



Teledermatology: Examples of Consultative and Direct-to-Consumer Platforms in Action

Consuelo V. David, MD, MSc

Limited access to dermatologic care has been a long-standing problem. Given that “all dermatologists are natural teledermatologists,” as Mark Seraly, MD, at DermatologistOnCall (www.dermatologistoncall.com) emphasizes, it is no wonder that the field of teledermatology is playing a critical role in tackling the issue (written communication, February 2013).

Types of Teledermatology

There are 3 basic forms of teledermatology: store-and-forward (S&F), live interactive, and a hybrid of both.¹ The S&F teledermatology model is the most common and involves users logging into a program, attaching photographs, and providing information regarding the problem. Store-and-forward programs are further divided into 2 subcategories: consultative and referral teledermatology (C&RT) with consultations between primary care physicians (PCPs) and dermatologists, and direct-to-consumer teledermatology (DTCT) with consultations between patients and dermatologists. Online portals and mobile applications are used as interfaces.^{2,3} Live interactive teledermatology refers to live consultations between patients and physicians that take place via teleconference. Hybrid models are live-interactive sessions that incorporate S&F photographs.¹ The benefits of teledermatology include flexibility, efficiency (ie, time, money), improved access, high patient satisfaction rates, and no specific staffing requirements other than being a licensed physician.³

Improving Dermatology Care for Safety Net Patients Through C&RT in California

There are several examples of S&F services that have successfully improved access to and the quality of dermatology care for underserved patients in California. Direct Dermatology (www.directdermatology.com) is a private teledermatology service provider supported by the California HealthCare Foundation to improve dermatologic care and access to underserved populations throughout California. eConsult (www.econsultla.com) is a telehealth portal developed for and funded by LA Care Health Plan, a public health plan created for the Los Angeles safety net community. TeleDerm is a program at the University of California, San Francisco, for underserved patients in Northern California (Toby Maurer, MD, oral communication, March 2013).⁴

eConsult providers work with the Los Angeles County Department of Health Services (DHS) and multiple private nonprofit clinics that are contracted through the Healthy Way LA health care initiative.⁵ As a safety net community, specialty care providers are a limited resource. eConsult gives PCPs quick access to specialists for consultation and eventually will be the primary system used to process intranetwork referrals within the Los Angeles DHS network. Currently there are 5 dermatologists participating in eConsult who either work in Los Angeles DHS facilities or have been recruited by DHS. For some dermatologists, their eConsult responsibilities are an add-on to already existing responsibilities, whereas others receive additional compensation. As the program expands, it will be interesting to see what solutions develop to alleviate staffing limitations and avoid fatigue.

Programs such as Direct Dermatology and eConsult as well as their predecessor TeleDerm show that C&RT is particularly good at improving access to

From Harbor-UCLA Medical Center, Torrance, California.
The author reports no conflict of interest.

dermatologic treatment in health care networks with limited specialty care such as county systems. eConsult dermatology consultants answer approximately 20 to 90 consultations per week, most beginning with correspondence similar to an e-mail. Using this model, dermatologists have the ability to offer “first pass advice as to what [PCPs] can do, a plan B if that doesn’t work, or triage patients to be seen in a live clinic,” says Toby Maurer, MD (oral communication, March 2013).

An important inevitable by-product of these physician-to-physician dialogues is PCP education on how to diagnose and treat common dermatologic conditions. For example, in his eConsult responses, Ron Birnbaum, MD, regularly includes links to VisualDx (www.visualdx.com), a clinical decision support system that has educational material, therapy recommendations, and expert-reviewed images for a multitude of dermatologic diagnoses (oral communication, January 2013). Direct Dermatology includes links to VisualDx as well as free patient education links through Skinsight (www.skinsight.com). In this way, PCP and patient education only requires one additional click from the consultation note.

A privately owned S&F teledermatology company, Direct Dermatology is an example of how the C&RT and DTCT models can complement each other. With funding from the California HealthCare Foundation to support sustainable businesses, Direct Dermatology recruits and retains high-quality dermatologists from around the state. The company consists of 15 dermatologists, including 1 pediatric dermatologist and 2 dermatopathologists, though dermatopathology has not been incorporated into its services (Noah Craft, MD, PhD, DTM&H, written communication, March 2013). Their consultative arm contracts with insurance companies, health maintenance organizations, and independent practice associations to provide teledermatology consultations to network PCPs. For C&RT consultations, PCPs log into the Direct Dermatology Web site to upload patient photographs and provide information regarding the skin problem. Over the last 3 years, Direct Dermatology has managed 95% of referred cases without the need for a face-to-face (FTF) visit (Noah Craft, MD, PhD, DTM&H, written communication, March 2013). Direct Dermatology staff dermatologists are private dermatologists, most who are university affiliated, and are paid on a fee-for-service basis for each consultation completed.

