

Critical success factors:

how to establish a successful
telehealth service



Accessibility

To receive this publication in an accessible format phone 03 9096 1405, using the National Relay Service 13 36 77 if required, or email: geraldine.mcdonald@health.vic.gov.au

Authorised and published by the Victorian Government, 1 Treasury Place, Melbourne.

© State of Victoria, February, 2015

This work is licensed under a Creative Commons Attribution 3.0 licence (creativecommons.org/licenses/by/3.0/au). It is a condition of this licence that you credit the State of Victoria as author.

ISBN 978-0-9924829-8-5

Available at <http://www.health.vic.gov.au/telehealth>

(1411002)

Contents

Introduction	1
Understanding telehealth	2
What is telehealth?	2
Why consider telehealth?	2
Types of telehealth services	2
Where to start	3
Critical success factors for successful telehealth	4
A clear purpose has been established	4
There is strong leadership and dedicated coordination	5
Key stakeholders and consumers recognise the benefits and are engaged	6
Project planning and a readiness assessment informs implementation	8
Technology and clinical service needs are well matched	10
A sustainable workforce model underpins the service	12
Change management is a focus	14
Clinical responsibility and governance protocols have been clearly articulated	16
A sustainable funding model is in place	18
Services are consumer-centred and consumers supported in adopting telehealth	20
There is ongoing review and evaluation	22
Involvement and collaboration across the sector	24
Feedback and contributions to this document	25
Contact details for Victorian agencies that can provide advice and assistance	26
Useful websites and further information about telehealth	27
References drawn on in developing critical success factors	28

Introduction

Telehealth is increasingly being used to support the delivery of, and improve access to, clinically appropriate and cost-effective consumer-centred care.

A range of telehealth initiatives trialled across Victoria have demonstrated that the effective and efficient use of telehealth can result in better access for consumers as well as deliver services more efficiently. However, it has been challenging to build on these initiatives to develop system-wide telehealth services.

The diversity in projects and initiatives, target populations and geographic and social landscapes in which telehealth services have been established make it difficult for clinicians, executives and administrators to identify what is applicable and relevant when developing telehealth services. While there is no 'one size fits all' approach to telehealth implementation, the literature identifies factors that strongly influence the success or failure of a telehealth service.

Critical success factors: how to establish a successful telehealth service aims to identify these factors to provide health services with insight into the environmental conditions that will increase the likely success rate of telehealth services. It offers a practical resource that highlights the key issues identified as essential to building a sustainable telehealth service, while drawing on some of the 'sticking points' that have hindered previous efforts.

The following are the identified critical success factors. As telehealth services proliferate, these will be added to and amended as new implementation experiences identify other issues that can support or hinder the development and expansion of telehealth services.

Critical success factors

1. [A clear purpose has been established](#)
2. [There is strong leadership and dedicated coordination](#)
3. [Key stakeholders and consumers recognise the benefits and are engaged](#)
4. [Project planning and a readiness assessment guides implementation](#)
5. [Technology and clinical service needs are well matched](#)
6. [A sustainable workforce model underpins the service](#)
7. [Change management is a focus](#)
8. [Clinical responsibility and governance protocols have been clearly articulated](#)
9. [A sustainable funding model is in place](#)
10. [Services are consumer-focused and consumers are supported in adopting telehealth](#)
11. [There is ongoing review and evaluation](#)
12. [Involvement and collaboration across the sector](#)

A range of research reports and conference papers, evaluations and the viewpoints of practitioners in the telehealth field have been drawn upon in synthesising these critical success factors. Case studies highlight successful approaches to implementation and some of the issues that have impacted on success.

In particular, the Department of Health & Human Services thanks Dr Victoria Wade for her advice and sharing of her experiences and research. The Department also appreciates the input and feedback received from representatives on the Telehealth Advisory Committee.

Understanding telehealth

What is telehealth?

There is a range of terms used to describe the delivery of health services using technology.

Telehealth is commonly defined as the provision of healthcare delivery or related processes (such as education), when some of the participants are separated by distance and information and communication technologies (ICTs) are used to overcome that distance. Common telehealth technologies include videoconferencing and store and forward technologies.

There are often distinctions between telemedicine and telehealth, with the former limited to those being delivered by physicians, and the latter by health professionals in general, including nurses, pharmacists and allied health professionals. Telehealth is taken to include other aspects of healthcare such as disease management, prevention and health promotion.

The term telecare also has a broader application and can include the delivery of a range of care services using technologies.

As the use of technology for the delivery of specialties increases, new terms are also emerging. For example, teleophthalmology is a branch of telehealth that delivers eye care through digital medical equipment and telecommunications technology. Teledentistry, telepsychology and teledermatology are other terms used to describe the delivery of specific health services using technology. These are all subsets of telehealth.

