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Telehealth: the specialist perspective

Background

Tele-Derm National is an online consultation and educational service in dermatology designed to meet the needs of doctors working in rural and remote Australia. In existence since 2003, it is hosted on the Rural and Remote Medical Education Online site, which is run by the Australian College of Rural and Remote Medicine.

Objective

This article aims to explore the use and potential of store-and-forward teledermatology in the Australian context.

Discussion

Doctors who use this service can manage the majority of their patients without the need for a face-to-face appointment with a specialist dermatologist and deliver similar outcomes. Using store-and-forward technology rather than videoconferencing, this site provides specialist diagnosis and management advice year round. All cases are answered within 24 hours of being submitted. There are benefits in terms of increased availability, as well as reduced time, cost and professional isolation. However, uptake remains low, potentially because of a lack of awareness, increased workload for referring practitioners and lack of financial incentives.

In 1993, while working as a dermatology registrar in a large urban hospital, I opened a letter mailed 3 days earlier by a doctor almost 1600 kilometres away. Inside was a photo and a request for advice. Calling the hospital, I asked if the patient had been recently anticoagulated. 'Yes', came the reply, 'she had a deep vein thrombosis last week, why?'. Warfarin necrosis was confirmed and management instituted. This was my first experience of remote patient management and it planted the seed for Tele-Derm National.

The Australian College of Rural and Remote Medicine (ACRRM) describes telehealth as 'a broad term encompassing the use of communication and information technology to provide patient care – this includes (but is not limited to) real-time video conferencing'.¹ Telehealth has existed since the invention of the telephone. Of all specialties, dermatology is probably the one most suited to telemedicine.

The two main forms of telehealth delivery are 'store and forward' and 'real-time videoconferencing'. In the former, the virtual consultation relies on digital images and patient details sent to the specialist provider, who then provides an opinion. With the latter, the patient has a direct consultation with the specialist using videoconferencing equipment.

Dermatology constitutes up to 15% of all general practice consultations.^{2,3} Skin conditions can be difficult to diagnose

and manage, yet few require urgent intervention. The technology needed to access teledermatology – a computer, an internet connection and a basic digital camera – exists in any Australian medical practice. Basic colour images can accurately communicate the clinical features. Most doctors should be able to perform the investigations needed such as skin biopsy, fungal scrapings, patch testing or blood tests. Instituting and monitoring treatment does not usually require any extra training. Many conditions are chronic and require ongoing follow-up, which, without telemedicine, can be difficult and costly to deliver.

Telemedicine overcomes barriers such as excess demand for and inadequate supply of dermatologists, relative expense of specialist versus general practice consultations, time constraints and geographical isolation of patients.

Teledermatology provides an accurate diagnostic and management service with turnaround times far shorter than can be achieved with traditional consultations yet with similar patient outcomes.⁴⁻⁶ The patients remain under the care of a single doctor while benefiting from specialists' input to their management. Access to telemedicine reduces professional isolation of doctors. Yet it remains common to see patients referred with skin disorders who could easily have been managed via telemedicine. Why is this so?

Concerns over patient confidentiality are often raised but these are readily addressed and dealt with in the patient consent.

Anxiety over the possibility of misdiagnosis and mismanagement is understandable but ill-founded.

I believe there are two major reasons for poor uptake of teledermatology. First, the existence of these services is not widely known to medical practitioners or patients. Second, use of teledermatology places a far greater workload and responsibility on the referring doctor. Although videoconferencing attracts a Medicare rebate, this is not the case for store-and-forward services. With teledermatology, the referring doctors have to perform tasks that would normally be done by the dermatologist, such as taking an accurate, comprehensive history, performing a thorough examination, and recognising and imaging the relevant clinical features. Once a diagnosis has been made the referring doctor performs the relevant investigations and procedures, explains the condition and its management, institutes treatment and organises appropriate follow-up. The commitment in terms of time, effort and responsibility is far greater for the doctor referring to a teledermatology service. All of these factors may act as a disincentive to a busy practitioner. As such, all forms of telemedicine should attract a Medicare rebate.

For a teledermatology service to work optimally, users need the skills and knowledge to carry out these tasks. To this end Tele-Derm National was established in 2003. The site is hosted on ACCRRM's Rural and Remote Medical Education Online (RRMEO) website (www.rrmeo.com). It is funded by the Australian Government and is currently moderated by a single dermatologist. It was designed to meet the needs of rural and remote practitioners for educational and consultation services in dermatology.

Education is an important aspect of the site, which includes tutorials on history taking, dermatological examination, digital photography, the use of dermatological medicaments such as topical steroids, field treatments for solar damage, antibiotics, retinoids and so on.

Procedural skills are addressed with detailed, illustrated instructions in skin biopsy techniques, suturing, cryotherapy, curettage and excisional surgery. Streaming video of surgical

management of skin malignancy by a plastic surgeon is also available. Interesting journal articles are reviewed to keep users up-to-date with advances in dermatology.

