Telehealth in the post-pandemic era: challenges and opportunities

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As we look toward post-pandemic health delivery, the role of telehealth must be examined. We use the Reach, Effectiveness, Adoption, Implementation, and Maintenance (RE-AIM) framework to discuss the challenges and successes of telehealth during the pandemic in the United States, and critical aspects to consider for optimizing telehealth care in the future.

In early 2020, the coronavirus disease 2019 (COVID-19) pandemic spread rapidly across the United States, challenging all aspects of society, the medical profession included. While some delivery of healthcare services remained unchanged for patients with certain health conditions, telehealth strategies were employed across specialties in an attempt to meet the care needs of patients while minimizing the spread of COVID-19.[1,2] Before the COVID-19 pandemic, there were many barriers to implementing widespread telehealth in the United States, including reimbursement and regulatory issues, patient and clinician acceptance, and functional and easy-to-use technology. To address some of these challenges during the pandemic, the United States Department of Health and Human Services (DHHS) temporarily suspended many of the requirements for telehealth technology, rapidly making telehealth services available across many technology platforms.[3] In addition, Centers for Medicare & Medicaid Services policy changes allowed physicians and nurses to be reimbursed for telehealth services, and this policy change extended to physical therapists, occupational therapists, and speech therapists as well.[4]

Large medical systems, such as Ascension Health, swiftly adopted telehealth across

disciplines. As one of the largest nonprofit health systems in the nation, Ascension has over 2,600 sites of care in 20 states and the District of Columbia. Prior to the pandemic, over 40,000 Ascension-aligned providers completed 15 million office visits in 2019, with only 16,482 visits completed by telehealth. In comparison, from March 16, 2020 through February 21, 2021, Ascension completed 1,995,000 virtual visits spanning multiple specialties and visit types.

While the widespread use of telehealth accomplished many aspects of physical distancing to prevent the spread of COVID-19,[5–8] there remains a paucity of data on its impact on care, patients, providers and health systems. As we consider how best to incorporate telehealth into care delivery when the pandemic is controlled, it will be important to rigorously examine the impact of the many dimensions of telehealth. There are several published frameworks that evaluate the implementation of new approaches and systems in health care, which could be used for such an assessment. Here, we highlight the Reach, Effectiveness, Adoption, Implementation, and Maintenance (RE-AIM) framework as a possible approach to critically assess the impact of telehealth across the United States.[9]

The RE-AIM framework, which together determine the impact of public health) was originally proposed in 1999 to guide the reporting of research results, and later to frame reviews of the literature on health promotion and management of different diseases. Within the medical field, it has been used in all aspects of care, from clinical practice to disease prevention, educational programs, and community engagement (9). RE-AIM is designed to ensure high-quality and impactful implementation of new healthcare delivery methods and models. It

presents an ideal framework to evaluate the effectiveness of telehealth across five proposed domains, from the perspective of patients, care teams, and healthcare systems.

REACH: HOW DO WE MAKE TELEHEALTH SERVICES ACCESSIBLE TO ALL PATIENTS?

To maximize access to telehealth, several factors need to be considered. Patient engagement is very important for telehealth to be effective.[10] Telehealth solutions need to enable care for all patients to help close and not exacerbate disparities in care. A variety of potential solutions will need to be tested, such as easy tips and visual aids, which are tailored to patient populations and/or disciplines. For large-scale adoptions, it may be necessary to augment the program with telehealth navigators to support patients. The technology barriers – broadband connectivity, devices that support live video streaming, and digital literacy – disproportionately affect poorer and minority populations, as well as older patients, so the sudden shift of care from in-person to telehealth visits may have exacerbated the existing health disparities.

Patients living in rural areas are also less likely to have a broadband internet access, so they are less able to engage in telehealth services.[11] The extent of disparities in telehealth access should be quantified, and specific barriers should be identified so that they can be addressed.[12,13] At the practice level, staff members should be trained to ask patients whether they have access to a cell phone, computer, or tablet with a forward-facing camera, and if not, working with patients to identify other potential access points, such as a friend or relative with a device, or a school, library, or community center. In addition, simply initiating an online visit or sustaining a

visit through a virtual platform can be challenging for some. Thus, engagement is required from clinicians and care teams.

For health systems, connectivity to support both audio and video in a reliable real-time manner, as well as adjuncts to support other components of care such as imaging data, is critical. Areas of the United States that are already impacted by poor connectivity will be further impacted by reduced access to health care if systematic considerations are not made. These considerations will only be impactful if DHHS makes the loosened telehealth technology regulations permanent.

