Telehealth in primary health care settings within Australia and internationally

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Executive summary

Access to appropriate health care services is often limited for people living in rural or remote areas, or for those with restricted mobility. One approach to minimising the inequality in access for those located at a distance from health care services is through telehealth service delivery.

This review examined the evidence on telehealth models in Australia and elsewhere, with a specific focus on the synchronous, real-time video consultations, where patients and health care providers were present simultaneously.

Equipment, settings, conditions and providers

Most studies evaluated standard, commercially-available videoconferencing equipment, which often included peripheral equipment, such as a digital stethoscope or a close-up camera. In a small number of cases, Skype technology was used; however, the evidence of effectiveness of this approach was uncertain as the studies were small and had weak study designs.

While telehealth services were based primarily in hospitals, other locations included community health care centres, residential aged care facilities and Aboriginal health services.

Telehealth covers a range of specialist services for acute and chronic care, including: mental health/psychiatry, paediatrics, radiology, dermatology, pathology, endocrinology, oncology, neurology, dentistry, burns and wound care. It is used across the continuum of care from diagnosis to palliative care.

Telehealth is coordinated and managed differently across the States and Territories in Australia. In some jurisdictions, telehealth is centrally coordinated (e.g. NSW Telehealth Network) and in others it is managed by general practitioners (GPs) and community centres (Tasmania), the Rural Health Alliances (Victoria), or through individual hospitals (South Australia, Western Australia).

Telehealth across the continuum of care

Video consultations have been used for diagnostic purposes in a wide range of areas, including dermatology, psychiatry, neurology, orthopaedics and paediatric illnesses. For the most part, the evidence indicates that there were no significant differences in diagnostic accuracy between video consultation and face-to-face consultation. However, the rates of recommended follow-up...
were sometimes higher. Satisfaction levels of teleconsultation patients were generally high, and sometimes significantly higher than those of patients receiving traditional face-to-face specialist consultation. Similarly, the findings were generally positive for patients who were treated by video consultations in a range of healthcare settings for a range of conditions, including:

- psychiatry: non-significant differences or equivalent outcomes; higher patient satisfaction
- stroke: lower mortality, higher diagnostic accuracy, good acceptability (limited evidence)
- intensive care: lower rates of mortality, shorter stays, fewer complications, lower costs.

Teleconsultation for management of chronic illness showed mixed effects. While there were overall non-significant differences, or positive effects of videoconferencing, patients with complex conditions were generally excluded from trials; therefore the evidence of effectiveness for this group is not known. It is possible that in more complex cases of patients with advanced illness, or co-morbidities, video consultations may be less desirable. Patient satisfaction was generally higher for telehealth services and there was some evidence of higher quality of life (e.g. for heart failure patients). It must be noted, however, that over the longer term video consultations for chronically ill patients were often combined with other telehealth services, such as remote monitoring. This is not surprising, given the long-term nature of chronic conditions and the need to monitor and manage intermediate patient outcomes, such as blood pressure, blood sugar and heart rate. While evidence on telehealth for rehabilitation and palliative care was limited and studies reported short-term follow-up only, the results were mainly positive: no significant differences in patient outcomes compared to usual face-to-face consultations; and good acceptability of telehealth services.

Aged care and Indigenous health services
Telehealth services may be particularly useful for frail elderly people who may experience poor mobility; and for Indigenous Australians located in remote communities. However, the evidence base for both these areas is limited.

Costs and cost-effectiveness
Overall, the evidence on cost-effectiveness of telehealth (video consultations) is limited and the quality of existing studies is poor-to-average. The best available evidence was from a US review, which suggested that the most cost-effective form of telehealth (particularly for chronic conditions) was a hybrid of telemonitoring and video consultations.

Potential adaptations of telehealth services to the Australian context
Video-based telehealth services have been successfully implemented in many countries. Although tailoring to local conditions and specific healthcare systems is always necessary, many initiatives that have been implemented in a specific geographical region, for a specific population group, or in a particular setting, have the potential to be adapted or tailored to alternative regions, groups or settings.

