



Editor's note

Telehealth video consultation is fast becoming an important method of delivery of clinical care by physicians. This is because it brings with it important benefits, including an increase in the flexibility of interactions with patients, enhancement of the availability of services in remote or poorly supported locations, and reduction in waste by cutting travel and waiting times.

Connecting to telehealth, however, is not always completely straightforward. There are important considerations relating to technical issues, as well as to the conduct of the clinical interactions themselves. There are questions about the selection of patients, relationships between providers, consent and confidentiality, and business issues. Even where efficient, high-resolution technologies are available, there may be crucial differences between what can be achieved in a face-to-face clinical encounter and what occurs through the computer screen, although whether these differences generate better or worse clinical or ethical outcomes, it is as yet too early to tell.

The article that follows is the first in a series of seven proposed papers developed by the RACP Telehealth Working Group to fill some of the gaps in the available literature about telemedicine, and thereby, it is hoped, to improve its accessibility to physicians. The various contributions will provide practical guidance, as well as highlight strengths and limitations, and opportunities and possible pitfalls, including potential ethical problems. As always, responses from readers will be welcome: in particular, we are especially interested to hear about the range of experiences of telemedicine that practitioners have already encountered and their opinions about what its proper place in clinical practice should be.

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TELEHEALTH SERIES

Practical aspects of telehealth: are my patients suited to telehealth?

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Abstract

The first in a series of articles that demonstrate the practical aspects of telehealth, this paper provides three case studies that examine the suitability of telehealth for patients living in rural and remote areas who require ongoing specialist care.

Table 1 Telehealth services by specialty. Examples of the types of telehealth services provided by selected medical sub-specialties (this is not meant to be a comprehensive summary of the literature)

Specialty	Setting	Type of services
Neurology	Rural/remote Community hospitals	<ul style="list-style-type: none"> • Follow-up consultation • Supervision of thrombolysis
Medical oncology	Rural/remote	<ul style="list-style-type: none"> • New, follow-up and urgent consultations • Supervision of chemotherapy
Diabetes	Home, rural/remote and community	<ul style="list-style-type: none"> • New, follow-up and urgent consultations, • Monitoring of diabetes control
Nephrology	Home, rural/remote and community	<ul style="list-style-type: none"> • Follow-up consultations, • Monitoring of dialysis
Geriatrics	Nursing homes, rural/remote, community	<ul style="list-style-type: none"> • New, review and urgent consultations • Capacity and mental state reviews
Occupational medicine	Rural/remote and out-of-hours	<ul style="list-style-type: none"> • New, follow-up and urgent consultations, • Monitoring of injuries • Pain management

Introduction

Telehealth has been used by physicians in internal medicine to deliver medical care to patients from disadvantaged populations including those living in rural and remote areas, patients of Aboriginal Medical Services and Residential Aged Care Facilities. Telehealth is used for review of new and follow-up consultations, consultation of urgent cases and the remote supervision of medical therapy in rural, remote and community-based health centres including nursing homes and for patients using telehealth at their homes. (Table 1).¹⁻⁵

Several questionnaire-based and qualitative studies have shown that telehealth services are acceptable to indigenous and non-indigenous patients and health professionals.^{2,6,7} Telehealth services enhance the patient's continuity of care through the integration of face-to-face and online clinical consultations. These complementary services support patients who have limited access to specialist services by reducing the need for patients to travel to urban or metropolitan areas to attend specialist appointments which can be costly both financially and in time spent. Effectively, this reduces the geographical isolation commonly experienced by rural and remote indigenous and non-indigenous populations when they require specialist medical care. Telehealth services also support broader community-based healthcare and education, which can lead to greater engagement and communication between the patient, their practitioner and the distant specialist.

Safety might be a concern when medical therapy is supervised remotely. Yet from the experience of 'tel-

estroke' and 'teleoncology' services, it seems that rates of serious adverse events are similar to face-to-face models.⁴ The issue of the inability to perform physical examinations by specialists has been overcome by having a nurse, Aboriginal Medical Service healthcare worker and/or a medical practitioner present during the telehealth consultation at the patient's end.

Other concerns such as medico-legal and ethical aspects, privacy and confidentiality, financial and technical considerations and doctor-patient communication will be discussed in the future papers in the *Internal Medicine Journal*' telehealth series.

Using the case studies presented here, this paper discusses the suitability of telehealth, by examining whether a telehealth model of care may have avoided unnecessary and costly long distance travel by rural and remote patients.

Case 1

A 60-year-old man was booked into a standard sedated colonoscopy list after being referred by his general practitioner for investigation of intermittent per rectal bleeding and altered bowel habits. This patient lived in a town 700 km from a tertiary hospital. As per the referral letter, he was on perindopril for hypertension and had no allergies. Examination of the full blood count showed an Hb of 100 g/L and electrolytes, and liver function tests were slightly abnormal. On arrival after an 8-h drive to the endoscopy unit, he weighed 130 kg and had symptoms suggestive of obstructive sleep apnoea. The patient's body mass index was calculated to be 45 kg/m², and thus the Australasian Sleep Association status estimated at grade 3. Standard sedated colonoscopy was therefore cancelled, and the

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patient was booked into pre-anaesthetic clinic a week later to ensure a safe, anaesthetist assisted procedure could be planned.

Commentary

If this patient was reviewed via telehealth, his morbid obesity would have been identified prior to the long travel endured by the patient and his escort. In fact, sleep physicians in Australia are assessing patients by telehealth consultations now. This may have led to better coordination of pre-anaesthetic clinic and colonoscopy timing thus avoiding unnecessary travel. This case illustrates one of the benefits of telehealth. A review of rural patients using videoconferencing could lead to better coordination of care and reduce the unnecessary cancellation of procedures.