EFFECTIVENESS: HOW IS THE EFFECTIVENESS OF WIDESPREAD TELEHEALTH INITIATIVES MEASURED?
Telehealth was adopted at an accelerated pace during the pandemic out of necessity because of stay-at-home orders and closures of ambulatory clinics. While it may be tempting to extrapolate from the experience with telehealth initiatives during the pandemic, conclusions are not likely to be applicable to a healthcare environment that has returned to homeostasis. Virtual-integrated care delivery models should be evaluated across multiple dimensions of effectiveness, including patient satisfaction, clinician satisfaction, visit adherence, equity of care delivery, and total cost of care.

While the primary intent of telehealth deployment during COVID-19 was fundamentally to support access to care, it is important to consider how this modality can impact the quality of care, and patient engagement and wellbeing.[14,15] Although there are a wealth of literature describing the implementation of telehealth in a variety of contexts, the literature that assesses the quality of care delivered compared with either clinical guidelines or in-person care is sparser. For example, one of the systematic reviews found telehealth to be associated with greater reductions in liver function tests than in-person visits among patients with non-alcoholic fatty liver disease;[16] however, the systematic review included only four studies, two of which were randomized controlled trials, and these latter trials together included just 90 participants.[17] Another systematic review of telehealth for patients with hypertension and diabetes identified four clinical trials, which collectively found telehealth to be associated with a greater reduction in blood pressure but not glycemic control.[15]

Telehealth did improve the healthcare experience for patients, though. In general, many applications of telehealth have not been rigorously evaluated for safety or effectiveness, or data are just emerging. In contrast, more is known about the effects of telehealth on patient experience and quality of life. For example, one systematic review of randomized controlled trials evaluating the effect of telehealth on the quality of life of cancer survivors found an overall benefit of telehealth.

Evaluation of its effectiveness should weigh the potential benefits against potential risks, such as reduced access, whether children still receive vaccines on schedule, and even adverse health outcomes. These risk–benefit analyses will necessarily vary by specialty and will require critical content input from field experts to ensure that the most appropriate measures of outcomes are captured.

ADOPTION: WHAT NEEDS TO BE CONSIDERED FOR ORGANIZATIONAL SUPPORT OF TELEHEALTH?
Statutory and regulatory barriers to telehealth have existed for years. To innovate in care

delivery and embrace the capability to interact with patients virtually, permanent regulatory changes are required. Site-of-care requirements defeat a key value-add of virtual care, which is to bring care to patients and eliminate access barriers. State licensure restrictions prevent clinicians who have a pre-established relationship with patients from addressing an end-to-end episode of care. For example, a surgical patient who happens to live in a state where their surgeon is not licensed is unable to receive a timely virtual postoperative follow-up.

Coverage for certain services, and not others, appears to be arbitrary and should be expanded to include many other services, including mental and behavioral health, dentistry, and physical and occupational therapy. Finally, payor contracting, reimbursement policies, and provider compensation need further development to ensure widespread adoption. Without these changes, adoption of telehealth will remain limited beyond the pandemic. Table 1

summarizes the key statutory and regulatory barriers and their impacts across multiple telehealth applications (virtual provider office visit, direct to consumer, remote patient monitoring, facility-based services, and virtual emergency department services). These barriers should be removed to adopt virtual care at scale, and include reimbursement coverage, licensure, originating site restrictions, constraints on distant site providers, new vs. established patient visit restrictions, prescribing restrictions, and provider credentialing.

At the health system level, multidisciplinary support in the form of IT/technology, legal and regulatory, operational, and clinical aspects should be provided. Technology solutions need to focus on the 'user-experience' of patients, clinicians, and practices. Recognition that implementation of telehealth requires changes in workflow, staffing, and scheduling is important, and therefore, appropriate education and training should be provided.

Table 1. Statutory and regulatory barriers and their impacts across multiple telehealth applications (reference: Ascension virtual care whitepaper)

Regulatory barrier	Virtual provider office	Direct to consumer	Remote patient monitoring	Facility-based services	Virtual emergency department services
Reimbursement coverage and/or parity	☑	☑	☑		☑
Licensure	☑	☑	☑	☑	☑
Remove originating site restrictions	☑	☑		☑	
Expand distant site providers	☑	☑			
New vs. established patient restrictions	☑	☑	☑		
Prescribing restrictions	☑	☑			
Provider credentialing (hospital and plans)				☑	☑