The application of telemedicine and/or telehealth to the home environment has introduced another concept of telehomecare or home telehealth, including home monitoring.

E-health is commonly used as an umbrella term that includes telehealth, electronic medical records, and other components of health IT. The National E-health strategy for Australia identifies E-health as both the essential infrastructure underpinning information exchange and as a key enabler and driver of improved health outcomes.

The commonality between all these services is that they use technology to provide direct health services, share information and link healthcare professionals.

Why consider telehealth?

Telehealth can be considered as an alternative or complementary model of service delivery:

- For consumers and families, telehealth improves access to specialist and primary care services, reduces disruption eliminating the need to travel to access health services, improves choice of practitioners and potentially reduces waiting times for health services. It can improve consumer outcomes through greater access to health services.
- For health professionals and health services, telehealth reduces travel between locations and provides access to specialist peer support. It enables practitioners to conduct multidisciplinary care planning when healthcare professionals are located across various services. It is used to deliver training and education options and reduces rural practice isolation. The availability of telehealth services can improve the capacity for services to recruit staff and retain health professionals.
- For governments, telehealth services have the potential to improve access to special services, reduce the overall cost of delivering services into rural and regional areas, deliver better services and improve health outcomes.

As technologies continue to improve and become more widely available, telehealth also offers an opportunity for consumers to become more involved in their care and in health service planning. This shift from traditional physician-centred practice to consumer-centred care offers greater potential to improve the health outcomes of the population as consumers take on the responsibility for managing their health using telehealth such as home monitoring technologies.

Types of telehealth services

Telehealth is being used in a range of service models.

The introduction of the Medicare Benefits Scheme (MBS) item numbers for telehealth has increased the use of telehealth for specialist consultations directly to consumers across a range of disciplines, including dermatology, ophthalmology and diabetes management.

Videoconferencing is enabling specialists to work remotely with allied health services or local specialists to oversee the provision of care. As an example, the statewide paediatric telehealth service, which is being rolled out across Victoria, is enabling regionally based paediatricians and GPs to treat local consumers with support and specialist advice from sub-specialists at The Royal Children's Hospital and Monash Children's Hospital. This not only reduces the need for consumers and their families to travel to receive sub-specialist care, it provides regional practitioners access to knowledge and support from colleagues in other health services, which will improve their capacity to deliver care to their consumers.

In regional areas consumers that are presenting in emergency departments or patients that are deteriorating and require time-critical attention, such as those who are diagnosed as having had a stroke are receiving advice and treatment from specialists via videoconferencing. Using telehealth in these environments is complex, as the technology must be trustworthy and immediately available to avoid time delays.

Telehealth is also enabling multidisciplinary clinical discussions involving a range of specialists in the care of a consumer. In Victoria, videoconferencing technology is used to link clinicians to cancer multidisciplinary meetings (MDM) across Victoria to inform decision making. These linkages include metropolitan clinicians into metropolitan MDMs, specialist diagnostics into regional MDMs, region-wide MDMs for low volume cancers and GPs. This approach has been found to be particularly successful in managing the overall healthcare plan for consumers.

Imaging-oriented services like teleradiology and, to a lesser extent, telepathology, have been successfully embedded in clinical environments and are now often part of routine healthcare. Videoconference-enabled education is becoming a standard process to support medical education and training.

Other initiatives that are underway include the use of telehealth-enabled remote consumer monitoring. Consumers are able to take their own vital signs and biometric measures that can be monitored by the health service with a 24-hour escalation process for signs and symptoms of deterioration. This model of care captures a richer set of information than would be achieved if a consumer attended a consultation and allows the consumer to customise and adjust their healthcare based on this information.

It is not the purpose of this document to identify the breadth of applications for telehealth in delivering health services. There are a great number of examples that can be found across specialist areas, consumer cohorts and in different settings that will inspire and provide useful examples of ways that telehealth can make an existing service more accessible or establish new service models and capabilities.

Where to start

A first step is to contact agencies that can provide assistance and advice on implementation and identify other initiatives where possible synergies exist. The Telehealth Unit in the Department is a good starting point to discuss your initiative and determine synergies with other projects and opportunities to leverage from existing initiatives.

Across Victoria, many regional and sub-regional health services have already put into place telehealth officers who can assist in identifying possible sources of advice and assistance.

Each of the rural regions has a Rural Health Alliance (RHA) that is responsible for managing the telecommunications infrastructure for information exchange needs for public health services in the region. These organisations may provide advice on regional telehealth initiatives, existing technology available in health services, and how the RHA can assist in implementation of a new telehealth initiative.

Medicare Locals have traditionally had a role in supporting the adoption of telehealth across the primary healthcare services, including GPs. As they transition to become Primary Health Networks (PHNs) under new Commonwealth arrangements, it is hoped that their role in supporting telehealth implementation will be maintained.

