Teledermatology: The Present State of Dermatology’s Future

BY PETER A. LIO, MD

With the rapid evolution of communication technology, we can now conduct high-resolution live video chats between mobile phones anywhere in the world. Not surprisingly, the notion of telemedicine has risen to prominence in recent years. Teledermatology, in particular, has been deemed the “next big thing” for quite some time. As we are constantly reminded, dermatology is a natural fit for telemedicine due to its uniquely visual disposition. But, while new data suggest that adoption rates for sustainable programs are slowly on the rise, teledermatology is not in widespread use and remains frustratingly out of reach for many patients. Reasons for this range from insurance coverage to medicolegal questions; yet, as more evidence demonstrates its potential, and ceaseless technological developments continue to improve its accessibility, the tantalizing possibility of teledermatology may soon be realized, to the benefit of patients and physicians alike.

Ahead, I hope to explore the current pulse of telemedicine and gauge its future in our specialty. To do so, I will examine some of the relevant data and consider the broader issues and roadblocks to teledermatology’s implementation.

CONTEXT AND RESEARCH

For at least a decade, we have possessed the technology for simple, secure, and inexpensive store-and-forward teledermatology. During that time, many studies have probed the medical, social, and legal aspects of teledermatology. From the standpoint of pure performance, multiple studies demonstrate reasonably good outcomes with both diagnosis and treatment via teledermatology. For example, one recent trial in which patients were randomized to receive care via teledermatology or in-person, found no evidence of a difference in clinical outcome between the two groups at nine months post-referral. Teledermatology has also been found useful as a screening system for cutaneous melanoma with a favorable effect on the initial prognosis of patients with melanoma.

Regarding the utility of teledermatology, several factors—from image quality to the nature of the communication itself—may impact the quality of care. In one study, there was a significant correlation between the correct diagnosis and the quality of the photographs taken. In nearly two-thirds of all cases, a teledermatology diagnosis was possible, yet there was insufficient information to make a telemedicine diagnosis in the remaining third of the cases. Remarkably, another study argues that photo quality does not appear to have a significant impact on the accuracy of diagnosis. In this study, pediatric teledermatologists were able to make a diagnosis most of the time, regardless of historical information provided or image quality.

While the differences in diagnosis and treatment do not appear to vary greatly between teledermatology and in-person consultation, one might anticipate that there would be significant stylistic differences between these modalities. However, one study found that physician providers communicate with similar style and content whether using teledermatology or in-person. Moreover, teledermatology appears

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to have high rates of satisfaction with both physicians and patients. In a recent study of primary care providers at Veterans Health Administration, 86 percent of providers reported that teledermatology was a good addition to regular patient services. In addition, 97 percent of imaging technicians were satisfied with the ability of teledermatology to improve the description of dermatology conditions using images of the lesions or rashes.

There is even real-world use data that shows teledermatology is making a significant impact for some populations. For example, a study at Kaiser Permanente’s Northern California Medical Center revealed that the use of teledermatology in remote areas results in a shorter time to biopsy than traditional referral methods as a result of improved triaging measures. Add to this data demonstrating long wait times and large underserved areas for dermatology, and we can only conclude that there are no real technological hurdles for this revolution to take place: all are external.

**ROADBLOCKS TO TELDERMATOLOGY**

Despite mounting research in support of teledermatology’s benefit and utility, implementation has been very slow. (In fact, “slow” may be an understatement!) There seem to be three major issues holding up its widespread adoption:

- **Lack of insurance coverage**
- **Medical malpractice insecurities and regulatory issues** (such as being bound by state licensure)
- **Lack of patient enthusiasm** (especially vis-à-vis lack of insurance coverage)

The widespread lack of insurance coverage for teledermatology services is a particularly vexing phenomenon, particularly since teledermatology has been shown to offer great assistance in streamlining medical care solutions, which by turn reduces costs. Thus, we can only speculate as to why increasing patient convenience is not something insurance companies are excited about. Although teledermatology services could be billed at a potentially much lower cost to insurance carriers, it is possible that the usage would surge, especially since seeing a dermatologist in-person has several deterrents built-in, including long wait times. One could imagine a bonanza of demand for the smallest pimple or transient rash. It could also result in an inflated demand for dermatology visits. For example, when evaluating a mole, many physicians might desire an actual visit to perform dermoscopy, biopsy, and even to examine all of the patient’s moles, since sometimes the most concerning spot is not the one that the patient is worried about. However, it is likely that pressure will continue to mount for such coverage, and it seems inevitable that this will be a way to leverage technology to improve access to care.

