

Improving TeleDiagnosis: A Call to Action



SOCIETY^{to}
IMPROVE
DIAGNOSISⁱⁿ
MEDICINE

Conversations about Functionality, Policy, Payment and the Future

Problem

The COVID-19 pandemic has provided many patients with their first opportunity to experience the use of telehealth for diagnosis (telediagnosis). The safety, the convenience, and the novelty of telehealth have been convincing selling points, and with so many clear advantages, telehealth seems well on its way to becoming ‘the new normal’. (1, 2) But the future of telehealth is unclear. As the COVID pandemic recedes, its use in the future will depend on whether both providers and patients believe it is worthwhile and how the many unresolved policies and payment issues are settled.

Telehealth changes almost every aspect of the diagnostic process, and the effect these changes impart on diagnostic outcomes is not known. (3) In this series of “Conversations,” we sought to learn how the different stakeholders involved view this new modality of healthcare delivery as it applies to diagnosis. We have previously considered telediagnosis from the perspectives of hospitals, health systems, and clinical practices (4), and clinicians. (5) In this report, we consider the future of telediagnosis in ambulatory care and the many significant issues that are now front and center. Findings from the recent literature and input from telehealth vendors, company representatives, and diagnostic quality and safety experts are presented, again using the RE-AIM framework (Reach, Effectiveness, Adoption, Implementation, and Maintenance and future prospects) to organize discussion topics. (add cite to Re-aim). (insert cite)

Reach

Key findings from the literature: Telehealth as a field spans a wide range of services and commercial interests, with over 250 vendors already involved. On one end are the large commercial conferencing systems that already existed and could be easily used for virtual ‘visits’. At the other end are brand-new, highly specialized start-ups developing tools to examine and monitor patients in their home setting. And in the middle are a host of commercial services that enable connection, integration with existing systems or the electronic medical record, or end-to-end services that provide a package of services and resources. Some systems link directly to an organization’s EMR, and others do not.

Many commercial systems are designed for existing practices and healthcare organizations to continue providing their patients with services. Other vendors replace these practices and organizations and provide direct-to-consumer healthcare services. Some vendors connect a patient to one of the company's clinicians for primary and urgent-care complaints and issues, while others provide virtual access to second opinions, a valuable aid to diagnostic quality and safety. Several major healthcare organizations have developed their platforms for delivery rather than relying upon an outside vendor.

Telemedicine is attracting serious investment; in just the first nine months of 2020, over 3 billion dollars was ventured, topping the list of digital health options. Wearable sensors alone garnered \$703 million in venture capital. (5)

What we heard: Much of what we heard in our discussions echoed what was found in the literature, with a few points emerging most prominently. The capacity for telemedicine to expand access to care was a palpable theme, though each conversation participant acknowledged that we have a great deal to learn about the patterns of use and access among underserved populations. Other prominent themes were mentioned, including the value of asynchronous telemedicine through remote patient monitoring and online education and communication platforms that can be accessed through patient portals. While some of these technologies have been in place for many years, the sentiment among those we spoke to was that this was an area to watch for its potential to improve care coordination and, significantly enhance the diagnostic process.

Effectiveness

Key findings from the literature: The first steps of diagnosis involve learning the patient's chief complaint and the history of their illness, performing an appropriate physical examination, and gathering relevant information from their medical records. The most critical limitation of virtual care is precisely that: it is virtual; that middle step, learning from the physical examination is, by the nature of the interaction, limited. Limitations in assessing breathlessness during the COVID-19 pandemic illustrate the criticality of this problem. (15) Knowing who needs to be seen 'in person' is the critical question for every telehealth provider. Understanding the limitations of virtual care is the key to realizing diagnostic quality and safety for teleradiology.

