in real time, thus enabling timely diagnosis and prompt initiation of treatment. Designation of new workflows enhanced by artificial intelligence will support an integrated transition between virtual and in-person care. Issues of privacy, disclosures, interoperability of electronic health records, and data security will need continued scrutiny and updating as telehealth expands.

The rapid increase and wide adaptation of telemedicine into care delivery models should be balanced against the perception by some patients and providers of its safety and value compared with in-person care. A concern exists that telemedicine may be viewed by health care providers as an erosion of the empathic physician-patient relationship that might result in depersonalization of care. To enhance utilization of telemedicine, it will be critical to identify and categorize conditions, acuity, and temporal relationships to care (eg, initial or follow-up visits) that could be optimally served by telehealth methods. Effective and

efficient virtual care will require a reliable communication infrastructure and affordable and readily accessible broadband connectivity to rural regions, which could close one of the health disparity gaps in our country as well as allow for global outreach and national programs for all underserved populations.³

In conclusion, a number of driving forces will influence health care in the United States during and after the COVID-19 pandemic. During the pandemic, telemedicine has had an important role in health care delivery, allowing for ongoing medical care while ensuring the safety of patients and health care workers. This situation occurred only after local and federal regulations surrounding telemedicine were relaxed. If these relaxed regulations continue, the promise of expanded access, improved efficiencies, and enhanced patient outcomes also continues. Telemedicine is a means to developing an organization's ability to provide in-home quality care, thus lowering health care costs and bridging health care access to underserved populations. Careful planning, continued scrutiny, and adaptation of existing methods are urgently needed to further increase the adoption of telemedicine into routine clinical care.

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