Fortunately, patients and clinicians who have experience with telehealth report high satisfaction with virtual care.[18–20] During the period of March 1, 2020, through May 31, 2020, Ascension surveyed patients who participated in a virtual provider office visit in Wisconsin, Florida, Kansas, New York, and Michigan for their satisfaction with the visit and likelihood of recommending virtual visits. Of approximately 2,850 patients who responded to the survey after their visit, 94.7% were satisfied that the virtual visit met their needs and expectations, with 92.7% indicating that they would likely recommend a virtual visit to their friends or family (unpublished). However, it is unclear how patients who did not respond or were not invited to participate in the survey felt because they had not had a telehealth visit. It is critically important that we understand this population's view of telehealth and barriers to engaging with telehealth, especially because this population would be expected to be enriched for disadvantaged and vulnerable populations, including ethnic and racial minority communities and those living in poverty.

Barriers to adoption of telehealth for this population may exacerbate already existing health disparities, and must be identified and addressed. A 2020 American Well Physician survey of over 600 physicians across multiple disciplines reported that 92% of physicians would continue using video visits even after it was safe to see patients in person;[21] however, adoption beyond the pandemic will require a systematic look at effectiveness to support continued use that will vary across systems and medical specialties, requiring significant operational and regulatory support.

It is also important to recognize that medical training, with the exception of a few fields, is geared toward physical interaction with patients in an exam room setting.[22] Therefore, core communication competencies, including professionalism, active listening, sharing information and providing guidance, and shared decision making, need to be translated for virtual care. However, even when healthcare providers effectively use these competencies, the same level of connection that occurs in an in-person visit may not be fully achievable in a telehealth visit. However, there has been little research on the level of human connection during telehealth vs. in-person visits, including whether telehealth is preferable in certain contexts or for certain patients. Research that identifies which types of visits and patients' needs can be met with telehealth and which are better served with in-person visits is needed to promote appropriate adoption.

Physical examination techniques need to be modified for the virtual visit, which involve active patient participation. There are additional environmental cues that can be taken into account during a virtual visit from a patient's home, which can impact clinical decision making, for example finding out steep stairs or carpeting that could contribute to fall risk or identifying environmental triggers for asthma. Training and education for implementation of virtual care into practice need to be standardized and integrated into medical school, graduate medical education, and continuing medical education curricula.

IMPLEMENTATION: HOW IS TELEHEALTH CONSISTENTLY DELIVERED?
There are several considerations for the optimal implementation of telehealth. As best practices emerge, the opportunity to share them will optimize broad adoption of telehealth services in a standardized and generalizable manner for patients, while reducing inefficiencies and

redundancy. These best practices will also allow an assessment of safety. There are aspects of medical care that simply cannot be entirely delivered virtually to a patient, such as procedures and vaccinations.

The healthcare team and system-wide organizational elements of telehealth that ensure consistent delivery of are manifold. The configuration of and tasks performed by clinical staff for telehealth are changed, as is the workflow. Optimizing the workflow and ensuring training for all stakeholders will be essential. All of these aspects, and others, present opportunities for sharing developed operations and best practices to optimize the implementation of widespread telehealth while continuing to assess safety.

MAINTENANCE: HOW CAN TELEHEALTH BE SUSTAINED AS A CARE MODEL?

It would be a lost opportunity if we did not consider the current state as a chance to measure what does and does not work as systems to sustain telehealth care models are put in place. Identifying technologies and workflows that are effective, and gaining feedback from end-users, including patients, families, and providers, could inform training and modifications to existing programs and the development of new ones. Once the pandemic has ended, organizations will need time to measure the impact of integrated virtual care delivery models on clinical outcome measures and total cost of care.

In summary, there are many frameworks of the healthcare system that can be used to systematically examine the impact of rapid uptake of telehealth on health of patients, care delivery, key stakeholders, and systems like Ascension. The framework we propose here is just one of the examples but serves to highlight the importance of measuring the impact of widespread telehealth on patients, healthcare teams, and health systems. It is also important to consider the impact on the communities they serve, given that without careful thought and planning, there is potential to widen the disparities gap in health outcomes. We anticipate a growing body of research examining the effects of widespread deployment of telehealth, which will be critical to refining telehealth care. Advances in policy and regulations related to telehealth, combined with a rapidly expanding evidence base, will be crucial to expanding telehealth care in a way that ensures safety and effectiveness. It took tremendous teamwork and commitment within the healthcare field to rapidly deploy telehealth on a large scale in the name of safety; however, it will take comparable teamwork to commit to assessing the impact of widespread telehealth on the health of patients.

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