Tele-Derm National encourages participation in an online discussion around specific peer-reviewed cases weekly. Added to this, there are, at the time of writing, 963 online individual case studies dealing with all aspects of skin disease and skin malignancy. They are coded under diagnosis and can be used as a guide to management or undertaken in a blinded fashion as a self testing exercise and continuing professional development. The case studies are in a question-and-answer format and aim to educate users in history taking, clinical examination, diagnostic formulation, investigation and management of skin disease.

Tele-Derm National's store-and-forward consultation service gives diagnostic and management advice for referring doctors. History of the presenting problem is submitted accompanied by representative digital images. The site dermatologist receives a text and email alerting them to the request. Cases are submitted at a rate of about 10 per week. Each case is answered within 24 hours.

An optimal referral will have a comprehensive outline of the presenting complaint and patient history. This should cover details such as medications; treatment given; medical, surgical and skin history; and the results of any investigations. Images should convey the distribution of the skin problem, as well as close up detail.

A typical response will provide a provisional diagnosis accompanied by specific advice regarding further history, examination and investigations that may be needed. Treatment advice is tailored to the case presented. Doctors are often referred to the site's educational cases dealing with the condition seen.

Conditions seen have ranged from acne, eczema, psoriasis, drug reactions and tinea through to flagellate erythema from ingestion of shiitake mushrooms, tick typhus, mastocytosis, blistering disorders, porphyria and genodermatoses.

Inflammatory dermatoses constitute the majority of requests for advice. Advice in skin cancer management is also delivered. In many

instances the treating doctor is seeking advice about diagnosis. Often they have made an accurate diagnosis but are uncertain as to optimal management.

Referrals arrive from places as remote as Antarctica and Arnhem Land to capital cities. Perhaps unique to Tele-Derm National is the ability for all users of the site to view all cases for advice submitted by referring doctors. All cases are de-identified. When submitting a case the referring doctor has to acknowledge a disclaimer recognising the possible limitations of the service. A consent form for patients is also required.

The site uses the store-and-forward method of teleconsultation. This has many advantages over videoconferencing. The patient has to present only once to the referring practitioner, when their history is recorded and images taken. Requests for advice can be submitted and answered at any time rather than having to coordinate the presence of the patient, the dermatologist and a representative of the referring practice in the same 'virtual space' at the one time. Most requests for advice submitted to Tele-Derm National are answered outside working hours and the service runs 365 days a year. I have answered cases while overseas, beachside, in restaurants or from the backseat of a car. This would not be possible with teleconferencing.

A major benefit of Telemedicine is the educational aspect. The referring doctor is far more hands-on with these consultations. They are actively involved in all aspects of the assessment and management of their patient. This experience and the lessons learnt can then be put to use with other patients.

Teledermatology does not have to be used instead of face-to-face dermatology. As waiting times for an appointment for a traditional dermatology review can often be measured in months, teledermatology can be used in the interim. Only a minority of these patients would need to progress to a face-to-face appointment.

Although most cases are referred from the general practice setting, teledermatology will increasingly be used for the management of nursing home, hospital and intensive care patients. These services can also meet the needs of Australians travelling or working

in areas remote from medical services and of our service personnel on active deployment. It could also be used to deliver medical services to foreign countries.

Only a minority of skin problems need a traditional consultation with a dermatologist. Australian doctors should consider the option of teledermatology when next referring a patient. Access to Tele-Derm is free to all general practitioners registered in rural and remote Australia. There are about 2000 doctors enrolled. For a virtual tour of Tele-Derm, see www.youtube.com/watch?v=qtkuQW1PyMA.

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References

1. Australian College of Rural and Remote Medicine. ACCRM submission to the Queensland Government Parliamentary Inquiry into Telehealth Services. Brisbane: ACCRM, 2013.
2. Britt H, Miller GC, Henderson J, et al. General practice activity in Australia 2012–13: Bettering the Evaluation and Care of Health. General Practice Series no. 33. Sydney: Sydney University Press, 2013.
3. Morgan VA. Skin disease in general practice. *Australas J Dermatol* 1992;33:113–15.
4. High WA, Houston MS, Calobrisi SD, et al. Assessment of the accuracy of low cost-store-and-forward teledermatology consultation. *J Am Acad Dermatol* 2000;42(5 Pt 1):776–83.
5. Oztas MO, Calikoglu E, Baz K, et al. Reliability of Web-based teledermatology consultations. *J Telemed Telecare* 2004;10:25–28.
6. Lim AC, Egerton IB, See A, Shumack SP. Accuracy and reliability of store-and-forward teledermatology: preliminary results from the St George Teledermatology Project. *Australasian J Dermatol* 2001;42:247–51.