Critical success factors for successful telehealth

1. A clear purpose has been established

In developing a telehealth service model it is essential to clarify the specific purpose of the service. Telehealth services should not be adopted just because the technology is available. Having a clear purpose will also enable the service to be evaluated against what was initially intended.

Improvements in consumer outcomes should underpin the implementation of a telehealth service. There may be other objectives for a telehealth service as well, such as efficiencies or cost-savings. It is important that these are documented, although measuring these could be problematic. While there is evidence that telehealth can have a positive impact on consumer access and care, improvements in clinical outcomes and cost-savings are harder to measure.

It is important to specify the clinical uses the service will be focused on, but also consider other services which might be delivered via telehealth. Service targets in terms of volumes are a good mechanism to ensure that the service is targeted to specific outcomes.

A pilot project offers an opportunity to understand and model uptake rates within a community and health service to ensure that the service will be viable and used to capacity. It will provide an opportunity to test and adjust the approach without impacting too broadly, and will assist in determining whether the service can meet its objectives. Even with a pilot program, there must be a commitment to embedding the practice.

To consider

- Why is a telehealth service model being considered and what is it intended to achieve?
- What is the problem that needs to be solved using telehealth?
- How will telehealth contribute to the organisation's overall vision?
- What outcomes are anticipated and how will these be measured?
- Have examples and evidence of effective telehealth technologies used in similar contexts been identified?

Telehealth to deliver improved responses to stroke in regional areas – the experience of the Victorian Stroke Telemedicine program

The delivery of optimal stroke care in rural/regional Victoria is challenging for several reasons including a shortage of stroke care units; limited availability of stroke specialists; and time delays for consumers due to long distances to access acute services.

Intravenous thrombolysis (t-PA) as an acute treatment of stroke greatly reduces disability. In 2011, only 13 per cent of rural and regional hospitals used t-PA. Furthermore, the proportion of consumers that present to regional hospitals that receive t-PA continued to be very low, 2 per cent compared to international best practice of over 10 per cent.

The Victorian Stroke Telemedicine (VST) program lead by the Florey Institute of Neuroscience and Mental Health began in 2010, when the first pilot project linked doctors at Bendigo Health to a network of specialist stroke neurologists in Melbourne to evaluate patients with acute stroke.

Key drivers for VST were to:

- improve rapid diagnosis, treatment and organisation of care processes for acute stroke
- ensure equity of stroke care received regardless of geographic location
- ensure that effective thrombolytic therapy was available.

Evaluation found that the VST pilot enhanced clinical decision making regarding stroke care by providing real time access to brain imaging, as well as high quality audio-visual communication to facilitate the remote consultations.

For further information:

Professor Chris Bladin

Clinical Lead, Victorian Stroke Telehealth Project
The Florey Institute of Neuroscience & Mental Health
Melbourne Brain Centre

Email: Chris.bladin@unimelb.edu.au

2. There is strong leadership and dedicated coordination

Strong leadership and executive support are essential to build an organisational culture that has capacity for change and improvement.

The development of a telehealth initiative needs to align with an organisation's strategic plan, vision and mission. It also needs to be grounded on a compelling business case and a commitment to supporting the change to existing processes.

An internal champion, such as the CEO, will help ensure that telehealth is appropriately resourced and supported through the organisation.

Leading change in the Barwon-South Western Region

As part of the Barwon South West Strengthening Health Services Collaboration, in 2013 Barwon Health established a role to support development of telehealth capability for evolving models of care across the region. The Regional Telehealth Program Manager is the key contact for telehealth promotion, initiatives and support for the 19 health service members as they elect to opt into telehealth. The role is also responsible for developing seamless and sustainable access to telehealth services across the region.

Telehealth features in the Barwon Health strategic plan, which aligns closely with the business plan. Barwon Health's CEO has been a leader in advocating for telehealth, seeing it as an opportunity to improve sustainable, consumer-centred healthcare linked to R3: *right care, right time, right place*.

In 2014, Barwon South West Telehealth held its first Telehealth Awareness Week to bring together key stakeholders to identify telehealth opportunities and progress the development of a telehealth strategy.

For further information:

Rebecca Eastgate

Regional Telehealth Program Manager

Barwon Health

Email: rebecca.eastgate@barwonhealth.org.au

Governance structures need to reflect responsibility for project functions. It may be appropriate to create a governance group that includes high-level decision makers from across the organisation to oversee implementation and promote integration.

A dedicated telehealth coordinator who is empowered to manage and sustain telehealth initiatives, has the clinical and operational skills, can direct internal resourcing and has executive visibility to promote key milestones of the project will foster success.

