Improving TeleDiagnosis: A Call to Action

SOCIETY to IMPROVE DIAGNOSIS in MEDICINE

Conversations with Hospitals, Health Systems & Clinical Practices

Problem

The COVID-19 pandemic has prompted the explosive growth of telehealth, including the novel use of virtual care for diagnosis (telediagnosis). Virtual diagnosis has been used with great success in specific clinical subspecialty settings, especially in visual specialties like dermatology, radiology, and ophthalmology. What's new is the dramatic shift, involving practically every practice and organization in the country, to the reliance on audio and video visits with patients for everyday diagnosis. Both this application and its scope are unprecedented, and telediagnosis raises many questions regarding the impact of virtual care on the quality and safety of the diagnostic process.(1)

Studying healthcare innovations is critical to understanding their uptake, initial impact, and ultimate potential. To understand the current state of practice and better define the key issues relative to the quality and safety of telediagnosis, we conducted an extensive environmental scan of recent literature, and hosted 'listening sessions' with eighteen individuals responsible for establishing and using telehealth services for their practices, hospitals, or healthcare systems. Our findings from these two sources are presented below, organized using the "RE-AIM" framework, which focuses on five key aspects of novel implementations: **R**each, **E**ffectiveness, **A**doption, **I**mplementation, and **M**aintenance (including trends and future directions).(2)

> *The "RE-AIM" framework focuses on five key aspects of novel implementations: Reach, Effectiveness, Adoption, Implementation, and Maintenance*

Reach

Key findings from the literature: The 'viral growth' of COVID-19 cases was matched by viral growth in the use of telehealth. Organizations that were providing a few dozen telehealth visits per week pre-COVID were conducting many thousands by year end. By one estimate, 2020 will see over 1 billion telehealth visits in the US.(3)

Although virtual visits extensively replaced in-person visits, this was not a 1-to-1 relationship; only two-thirds of in-person visits were replaced by a virtual visit.(4) This points to unmet gaps in care during the height of the pandemic, and the likelihood that care that is being delayed or deferred will result in harm. Anecdotes and studies are emerging that point to patients skipping annual check-ups and cancer screenings, for example. Even patients with acute problems seem reluctant to seek care; children with appendicitis are now presenting later in their course, with more complications.(5) The emerging literature warns that expanded telehealth adoption could widen existing race and ethnicity-based disparities in health care and patient outcomes.(6,7)

What we heard: Although virtual care reached many patients during the pandemic, it did not reach them all. Concerns have emerged over disparities in utilization, affecting rural patients, non-English speakers, and the many patients who lack 'tech' literacy, broadband services or a smart phone.(8,9) Elderly patients may struggle with virtual care, relating to hearing loss, challenges using video-chat resources, and using mobile health resources generally.(10) Innovative suggestions are emerging for some of these populations, for example checklists and tips for providers on how to improve telehealth engagement with the elderly.(11)

Our providers were aware of disparities in telehealth usage, and that many patients were struggling to engage effectively in virtual care. A consistent finding in our discussions was their drive to identify, understand, and address problems their patients and providers were encountering. One organization, as an example, was shipping easy-to-use devices for virtual visits to patients who lacked a smart phone, along with pre-paid data cards. Another created a training video for new, struggling patients, and another worked with local internet providers to expand web access to patients. A provider for rural patients had made arrangement for them to visit easily accessed local settings, from which a telehealth visit could be more easily conducted, often with the assistance of a medical aide or nurse.

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The telehealth providers had a mixed sense of how well virtual care was meeting the needs of their elderly patients. One organization's telehealth lead commented on their own data showing that Medicare-age patients were half as likely to use telehealth successfully, compared to younger patients. In contrast, others said that they had many elderly patients who were not only facile in using video chats and navigating patient portals, they seemed more adept at using virtual services than some of the younger patients.