At the same time, creative approaches to reproducing elements of the physical examination are appearing regularly. Clinicians, researchers, and commercial concerns are all seeking to provide workarounds and devices that can be used at home in a 'patient-assisted' physical

examination. (16-18) Asking the patient to jump up and down recreates the opportunity to assess for 'rebound tenderness' seen in peritonitis, having them lift cans of soup or detergent

gives some idea of muscle strength and having them get close to the screen may provide enough illumination to examine the mouth. A guideline for the virtual 'ENT' (ears, nose, and throat) examination illustrates the guidance that is emerging, (19) and advice is now available for a virtual orthopedic examination as well. (20)

In terms of devices, the progress being made inventing devices to enable an at-home neurological examination provides a fascinating peek at what lies ahead.(21) One’s brainwaves can be measured with an EEG-enabled headband, your mental status with one of many different apps, your motor function with wrist-based actigraphy, and AI-enabled voice processing can tell if you have Parkinson’s disease. The progress is summarized in **Figure 1**, which illustrates the state-of-readiness of devices to address each step of the neurological examination. These various instruments will ...‘...move beyond traditional video-based telemedicine encounters’ in a major way. ‘A future suite of these clinical assessment technologies will blur the lines between history taking, examination, and remote-monitoring.’(21)

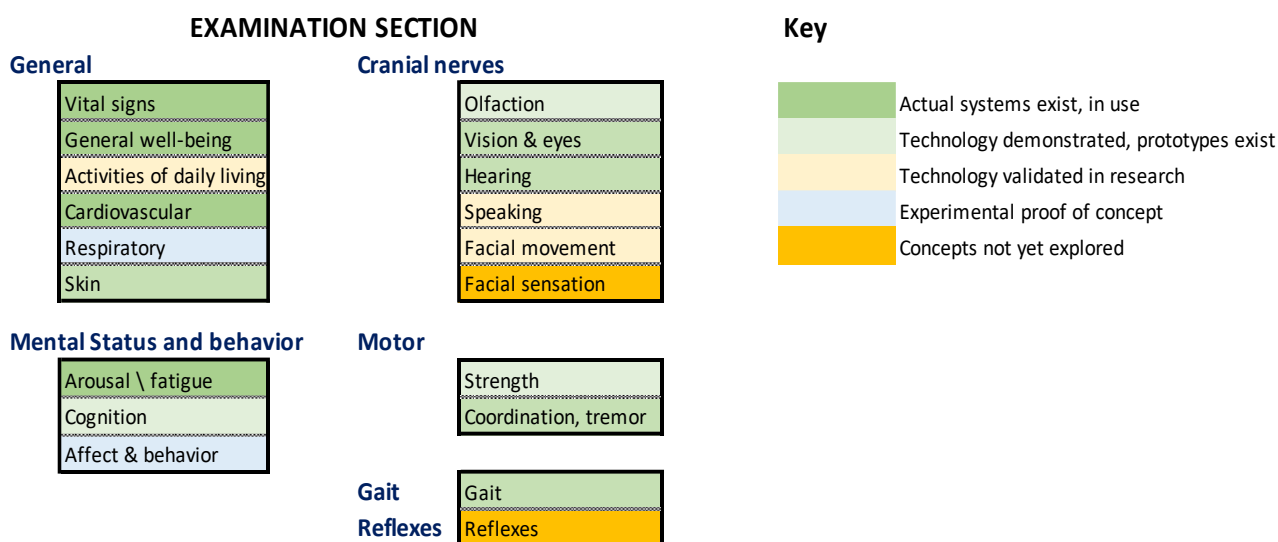


Figure 1: The state of readiness of devices to allow a virtual neurological examination(21)

What we heard: Again, the experiences and sentiments from the discussants mirrored many of those captured in the literature. There are simply aspects of in-person encounters that cannot be effectively replicated with virtual tools, like examining lymph nodes or touching a patient’s shoulder after a worrisome discussion. However, telehealth providers pointed out that virtual care can also improve in-person care. As an example, consider the advantages of asynchronous telemedicine tools that enable remote patient monitoring over time: A record of a patient’s cardiac rhythms obtained over a period of weeks is a significant improvement over the electrocardiogram obtained at one point in the doctor’s office. One telehealth provider shared how their platform improved patient education; allowing them to deliver pre-surgical educational materials in a patient’s native language before they reported for surgery; this type of technology could be valuable for diagnostic testing and preparation.