Examples include:
• Grampians Rural Health Alliance Clever Health project
  Designed to develop innovative delivery of PHC services to the Grampians region, the Clever Health project established a broadband videoconference network linking more than 40 healthcare facilities, including 12 hospital-based health services, four bush nursing centres, and several stand-alone community health centres. Although this project is located primarily in secondary health care facilities, there is potential for increased use in general practice and in after-hours services. Training and technical support are critical for success.

• NZ Buller Health Telehealth Pilot
  Situated in an isolated region of New Zealand, this videoconferencing project provides access to GPs and specialists via local medical centres staffed 24 hours a day by rural nurse specialists. An in-depth evaluation identified the need for a telehealth coordinator at each site to manage practical issues such as bookings, technical support, and training. Establishment funding and an evaluation strategy were considered essential to the success of the project.

• UK Virtual Outreach Project
  This virtual outreach service used videoconferencing to link GP consulting rooms and hospital outpatient departments in urban and regional areas in the UK. This model may be adapted to multiple settings in Australia from urban, through outer metropolitan areas and regional towns. Nurse practitioners and practice nurses may play an important role in these services, increasing cost-effectiveness and freeing up doctors’ time for more serious or complex consultations.

• Queensland Foetal Tele-ultrasound service
  This service uses real-time videoconferencing and ultrasound for specialist consultation about diagnosis and management of problems in foetal development. Although not specifically located in PHC, it serves as a model for technologically intensive specialist consultation that potentially increases the capacity of PHC workers to provide ongoing management of patients rather than transferring them to specialist care. It lends itself to implementation in other specialty areas and/or in mobile outreach services.

Overall, telehealth initiatives may be adapted or tailored for various Australian settings, particularly if the barriers are identified and addressed accordingly.

**Key benefits of telehealth**

Early access to services across the care continuum may lead to improved physical and psychological wellbeing for patients. Reduced waiting times, less travel and time off work required, and greater convenience for patients enhances their level of satisfaction.

Primary health care providers also benefitted from being present at specialist consultations through enhanced understanding of specialty areas and improved job satisfaction.

**Key challenges of telehealth**

The main challenges to implementing telehealth services pertain to:

- **costs**: start-up costs; equipment maintenance and repair; internet connectivity; and staff training
- **technology**: poor quality transmission; and data security
- **inter-professional conflict**: lack of confidence in other providers’ skills
- **organisational issues**: lack of guidelines; cultural differences and lack of readiness for change; and lack of adequate facilities dedicated to telehealth
• privacy, ethics, liability issues: privacy and confidentiality may be compromised; and potential for misdiagnoses due to inability to examine patients
• patient issues: patients may feel obliged to accept a telehealth consultation despite preferring a face-to-face appointment; and assessing some patient behaviours (e.g., facial expressions, body position) may be impaired.

While lack of time and resources are the main challenges for delivery of telehealth services, the introduction of financial incentives may address some of these concerns.

**Conclusions**

Overall, the available evidence indicated that the outcomes of teleconsultations by videoconferencing were not significantly different compared to face-to-face consultations for most types of specialties assessed; and patients participating in teleconsultations reported significantly higher levels of acceptability and satisfaction. Similar outcomes were reported across the continuum of care, except for management of patients with complex and/or severe chronic conditions, as such patients were typically excluded from studies. However, the evidence of effectiveness related to video consultation was average quality; and evidence on cost-effectiveness was scarce and poor in quality.

Video consultations were commonly combined with telemonitoring; and this composite type of telehealth was identified as more cost-effective. Health care professionals also reported acceptability, particularly in terms of continuing professional education; although there were concerns about the quality and cost of equipment.

While the evidence generally showed non-significant differences or positive benefits of video consultations, they are not intended to replace face-to-face consultations, but rather to provide timely access to health care in circumstances where face-to-face consultations are not available due to distance or other barriers.