Effectiveness

Key findings from the literature: The environmental scan identified substantial evidence that telehealth improves intermediate outcomes (satisfaction, timeliness of services, timeliness of diagnosis) in many setting outside of primary care, including the emergency diagnosis of stroke, and subspecialty diagnostic evaluations in dermatology, ophthalmology, and some screening settings (hypertension, mental health, cancer screening).(12) As just one example, teleconsultation with emergency department staff allows 'forward triage' of patients being transported with life-threatening conditions, expediting diagnosis and improving outcomes.(13)
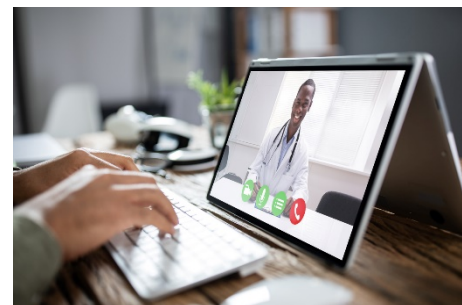
Published evidence regarding the use of telediagnosis in primary care is more limited, and mixed.(12, 14) One study of diagnostic care provided by a commercial telehealth provider found that HEDIS outcomes were somewhat worse for telehealth patients with 3 specific complaints: back pain, bronchitis, pharyngitis.(10) Another study involving some 12,000 pediatric telehealth visits found high levels of satisfaction, appropriate triage of emergency cases, and successful handling of the great majority of patient complaints.(15) For many, the jury is still out: "For primary health care staff, e-consultation delivers challenges around …… whether it offers a comparable standard of clinical quality, and whether it improves health outcomes." (16)

What we heard: Many providers felt that their current telehealth services had improved diagnosis, by improving access to care, expediting the patient's initial visit, improving early follow-up, and expediting and facilitating secondary consultations with specialists. One organization had succeeded in achieving real-time consultations, where the primary care provider could discuss the case with the appropriate 'on call' specialist during the patient encounter by text messaging, an accomplishment rarely achieved in the world of in-person care. Other advantages reported: Seeing the patient's home environment during a virtual visit, getting a sense of their physical setting and social support, being able to get both divorced parents involved on a call about their children.

None of the organizations were measuring direct patient outcomes for their telehealth programs, although many mentioned their surveys, and efforts to start collecting formal data. One organization, for example, found that telehealth visits had reduced the number of patients inappropriately appearing for evaluation in the emergency department. In a survey conducted by another organization, some patients said that if telehealth hadn't been available, they probably would not have sought care at all.
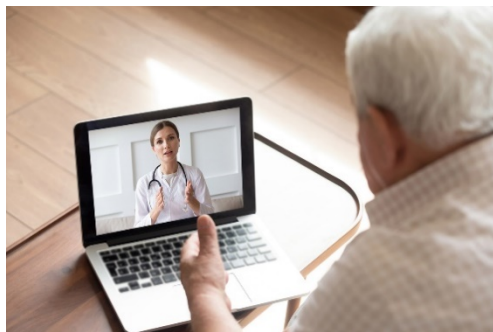
Providers were aware of the limitations imposed by virtual care, mainly the inability to conduct a comprehensive physical examination. One mentioned problem with privacy; patients in a home setting were unable to convey truly private issues with family members listening in. In terms of establishing patient rapport, one felt like a virtual visit got '95% of the way there', while acknowledging that things were missing: Issues left unsaid, feelings conveyed by body language, and not being able to put your hand on a patient's shoulder to express sympathy or convey difficult news. Many discussants mentioned challenges with the lack of formality of a telehealth visit, sharing that patients had "dialed in" from a restaurant drive-through or were engaged in other activities during the consult.

A key question confronting organizations and healthcare providers is whether a new patient can be seen virtually, or do they require an in-person evaluation? Those we spoke with felt that as they gained experience with telehealth care, their providers were getting better at knowing the correct pathway. They lamented a lack of consensus-based guidelines for triage, and that they were looking forward to new tools using artificial intelligence that might be able to suggest the best 'next steps' given the patient's initial symptoms and signs. One telehealth user commented that the most valuable test is a 'test of time' and that virtual care greatly facilitated the ability to follow-up frequently with patients after an initial visit to monitor whether symptoms were getting better or worse, or whether new symptoms had been noticed.