According to eConsult’s February 2013 preliminary data, 1432 dermatology consultations have been sent and 1099 consultations have been “closed” (eg, completed) since its launch in August 2012; average dermatologist response time was 2.48 days. As a

result, among closed consultations, 288 (26%) FTF dermatology visits were deferred because they were managed by a PCP after receiving advice from an eConsult dermatologist (Ron Birnbaum, MD, written communication, February 2013). Consultative and referral teledermatology services reduce wait times for FTF visits by eliminating unnecessary referrals and expediting urgent referrals.

In contrast to the percentage of Direct Dermatology consultations that required FTF visits, 754 (69%) of closed consultations at eConsult required FTF visits with a dermatologist; the reason for this variation is unclear.⁶ A patient may require an FTF visit when there is concern of systemic illness, extensive work-ups are required, a genodermatosis is suspected, or the diagnosis is unclear. Other reasons may include photographs that are poor quality, pigmented lesions with equivocal diagnoses that require further in-person evaluation, and a need for procedures such as surgical excision or Mohs micrographic surgery. Dr. Birnbaum explains, “Sometimes patients need face-to-face visits due to a lack of resources on the PCP end, such as cameras, biopsy tools, histopathology services, or phototherapy” (oral communication, January 2013). In other cases, patients may need medications that PCPs are uncomfortable managing (eg, isotretinoin, methotrexate, cyclosporine). Time also is a limitation encountered on both ends. It takes time to teach new diagnoses to PCPs and for them to learn and apply this knowledge; a similar observation was noted by Lasiera et al.⁷

TeleDerm services multiple San Francisco Bay Area counties including Alameda and San Mateo counties. Given the success of eConsult so far, it is not hard to imagine that it may have the potential to extend to surrounding counties, similar to TeleDerm. TeleDerm dermatologists are clinicians at the University of California, San Francisco; their teledermatology responsibilities are allotted into their work schedules and are accounted in their salaries (Toby Maurer, MD, oral communication, March 2013).

All teledermatology services, including DTCT services, have start-up costs. For C&RT, up-front costs may include buying cameras, hiring staff to upload the images, and hiring dermatologists. However, based on her experience with TeleDerm, Dr. Maurer explains:

We know from other studies that there’s probably not so much a [cost] savings as it is cost neutral with a shift to other providers in the system. So in reality, I don’t see [teledermatology] as a way to save money. But, I do see it as increasing access to a lot of people and decreasing wait times. And those are 2 outcomes measures that are critically important certainly in the county system and as we expand healthcare in America (oral communication, March 2013).

Direct-to-Consumer Tele dermatology

Direct-to-consumer tele dermatology improves access by giving patients the opportunity to contact dermatologists directly without visiting an office. Direct-to-consumer tele dermatologists can only provide a consultation to patients who reside in areas where the physician is licensed. Two private companies that apply this model are Direct Dermatology and DermatologistOnCall, which serves Pennsylvania.

Both companies instruct patients to log into their Web sites, which are compliant with Health Insurance Portability and Accountability Act guidelines, to submit photographs and information regarding their condition. Patients receive a consultation and/or prescription within 48 hours; due to the efficiency of tele dermatology, consultations often are completed much sooner. Patients who use DTCT services are charged an initial out-of-pocket fee; the fee is \$85 for Direct Dermatology and \$69 for DermatologistOnCall. Patients often can use a flexible savings or health savings account to fund the consultation, and the Web sites include forms that can be sent to insurance companies to facilitate reimbursement. Reimbursement by insurance companies for DTCT services largely is offered only for live-interactive services. The Center for Medicare and Medicaid services limits reimbursement for S&F programs in federally qualified centers in Hawaii and Alaska.⁸

Dermatologists often make a diagnosis within seconds. Because of this intrinsic skill, consultations have the potential to be completed very quickly. Dr. Seraly said, "Within 2.8 to 5.2 minutes, a consultation is done, is in the patient portal, and prescriptions are e-prescribed directly to the pharmacy" (oral communication, March 2013).

The use of physician extenders is a potential solution to the shortage of dermatologic care. In one study of 1243 dermatologists, 29% reported using physician extenders in 2007.⁹ An argument for the addition of DTCT services in a dermatology practice is the ability to directly manage the common, low-risk, short-term care of patients with chronic stable conditions who currently are managed by physician extenders, while triaging more complicated cases and procedures to the clinic. The 2-fold benefit is quicker access to care for patients and increased practice productivity for dermatologists.

