

International exchange

What factors will impact on the adoption of digital technology to access general practitioners in Australia?

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ABSTRACT

The geography of large and relatively under-populated countries like Australia makes it attractive to use increasingly cheap information technology to improve access to general practitioners. People are already using the internet to access many other services. However, there are some moderating influences on the use of video-consultations in general practice. These include technical limitations, patient confidentiality concerns, regulatory issues as well as the willingness of general practitioners to consult patients other than face-to-face. Theories predict that a relatively small cadre of innovative

doctors are those most likely to try video-consultations for routine consultations. However, much will depend on research that demonstrates that video-consultations are unlikely to harm patients or increase the risk of litigation; on the scope to incorporate diagnostic equipment on home computers; on the financial incentives offered to doctors and on the public proclamations of opinion leaders on the question of video-consultations.

Keywords: Australia, GP access, information technology, technical limitations

How this fits with quality in primary care

What do we know?

Video-consultations provide a potential solution to the problem of healthcare access in remote and rural areas.

What does this paper add?

The use of video-consultations will depend on a number of factors including evidence of effectiveness and safety, availability, incentives and opinion leaders

Introduction

Australia is a vast and relatively under-populated continent, with a population density of three people per square kilometre.¹ Some people live hundreds of kilometres from the nearest doctor. For example,

Punmu is a community of 180 people situated 1310 km northeast of Perth. It is in the middle of a desert, 640 km to the nearest town. Medical care is delivered by the Royal Flying doctor service. By contrast, 64% of

Australia's population live in an area representing just 0.5% of the continent. In absolute terms, 13.2 million Australians live in an area equal to 38 000 km². Of the rest, 2.1 million people live in an area of 7 million km², a region over twice the size of India.¹

Those living in the 'bush' are not well served by a system of healthcare based on face-to-face appointments with a practitioner in a fixed facility. Consequently, the health outcomes for people in rural and remote Australia are worse than they are for people living in the suburbs of Australia's coastal cities.² Concurrently, the Australian demography is ageing.³ Healthcare costs are rising partly due to this demographic shift, which is mirrored by a rising incidence of chronic and life-limiting illnesses. In 2010–2011, health expenditure as a percentage of Australia's gross domestic product (GDP) had risen to 9.3%.⁴ In response to the growing incidence of pathology there is a strong move towards active disease management with regular visits to doctors to monitor chronic illness. However, this trend is demanding of medical manpower at a time when Australia is experiencing a marked physician shortage; nowhere is this shortage more strongly felt than in general practice in rural Australia.^{5,6}

Technology issues

Information technology (IT) is now more widely available and is becoming cheaper. Even the residents of Punmu have internet access. The latest published data suggests that by January 2007, there were already 2432 exchanges providing asymmetric digital subscriber line (ADSL) coverage to 91% of Australia's population, compared with 2109 providing coverage to 88% as of June 2006.⁷ ADSL2+ services were already available from approximately 412 exchange locations by January 2007 (17% of DSL-enabled exchanges), compared with 309 on 30 June 2006. Satellite broadband services provide 100% coverage of Australia's land area.⁸ At the same time, the government is committed to establishing the National Broadband Network (NBN). The NBN will provide high-speed broadband access to all Australian homes and businesses through a mix of three technologies: optic fibre, fixed wireless and next-generation satellite. It is reported that 93% of Australian homes, schools and businesses will have access to the NBN through optic fibre to premises, capable of providing broadband speeds of up to 1 Gbit/s.⁹ The increasing accessibility and functionality of the internet is changing other consumer behaviours as home access to broadband becomes central to meeting consumers' information, communications and entertainment needs. By 2007, the cost of this technology had already fallen by 13%, while demand increased by 37%.⁷

Technology as a solution

If the care model of 'face-to face with physician' cannot be sustained to serve the ageing population and a limited healthcare workforce then it may be that access to healthcare will need to be delivered some other way. The current cohort of older people is increasingly internet savvy. There is a need to explore the possibility of facilitating access to general practitioners (GPs) using mobile technology, low-cost telecommunications and involving users to overcome an entrenched problem of inflationary healthcare costs and existing shortage of medical personnel. If this could be achieved it is more likely that communities in rural and remote Australia could be sustained.¹⁰ However, the rate-limiting step to the adoption of digital technology as a conduit for access to doctors is whether GPs are willing to engage with patients in this way.

The use of computers by GPs had increased from 15% in 1997 to 70% by 2000 and to 89% during the years 2003–2005.^{11,12} Factors that affect whether practitioners will deploy IT can be predicted by various theories which have been integrated by Yi *et al.*¹³ A key factor is whether the practitioners are willing to take a risk by trying out an innovation. On the basis that the proportion of such individuals is similar in Australia to elsewhere in the world, it is likely that routine access to GPs via video-consultations will be limited in the near future.¹⁴

Clinical research

The second consideration is 'result demonstrability'; in other words, whether access via video-consultations is likely to benefit patients in the context of routine consultations between GP and patient. At the time of writing there were few if any experimental studies reporting benefit to patients from video-consultations in general practice.¹⁵ This is in marked contrast to telephone consultations, which have been subject to randomised controlled trials and other evaluations.^{16–18} A third factor is 'perceived behavioural control'. That is an individual's belief about the 'presence or absence of requisite resources and opportunities'.¹⁹ In this respect, there are some identifiable barriers to the uptake of video-consultations, especially in primary care: first, video-consultations involving patients speaking directly to GPs online are not remunerated by the government; second, the use of video technology requires additional resources such as webcams and learning the technology that allows live video images.