Adoption

Key findings from the literature: The realities of the COVID-19 pandemic obviated many of the adoption hurdles that complex interventions normally entail. Both providers and patients appreciated the physical safety that virtual visits provided, and telehealth quickly became the only viable option to provide safe ambulatory care. As evidenced by the dramatic growth of telehealth utilization, adoption was extraordinarily rapid and widespread. This unprecedented adoption of telehealth is all the more remarkable given that healthcare practices and organization, generally, were unprepared for this. Although most were familiar with using the telephone, emails, or patient portals to interact with their patients, and a few had a limited experience with video-enabled visits, none were prepared for the use of telehealth at scale to provide primary or urgent care.

What we heard: The providers we spoke with were in agreement that from their perspective, virtual care had been exceptionally well-received by most patients. Many of their patients were happy to have telehealth services available and were eager to use them. Initially this reflected concerns over the safety of face-to-face visits, but the novelty and convenience of a virtual visit also became important factors. Patient satisfaction surveys conducted by organizations showed that the vast majority of patients were satisfied or highly satisfied with virtual care. Provider satisfaction was also substantial and improving; "our providers are not going back".

But adoption was variable, both on the provider side and the patient side. The discussants commented on the struggles that elderly patients initially encountered in their use of telehealth, as opposed to adolescents, who were generally tech-savvy; one younger patient did his telehealth visit from his bicycle. On the provider side, many specialties found the transition to telehealth relatively easy; psychiatrists had little trouble adapting because their care didn't require a physical examination, in contrast to cardiologists, who were uncomfortable with virtual visits for lack of the in-person examination findings. Pediatricians, very accustomed to hearing about problems by telephone and providing triage advice, were another group for whom the transition to telehealth was relatively easy. We heard of substantial variability in adoption and satisfaction even between physicians in the same department; some were eager to try the new systems and happy to use it, while others were 'kicking and screaming'.

Implementation

Key findings from the literature: The literature reported that start-up costs, a range of policy issues (regarding reimbursement, practice limitations and privacy), staff training, and a host of technical issues were the key hurdles to implementing telehealth widely.(17) Although national policy abatements solved some of these issues, many user issues persist. Dropped calls, poor video quality or sound, and sometimes just establishing a stable and usable video connection to enable the virtual visit are still major challenges for many. Organizations are employing a wide range of strategies to address these problems, for example, using pre-visit 'test calls' where clinic staff contact the patients to work out communication kinks, or dropping back to just a telephone call if a video visit isn't possible. While many organizations are still struggling with these issues, successful organizations report completion rates of virtual visits approaching 100% (18)

Even with the best technology, implementation required solving other issues relating to workload, workflow disruption, alignment with clinical processes, changed roles, and unfamiliar communication pathways.(19, 20) Many clinicians who had never worked in a telehealth environment found it time-consuming and frustrating. The literature identified a clear need for orientation and training in both the technicalities of conducting a virtual visit, and in developing 'webside manner'.

What we heard: Providers mentioned several factors that helped them launch or quickly expand their telehealth capabilities. Resources that facilitated implementation included having staff with prior experience using telehealth, and informaticists that could lead the initial configuration requirements and help secure needed equipment. One organization cited their electronic medical record (EMR) system as a facilitating factor, because it enabled providers to originate a video encounter with a patient from within the EMR.

It quickly became clear that the myriad implementation issues required problem-solving to be done locally, with consideration of the existing resources and needs. Each problem required solutions custom-tailored to the organization and its unique circumstances. Larger organizations generally had an easier time of it than small practices, which had to make all the pieces fit and troubleshoot on their own, without the help of the large 'IT' departments available at major healthcare organizations.

One organization lead mentioned an unmet challenge – the 'tower of Babel' problem - how to access and navigate medical records from different organizations. There was hope that improving interoperability will solve this problem, although commercial products were mentioned that could potentially bridge these divides.