Experts from the quality and safety space advocated for common nomenclature and syntax, arguing that this is a foundational need for capturing relevant data about the safety and quality of telemedicine. To be correctly analyzed and interpreted, data will need to be segmented by

what it describes—the experience of using the technology or the experience of providing/receiving clinical care?

Despite all of the advancements being made with devices, concerns were expressed about realistically assessing limitations with things like smartwatches or other devices used during a teleradiologic process. It is imperative to determine if a device is or is not working properly and how it has been calibrated. Overconfidence with these types of devices can bring a false sense of security.

Finally, the impact of telemedicine on how providers practice and interact with patients was a key feature of our conversations. Discussants shared that, with the new telemedicine landscape it is even more important that the person managing patient phone calls in the “front office” has some sort of clinical training. These calls have become more of a triage tool than a simple scheduling option. An RN who uses a telehealth platform along with remote monitoring technology-shared that using these tools allows her to “practice at the top of (her) license” and support patients to better coordinate their care across multiple providers and encounters.

Adoption and Implementation

Key findings from the literature: Telehealth flourished in 2020 thanks to a complex set of waivers, accommodations, and ‘flexibilities’ to existing payment rules, licensure restrictions, and state and federal regulations. As an example, HIPAA waivers allowed virtual telehealth visits over the telephone, a practice that would have been precluded in other years over security concerns.

Accommodations to support telehealth varied widely across the states. California and Virginia were called out as role models in enabling telehealth. Their efforts aggressively addressed the many barriers to telehealth usage and worked with Medicare to expand access opportunities. Another 30+ states enacted regulations to ensure financial parity for telehealthcare. State regulations governing licensure meant that many telehealth clinicians were restricted to ‘seeing’ patients just in their state.

Two other key issues will also need to be considered and resolved if telehealth is to continue full-speed-ahead: (9)

Liability Cyberliability is a whole new area of concern. Limitations in performing a physical examination, for example, exposes providers to the risk of missing something important.

Privacy and security An extensive set of HIPAA regulations help ensure the privacy and confidentiality of patient information used in healthcare. How do these regulations apply to virtual encounters? How can patient privacy be protected when so many different communication avenues are being employed and the everyday workflows of healthcare are disrupted?

Even the simple act of using video, or sending a still picture in connection with a telediagnosis visit raises legal issues that have yet to be addressed (**Figure 2**). (10) These concerns were not top-of-mind during the COVID-19 pandemic, but they are not trivial and ultimately will need solutions: *“For telehealth to succeed, privacy and security risks must be identified and addressed”*.(11)



A Case Study in Telehealth Risks – “Selfies” Patients may, on their own, or after being asked, take pictures of themselves or a body part during a telehealth encounter for diagnosis. These images represent legal documents, part of the patient’s medical record, but there are a host of image-related legal and ethical issues that have yet to be addressed, including: consent, guarantee of privacy, data security and storage, image quality, etc.

Figure 2. Selfies – A case study of telehealth policy challenges (10)

There is substantial pressure to solve the various payment and policy issues quickly. The American Medical Association is solidly behind telehealth. It is encouraging legislation that will ensure uniformity across states and address the key issues that will determine the future course of telehealth including the concerns over privacy, security, and licensure\liability. (12) The AMA resolutions also include the important and laudable goal of supporting telehealth as a means "to reduce health disparities and promote access to health care." The problem of disparities in telehealth usage has emerged as one of the major concerns regarding healthcare during the COVID-19 pandemic, and although ideas on how to bridge the ‘digital divide’ are emerging,(13) few have been adopted.