Video

The best known in this respect is Skype, a voice, video and chat communications platform with over 600 million users worldwide, effectively making it one of the world's largest telecommunications companies. Skype uses the combined bandwidth of all logged-in users. This means all computers on the network function as a server and a client, and, while safety measures are in place to protect individual machines, some institutions will not allow Skype to be installed because of this feature.²⁰ Skype calls also require a high-speed internet connection for the conversation to replicate an analogue telephone call. If the connection is too slow, there will be delays that interfere with a smooth conversation. Doctors may be concerned that the connection may be interrupted at a key moment in the conversation, for example, where a doctor is advising a patient on how to take a prescribed medicine. Even high-speed connections can have problems with calls that require users to hang up and reconnect. Concerns surrounding Skype's user data confidentiality have also been building since Microsoft finalised its purchase of the company for \$8.5 billion in 2011.²¹ By comparison, Apple's FaceTime is reported to meet the safety and confidentiality requirements for healthcare purposes and thus could be more suitable for clinical settings and consultations.²² However, the limited ownership of Apple products among practitioners and patients may inhibit the spread of this mode of communication.

Professional attitudes

The third powerful influential domain is so-called 'subjective norm'. Because of specialisation and professionalism in the practice of medicine, doctors tend to hold the opinions and suggestions of their peers in high regard. Even when not inclined to do so, they may choose to follow a process if perceived referents think they should. By corollary, if a respected peer says that a particular innovation is dubious, the suggestion could adversely affect the individual's engagement with that innovation. Accordingly, what members of the profession say about video-consultation is extremely important. It is notable, therefore, that the Royal Australian College of General Practitioners (RACGP) has publically expressed reservation about the practice. An RACGP representative recently commented:

... whilst the College is largely supportive of telehealth initiatives to improve access to health services, [the private] service delivery model puts doctors in the difficult position of making diagnoses without a proper

understanding of the patient's medical history and social context, in addition to removing the opportunity to conduct a physical examination.²³

The question of the value of the physical examination for the purposes of making a diagnosis in general practice is critical to the future of the video-consultation. It must be acknowledged that physical examination is not possible in telephone consultations. And yet experts have concluded that in spite of advances in diagnostic procedures, eliciting the patient's history is still the most important part of the diagnostic process.²⁴ Therefore, in relation to telephone consultations, the final diagnosis can be reached after the history has been taken in up to three-quarters of cases. In a previous study from the USA, 80% of physician respondents would have been prepared to consult and advise a patient with a viral upper respiratory tract infection by telephone, with 12% even willing to prescribe an antibiotic without seeing the patient.²⁵ Compared with telephone consults, video-consultations have the added advantage of supplying images. This is important because video-consultations more closely approximate to face-to-face meetings as visual messages and non-verbal communication account for up to 55% of the impact in a face-to-face consultation.²⁶ In some telemedicine consultations, the limitations imposed by the doctor's inability to physically interact with the patient have also been studied. The conclusion of some of this research is that the nature of the consultation may need to change, insofar as the lay individual at one end of the video link may have to adopt new communication practices in which they assist the doctor in his or her assessment of symptoms.²⁷ Therefore, it is conceivable that in video-consultations the patient may have to attach digital sensors to their body that may be of some value in the absence of physical examination. In Australia, almost every home can now have a computer, internet access, voice over IP, digital camera, digital files and peripherals. Such equipment could incorporate an electronic sphygmomanometer, auroscope, thermometer and digital scales. That means that every home could host the essential elements of a GP's clinic. Nonetheless, a key driver for video-consultation is the extent to which opinion leaders in the profession are willing to state that there is no need for the doctor to be physically present at the patient's bedside on every occasion.

The consultation can be seen as a 'standard operating procedure' consisting of 8% social behaviour, 15% agreement, 4% rapport building, 10% partnership building, 11% giving directions, 28% giving information, 14% asking questions and 7% counselling.²⁸ The key outcome of the consultation is that the patient should feel better able to cope with whatever physical, psychological and or social problems they have. This has been shown to be the case for telephone consul-

tations, even for vulnerable groups.²⁹ In a recent study, now in press, researchers have explored Australian GPs' intention to conduct video-consultations. Data indicate that GPs are unlikely to conduct video-consultations for patients with acute illness or those with medical emergencies. However, they are more likely to conduct consultations with patients who are presenting for follow-up of a chronic illness.³⁰ Finally, video-consultations must be incorporated into the working day. Activity that is not remunerated and can be costly is unlikely to be adopted. In Australia where GPs operate in a fee-for-service model, the most likely early providers of video-consultations will charge for the service; a few such providers have already entered the market.³¹

Conclusions

Australia has a geographically dispersed population and growing healthcare costs. Health services play a significant role in supporting life in rural communities.¹⁰ Australians have greater access to the internet than ever before. With a little more investment this technology could facilitate online video-consultations with GPs. Three key considerations will determine when patients are likely to benefit from video technology. First, early adopters in general practice will be the few who are innovative in their practice of medicine. Second, it is the extent to which the hardware, software and necessary networks make it feasible and profitable to communicate effectively online. Lastly, the public pronouncements of opinion leaders will either facilitate or retard the adoption of digital technology as a means of connecting GPs to their patients.

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CONFLICTS OF INTEREST

None.

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