Case 2

A 65-year-old woman was discharged from a cardiology ward after being admitted for exacerbation of congestive heart failure from ischaemia. She was discharged on usual anti-failure medications. On discharge, weight was 72 kg, blood pressure was 110/70 and pulse rate was 80. She was mobilising without dyspnoea and had no peripheral oedema. She was seen in the outpatient clinic 6 weeks later. She travelled 6 h for the clinic and waited another 60 min to see the team. At the clinic, the patient's weight was 71 kg, she had stable observation parameters, and her blood was normal.

Commentary

This patient travelled for nearly 12 h and stayed overnight for a 10 min consultation. Since the diagnosis was known and investigations were completed during her hospital admission, the outpatient clinic was only for the review of symptoms and monitoring of side-effects. If this patient was seen via videoconference with the help of a local medical officer, the local medical officer could have performed a physical examination and decided that she was on optimal anti-failure medication and would have avoided unnecessary travel and the associated costs.

Case 3

A 56-year-old man was referred by a physician from a rural town to medical oncologists at a tertiary centre. He had extensive stage small-cell lung cancer and was unable to fly because of dyspnoea. He was seen by

medical oncologists within 24 h via videoconferencing. Carboplatin and etoposide commenced the following day at the patient's local medical facility in the rural town. His progress and chemotherapy administration were supervised via videoconferencing. He achieved excellent partial response with an improvement in symptoms.

Commentary

The rural town in the above case has a physician locally and has a high-dependency facility. There is an oncology-specific senior medical officer and chemotherapy nurses. Urgent review and cancer management locally via telehealth were made easy due to service capabilities. When teleoncology was started in 2007 at the above rural town, all cases had to go to the tertiary centre for initial reviews and chemotherapy. With more experience and confidence in the telehealth model over time, all cases were managed locally without the need for travel.

Conclusion

Many patients are suitable for telehealth models of care at some stage during their journey through the healthcare system. Selecting patients for telehealth is determined by various factors including the experience of the providing physician and receiving-end health professionals using telehealth, the circumstances and preferences of patients, the service capabilities of the system at the receiving end and the complexity of the cases.⁸ In situations where there is reticence among doctors or patients, starting with simple case reviews with a view to providing more complex care later on allows all involved to become familiar and comfortable with this mode of healthcare delivery.

Practical tips

- A primary objective of telehealth is to improve the rural and remote access to specialist services locally, thereby reducing the need for unnecessary long-distance travel.
- Many patients are suitable for telehealth at some stage of their journey through the Australian healthcare system.
- Physicians should consider telehealth as an option for patients who have to travel long distances to see them.
- When commencing telehealth consultations, starting with simple cases with a view to managing more complex cases in the future will allow the practitioner to become more familiar and comfortable with using videoconferencing for clinical consultations.

References

- 1 Smith AC, Gray LC. Telemedicine across the ages. *Med J Aust* 2009; **190**: 15–9.
- 2 Grazia Dalfra M, Nicolucci A, Lapolla A. The effect of telemedicine on outcome and quality of life in pregnant women with diabetes. *J Telemed Telecare* 2009; **15**: 238–42.
- 3 Sabesan S, Larkins S, Evans R, Varma S, Andrews A, Beuttner P *et al.* Telemedicine for rural cancer in North Queensland: bringing cancer care home. *Aust J Rural Health* 2012; **20**: 259–64.
- 4 Schwab S, Vatankehah B, Kukla C, Hauchwitz M, Bogdahn U, Fürst A *et al.* Long-term outcome after thrombolysis in telemedical stroke care. *Neurology* 2007; **69**: 898–903.
- 5 Nakamoto H. Telemedicine system for patients on continuous ambulatory peritoneal dialysis. *Perit Dial Int* 2007; **27**: S21–S6.
- 6 Sabesan S, Simcox K, Marr I. Medical oncology clinics via videoconferencing: an acceptable telehealth model for rural patients and health workers. *Intern Med J* 2012; **42**: 780–5.
- 7 Mooi JK, Whop LJ, Valery PC, Sabesan SS. Teleoncology for Indigenous patients: the responses of patients and health workers. *Aust J Rural Health* 2012; **20**: 265–9.
- 8 Physicians telehealth support project. [homepage on the Internet]. Sydney: The Royal Australasian College of Physicians. [cited 2013 Jan 15]. Available from URL: <http://www.racptelehealth.com.au>

BRIEF COMMUNICATION

Large vessel calcification in Takayasu arteritis

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Key words

Takayasu arteritis, inflammation, renal impairment, fetuin-A, calciprotein particles, arterial stiffness.

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A 31-year-old woman of Filipino origin presented with a 3-month history of headaches and recurrent episodes of expressive dysphasia, leg weakness, facial numbness, headache and jaw pain. On examination, she was neurologically intact, but had absent brachial pulses, right

Abstract

We report the novel case of a young woman with Takayasu arteritis, with extensive large vessel disease. The case demonstrates that while mechanisms of vascular calcification are poorly understood, inflammation per se might be sufficient to mediate increased mineral stress leading to vessel calcification, even in the absence of renal impairment.

popliteal pulse and abdominal bruits. Her left femoral blood pressure, measured with an appropriately sized cuff, was 200/110 mmHg. A diagnosis of Takayasu arteritis (TA) was based on her fulfilling all six of the diagnostic criteria; age less than 40 years, claudication of the extremities, decreased brachial pulse, blood pressure difference >10 mmHg, bruit over subclavian arteries or aorta and arteriographic abnormalities.¹ She was started on steroids, azathioprine and antihypertensive agents (β -blocker and calcium channel antagonist).

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