Many of these suggestions are included in the “Telehealth Modernization Act” (S368), which would extend many of the enabling provisions enacted during the COVID-19 pandemic. The bill is under review by the Senate Finance Committee and enjoys bipartisan support. (14)

The Telehealth Modernization Act (S368) “... the bill extends certain flexibilities that were initially authorized during the public health emergency relating to COVID-19 (i.e., coronavirus disease 2019). Among other things, the bill allows (1) rural health clinics and federally qualified health centers to serve as the distant site (i.e., the location of the health care practitioner); (2) the home of a beneficiary to serve as the originating site (i.e., the location of the beneficiary) for all services (rather than for only certain services); and (3) all types of practitioners to furnish telehealth services, as determined by the Centers for Medicare & Medicaid Services.”

Economic evaluations have found that telemedicine is a cost-effective modality in several chronic-care settings, but with the sole exception of its use in the diagnosis of diabetic retinopathy, cost savings in diagnostic settings are equivocal or unclear. (6, 7) The economic consequences of using telehealth at scale for diagnosis in primary care have not been evaluated, to our knowledge.

Payers and insurers are trying to decide what their coverage policies will be going forward. CMS provided full payment for virtual visits in 2020, and most private insurers followed suit, many even waiving copayments. Whether these will be continued, or at the same levels is unclear, and the outcomes will hinge on both state and federal policy decisions. The American Medical Association is making the case these decisions should be based on a holistic evaluation of telehealth’s value across a number of dimensions. **(Figure 3)** This vision aligns with the emerging consensus that healthcare going forward will operate in a hybrid fashion, spanning the continuum of care from diagnosis to treatment. (8)

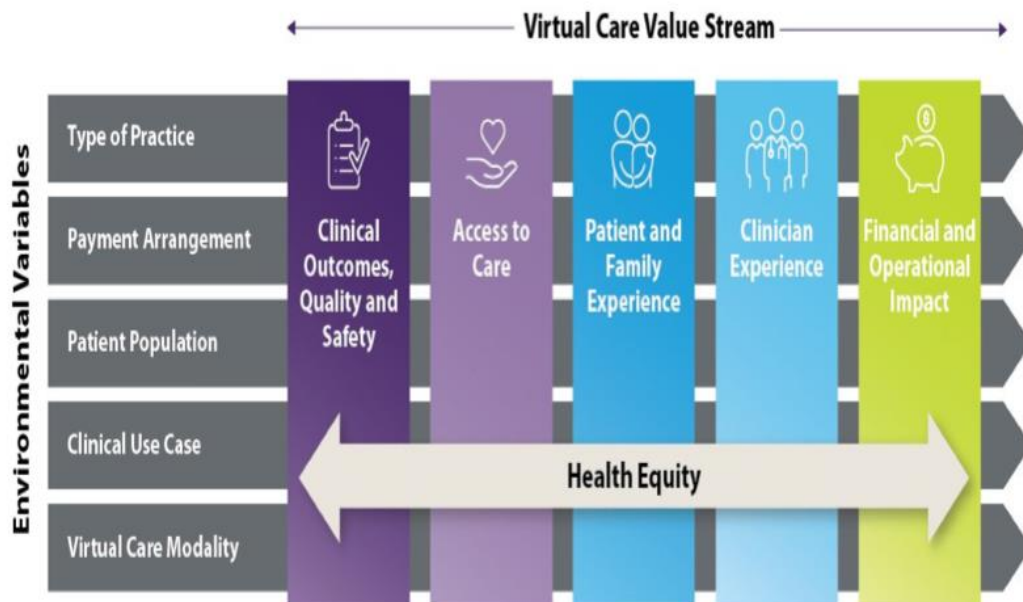


Figure 3: The AMA’s “Virtual Care Value Stream”

Telehealth companies are ready and eager to provide virtual services for patients, but need answers to the many questions about coverage, and ideally a uniform, national approach to payment. *“The business case needs to catch up to the clinical case. The key in making further progress is to continue to wipe away old assumptions about what will and won’t work.”* [Dr Til Jolly (9)] For companies to plan appropriately for the future, the economics of telehealth needs to be more clearly defined, standardized across states and, hopefully, stabilized.