Similar to C&RT-related issues, difficulties faced by DTCT tele dermatology include photographs that are poor quality, a problem that resolves as users learn how to take better photographs, as well as the inability of patients to recognize the clinical findings that are considered pertinent negatives. Also, some

dermatologists may miss the ability to visually follow-up on patients as they improve.

Final Thoughts for Residents

The tele dermatology models discussed here are just the tip of the iceberg and all have improved access to care. Aspects not explored in this article include tele dermatology mobile applications (eg, AccessDerm), the live-interactive tele dermatology model along with the companies that equip dermatologists with tools needed for this model, online portals dermatologists can purchase to add tele dermatology to individual practices, and reimbursement issues associated with tele dermatology services. There are many other leaders in the field of tele dermatology who have not been discussed including Greg Raugi, MD, PhD, and Nicholas Compton, MD, both faculty at the University of Washington and the Veterans Affairs Hospital in Seattle who run one of the largest tele dermatology services in the country; April Armstrong, MD, MPH, at the University of California, Davis, who leads one of the largest successful academic tele dermatology services; and Jeffrey Benabio, MD, at Kaiser Permanente in San Diego, California, who leads a large tele dermatology service in California.

As in any rapidly evolving field, many questions remain. Will increases in consultation volume in the setting of limited physician and financial resources affect the sustainability of C&RT safety net programs such as eConsult? If and when DTCT consultations are reimbursed by insurance companies, will this service be incorporated into county systems? When and how will dermatopathology services be incorporated into tele dermatology? Will increased popularity of private DTCT and consequently increased competition affect profitability?

Tele dermatology will continue to change, but it certainly is not going away. When asked to provide advice for residents on the subject of tele dermatology, Belinda Tan, MD, PhD offers:

You don't necessarily have to incorporate tele dermatology into your practice, but you should become familiar with it. Electronic communication with our patients will be part of how all physicians will be delivering care in the future. And as a dermatologist, you will be getting phone texts and emails from friends and family asking about skin problems. In a way, that is yesterday's tele dermatology (written communication, February 2013).

Acknowledgments—Special thanks to Belinda Tan, MD, PhD; Ron Birnbaum, MD; Stefani Takahashi, MD; Jeremy Kampp, MD; Noah Craft, MD, PhD, DTM&H; Mark Seraly, MD; and Toby Maurer, MD, for their insight and contributions.

REFERENCES

1. Armstrong AW, Wu J, Kovarik CL, et al. State of teledermatology programs in the United States [published online ahead of print March 28, 2012]. *J Am Acad Dermatol*. 2012;67:939-944.
2. Berndt RD, Takenga MC, Kuehn S, et al. Development of a mobile teledermatology system [published online ahead of print October 10, 2012]. *Telemed J E Health*. 2012;18:668-673.
3. Armstrong AW, Kwong MW, Ledo L, et al. Practice models and challenges in teledermatology: a study of collective experiences from teledermatologists [published online ahead of print December 14, 2011]. *PLoS One*. 2011;6:e28687.
4. Bishop S. Dermatology diagnosis goes digital. *The Examiner*. December 18, 2010. <http://www.sfexaminer.com/local/bay-area/2010/12/dermatology-diagnosis-goes-digital>. Accessed April 15, 2013.
5. Background & history. eConsult Web site. <http://www.econsultla.com/about/background-and-history>. Accessed April 8, 2013.
6. Gupta R. Direct Dermatology: the online dermatology clinic. California HealthCare Foundation Web site. <http://www.chcf.org/~media/MEDIA%20LIBRARY%20Files/PDF/C/PDF%20CINwebinar02272013DirectDermatology.pdf>. Accessed March 1, 2013.
7. Lasierra N, Alesanco A, Gilaberte Y, et al. Lessons learned after a three-year store and forward teledermatology experience using internet: strengths and limitations [published online ahead of print March 17, 2012]. *Int J Med Inform*. 2012;81:332-343.
8. Jesitus J. Conflicting language about Medicare reimbursement stalls teledermatology. *Dermatology Times*. May 1, 2011. <http://dermatologytimes.modernmedicine.com/dermatology-times/news/modernmedicine/modern-medicine-news/conflicting-language-about-medicare-reimb>. Accessed April 11, 2013.
9. Resneck JS Jr, Kimball AB. Who else is providing care in dermatology practices? trends in the use of nonphysician clinicians. *J Am Acad Dermatol*. 2008;58:211-216.