There is also uncertainty regarding the legal components of teledermatology, as laws vary from state-to-state and continue to change. Most states require that the physician limit practice to the state in which he or she is licensed, limiting the reach of teledermatology to some degree. Additionally, there is concern that malpractice risk may be higher without actually meeting a patient in person; however, this fear may be unfounded, as it has not been sufficiently studied yet.

My own experience with a commercial teledermatology system over several months has offered mixed results, due to a combination of the roadblocks described above. We paid a monthly fee to use the company’s HIPAA-compliant servers and application, and patients could log on via computer or mobile app, upload a photo and specific information securely, and then would pay the company directly. There was an insurance waiver (as apparently some plans may cover teledermatology in some settings—something which can be confusing) and our malpractice attorneys requested that we only use this for patients already established with our practice (rather than new patients) to mitigate risk. We found that, while many patients asked if they could send photos to skip an office visit, they were very hesitant to do this formally when payment was required. Beyond having to pay out of pocket, involving an additional company and having to pay them directly may have been part of the issue, but after several months we abandoned this practice. I strongly suspect that if insurance were to cover these visits, however, it would open the floodgates. At this point, at least in our small experiment, there seemed to be the sense that paying out of pocket for something that would otherwise be covered is not palatable, even for the convenience.

**THE RIGHT PATIENT, THE RIGHT MEDIUM**

Since dermatology is a uniquely visual specialty that faces its own workforce shortage, teledermatology might not only be beneficial, but essential for the continued growth of the specialty going forward. While a larger model for the sustainability of teledermatology remains undeveloped, in the meantime physicians who wish to incorporate it into their practices must find ways of doing...
so safely and at a reasonable cost. There is little doubt that teledermatology could be a powerful tool to maximize specialty time and resources, while minimizing cost and inconvenience for the patient, but part of the issue is finding both the appropriate patient and the conditions amenable to this medium.

For example, one element that is sometimes overlooked is that a relatively high percentage of patients are more complex than a photograph will accommodate. From KOH preparations and dermoscopy, to checking for dermatoglyphrik and performing cultures, to biopsies and excisions, dermatology is an incredibly hands-on field. Additionally, the relationship is not over once the diagnosis is made! Indeed, for many of our patients the diagnosis is the easiest part. What requires time, rapport, and many follow-up visits is guiding the patient through the labyrinth of therapeutic options, be it for severe plaque psoriasis or impenetrable facial eczema. Such counseling can be much more difficult to do electronically than during a face-to-face meeting. Part of the role for teledermatology, then, could be to help facilitate triage, so that patients who do need to actually be seen can get an expedited appointment. More work needs to be done in order to understand how best to utilize teledermcine in these more focused ways, as well.

Additionally, as the mobile market expands, physicians may find it difficult to navigate the growing field of products. For patients, teledermatology certainly seems more accessible, as a variety of websites now offer consultations and treatment to patients without ever requiring an office visit. These sites may pose a threat to traditional dermatology practice; another reason, perhaps—in addition to insurance and regulatory issues—why teledermatology has failed to take hold with physicians.

Ultimately, however, teledermatology and online consultations may just be two sides of the same thing. From the most conservative use of teledermatology by an existing patient to triage for a rash or spot, to the most risky (relatively) use of sending your photo and history to an unknown online doctor as the entirety of the relationship, there will be many gradations in between. Because we are more of a "hands-on" specialty than some give us credit for, my sense is that pure tele-relationships will be fairly limited, and may have less patient satisfaction and poorer outcomes in the long run. However, the sheer number of such start-ups suggests that there is something to this idea and that many smart folks are actively trying to figure out.

Over the next several years, it stands to reason that several of the current "unknowns" about teledermatology will be clarified. We may see more forceful regulations from either the Federal government or state governments regarding what constitutes safe and effective medical guidance online. In addition, the increasing number of mobile apps may engender more scrutiny and better performance of new technologies in educational and diagnostic capacities. A recent example of this are the recently published evaluation criteria for mobile technology applications, which offer a convenient and scalable means of providing specialty care and for assessing future mobile apps, as well.

**A BRAVE NEW (UNCERTAIN) WORLD**

As the online world of medical advice continues to expand, the onus rests on physicians to get the word out about the importance of dermatology as a specialty. Since many unqualified practitioners claim to be "skin experts," we in dermatology are unfortunately accustomed to having to fight for acknowledgement of our value and the importance of board certification. Thus, the battle over teledermatology and online consultation is just another hurdle on our track.

There is a fear and uncertainty about any change, especially change that is fundamental to the way we practice. However, when such changes are looming, the best thing to do may be to embrace them, own them, and control them so that we can maintain our leadership position. To ignore this and hope it goes away is folly, and allows others to take charge and may leave us behind in this brave new—and uncertain—world. The responsibility is ultimately ours to own this movement and ensure that patients have access to the most qualified care, whether in-person or from a distance.

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