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The group agreed with the literature in regard to the critical need for provider orientation and training. The importance of this was emphasized by one telehealth lead, citing internal data showing that both patient and provider satisfaction, as well as diagnostic outcomes, improved amongst clinicians who had received specific training to optimize their 'webside manner'. None of the telehealth leads, however, were aware of efforts to measure or assure telehealth competency across providers.

One concern about virtual visits is that the team-based approach to primary care might be lost. In the in-person environment, a patient coming in for a visit would encounter first a nurse, and later perhaps a nutritionist or a pharmacist, or another member of the health care team. Recalling that the top recommendation from the National Academies of Science and Medicine for improving diagnosis was to have more effective teamwork in the diagnostic process, would this be degraded with virtual visits? Interviews with telehealth users and leads, however, provided interesting and reassuring news that this potential problem had been not only recognized, but was being addressed, with several organizations actively working to recreate the team and the care process, virtually.

As examples, one organization had standardized ways for a nurse or pharmacist to interview patients before or after their visit with a physician, and another established a program for a traveling phlebotomist to visit patients in their home when lab tests were needed, supporting the notion that for telehealth to be successful, the team environment needs to be recreated in this new virtual setting. In another example, someone physically carried "the patient"—who was logged in and visible on an iPad, from room to room for various consults.

Maintenance, Trends & Future Prospects

Key findings from the literature: One theme that emerged clearly from the environmental scan was the dynamic nature of the shift to telehealth. The shift was dramatic in both the magnitude of the change, and the compressed time frame in which it occurred. Virtually every aspect of the diagnostic process was disrupted and reimagined as part of telehealth adoption, and the fine-tuning of these new systems is very much a work in progress.

Given the breakneck speed of telehealth implementation, it is no surprise that many aspects of its use still need attention. At the top of the list for hospitals and health systems are concerns over the financing and reimbursement for telehealth services, and a host of privacy and security issues that were bypassed during the initial telehealth roll-out.(21) The literature shows that healthcare organizations are wary about the future of telehealth for these reasons; indeed, the initial enthusiasm over telehealth adoption has already begun to reverse in late 2020, with in-person visits again on the rise nationally.(4)

Clearly, telehealth is quickly evolving and improving, especially in the telediagnosis realm. Devices that patients can use at home to complement a diagnosis-related visit are appearing regularly, including home oximeters, and surrogate devices that replace stethoscopes or otoscopes. Telehealth-specific training modules are emerging at a rapid clip, along with ever-improved hardware and software applications. Online repositories of advice, guidelines, and tools are growing rapidly; organization leads and providers can get firsthand advice from other uses via webinars, social media gatherings, and frequent publications on problematic issues.

Telehealth has had a troubled adolescence, with some viewing it as a problem-laden technology with unproven value. From a different perspective, others see it as the new normal, or perhaps more: an opportunity to reinvent healthcare that solves some of the vexing problems inherent in healthcare today, such as the inconvenience and the lack of timely access for appointments and specialty consultation.(22)

What we heard: Telehealth leads were concerned that continuation would be contingent on establishing more permanent solutions to the many finance and policy-related issues that determine when, if, and how organizations can provide virtual care, and receive appropriate reimbursement. Those who we talked to were enthusiastic about telehealth in general, and comfortable using it for diagnosis, or at least for initial triage. They related a sense that they were on a learning curve, becoming not only more at ease with the technology, but actually getting better at providing virtual care. They were universally looking forward to a future that included telehealth as an option, even if it were not a necessity.

Conclusion

Understanding the barriers to and facilitators for rapid adoption of telehealth for diagnosis is key to promoting high quality diagnosis and ultimately, optimal patient outcomes. Through a series of conversations with providers from clinical practices, hospitals, and health systems, and an in-depth review of current literature, we were able to elucidate some early trends in Reach, Effectiveness, Adoption, Implementation, and Maintenance (including trends and future directions, using the RE-AIM framework. Future listening sessions with clinicians, representatives from telemedicine companies, and patients are planned for later this year.

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