What we heard: Universally, the issue of reimbursement and payment was a primary concern—not only in this series of conversations, but in all conversations throughout the project. Two telehealth providers we spoke to who work exclusively in women’s health shared several examples of how wider use of telemedicine could save significant waste in the healthcare system and should therefore be recognized for that value and reimbursed accordingly.

Requirements to make a “first stop” at a primary care visit for example, before being referred for diagnostics or visits to additional clinicians. They also outlined how expanded access and payment for telemedicine could improve the quality of diagnosis and care for patients, pointing to menopause as an illustration, a condition for which many women suffer with symptoms for weeks or months while waiting to get an appointment.

The lack of clarity around liability, state licensure and regulations, and privacy and safety caused a fair amount of anxiety among those we talked to. While the “can do” spirit fueling the early pandemic response may have created a real—or perceived—safe haven for these issues, now that the pandemic is slowly coming within control, that sense of safe haven is waning if not already gone. We spoke with a pair of quality and safety experts who posed a simple but chilling question as an example of the constant mental math underlying these interactions; what if a patient fell during a telediagnosis visit? Would you have someone in their home call an ambulance? Would you call it directly? What would your role be as the provider overseeing that initial episode of care?

Maintenance

Key findings from the literature: The rapid uptake of telediagnosis during the COVID-19 pandemic has proven to be a disruptive alteration of the ‘normal’ diagnostic process. There is no longer a question of things ‘returning to normal’; telediagnosis will have a long-lasting impact on diagnosis. These changes are likely to evolve and even accelerate in the near term. Here’s what we see:

- Telediagnosis will complement and enhance in-person care, not replace it;
- Hybrid systems will be the norm, and patients will have options;
- Telehealth will facilitate access to sub-specialists, second opinions, and decision support
- Chat and messaging will be used extensively. Just as these have become so common in our personal lives, they will be used increasingly in our healthcare as well;
- Telehealth applications will interact seamlessly with EMR’s and patient portals; and
- There will be rapid growth in remote patient monitoring and asynchronous communication vehicles, including the development and use of in-home devices for evaluation, measurement, and communication,

The telehealth revolution goes far beyond just replacing one mode of communication with another. Recommendations from The Commonwealth Fund frame the upcoming policy decisions as a unique opportunity to improve healthcare access, quality, and value. (22) A posting by Forbes predicted that telehealth would transform not only diagnosis, but provide ‘end to end care management’. (2) The theme of telehealth as an opportunity for re-invention has been echoed by others, envisioning telehealth as an important avenue to improve not only access and convenience, but as a medium that supports patient sovereignty and the patient-physician relationship generally. “*Digital healthcare has everything to do with where medicine is going, not where it’s been.*” (23)

The net impact of telehealth on diagnosis in the United States is likely to be positive. The negative impact of the missing physical examination is offset by the many positive features.

Diagnosis timeliness will benefit directly from improved access to care, and diagnostic accuracy will be enhanced thanks to easier follow-up and enhanced access to second opinions, specialty consults, and decision support resources.

What we heard: The bottom line across all of the conversations we had is that telemedicine “has a place” in healthcare; a sentiment echoed by the patients we spoke with, as described in the fourth brief in the series.(cite for brief) Telehealth providers recognized the many limitations described above and elsewhere in the literature, but they had also begun developing their own simple algorithms or metrics for making decisions when the choice between virtual and in-person diagnosis was fairly obvious. The more “grey” areas are where guidelines and more research are needed, just as more firm guidance is needed around liability, cross-state regulation, and privacy.

Everyone we spoke with also saw an immense opportunity for expanding access to patients, whether through the new ability to connect remotely for those in rural areas, or simply because logging on to a virtual visit does not require a multi-hour chunk of time that interferes with work, school, or family obligations. Those providers offering asynchronous telemedicine like remote patient monitoring or educational platforms also saw immense value through better coordination of care and more consistent contact with the patient, enhancing the ability to make new diagnoses if new symptoms arose.

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 **R**each, **E**ffectiveness, **A**doption, **I**mplementation, and **M**aintenance (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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