A telehealth coordinator can work as an agent of change across an organisation to drive implementation, including process design, training support, managing the development of policies and guidelines and negotiating technical solutions associated with telehealth.

For telehealth services involving more than one site, it is suggested that a health worker or other staff member has responsibility for supporting the use of telehealth to manage practical issues at each site.

Successful implementation of the program relies on a balance between top-down implementation of revised business processes and governance frameworks with bottom-up innovation that reflects and responds to the needs of clinicians and consumers.

To consider

- Has the project gained support from senior leadership?
- Have internal champions been identified for the initiative?
- Is there recognition and support for change from clinicians and executive?
- Does the project leader have good project management skills to drive sustainable implementation, integration and organisational change?

3. Key stakeholders and consumers recognise the benefits and are engaged

To be successful, any telehealth service requires the support and engagement of key stakeholders throughout implementation.

It is essential that those delivering health services using telehealth understand the benefits. Support for the service will depend on the clinician's confidence in the technology, their belief that telehealth will not add to their workload, and understanding that a telehealth consult will provide the same or better value and quality of service to a consumer.

Creating a clear and compelling narrative that describes the way the technology can help transform service delivery, experience and outcomes will be important.

It is also important to explain how telehealth will integrate with existing practices. Opportunities for engagement and feedback should be built into the establishment and design phase. Clinicians and administrators need to have input into the decision-making process, including determining the most appropriate technologies, setting the policies and identifying evaluation measures. This is critical in creating a sense of ownership in the project at a local level and contributes to project success.

Ensuring consumer engagement during the project is also important. Most health services are well connected to their communities and many have consumer advisory committees or consumer representatives on committees. Telehealth is no different and should aim for consumer representation in all levels of service development phases.

Traditional communication tools, including progress reports, website pages and posters, can highlight implementation progress and provide services with an opportunity for involvement. Information should address the factors that are likely to inhibit take-up from clinicians and consumers.

Feedback loops, such as surveys or feedback boxes for consumers, promote engagement and offer an important source of information upon which to make improvements. Results of staff and consumer surveys should be regularly compiled and distributed for discussion and to promote ongoing improvement to service design. To be successful, staff and consumers need to feel confident that the feedback is acted upon and that there is a commitment to addressing issues that are raised.

To consider

- Have staff had the opportunity to be involved in developing the project plan and considering the evaluation measures?
- Are there success stories that can build clinician interest and support?
- Have community or consumers been consulted in designing the service?
- Have regular lines of communication been established to keep all stakeholders well informed of progress?
- Are feedback mechanisms in place to ensure the issues and considerations of staff and consumers are captured and can be addressed?

Strengthening success through engagement - The Royal Children's Hospital (Melbourne)

In 2012, The Royal Children's Hospital in Melbourne commenced widespread implementation of telehealth across all clinical services. Most consultations are to families in their homes, typically for review appointments and with known patients. Most specialties now offer at least some telehealth, with around 60–80 consultations per month hospital-wide.

The Family Advisory Council was consulted early on and a Telehealth Steering Committee established, consisting of IT, two senior medical clinicians, the executive sponsor, Director of Ambulatory Services, Specialist Clinics Manager, media producer, finance and telehealth program manager.

A telehealth website contains comprehensive resources for staff, including information on getting started, running a telehealth consultation, Medicare eligibility and billing, hospital procedures, practical tips and medico-legal considerations.

A participant feedback survey and a self-subscribing emailing list were utilised to inform the development of the service and have been invaluable in connecting with stakeholders.

Telehealth is being promoted to parents and families so they might initiate a discussion about telehealth with their clinician. Promotional activities included TV and other local media stories, banners in Specialist Clinics, messages on in-house TV screens, links on the RCH internet and parent guide, brochures on display in Specialist Clinics and sent out with discharge summaries and Specialist Clinics letters.

Capitalising on the positive experiences of early adopters, along with the clinical lead role, has been vital in engaging clinicians. The approach to telehealth rollout has been 'local ownership' - telehealth is 'owned' by individuals and departments, rather than the 'telehealth unit'. Crucial to the engagement of clinicians has also been 1:1 support as needed – increasingly this is now available from within Specialist Clinics.

For further information:

Susan Jury

The Royal Children's Hospital, Victoria

Email: susan.jury@rch.org.au

4. Project planning and a readiness assessment informs implementation

Developing a detailed project plan will assist in articulating what the telehealth service is aiming to achieve; establish project parameters, scope and timelines and identify the risks and how these could be addressed. As part of this, it is important to establish short and long-term goals and the methods of measuring them.

Robust data is also required as part of this project planning phase. It is essential to gather detailed information on current service provision and availability, demand patterns, consumer demographics and technical capabilities. This will assist in identifying potential outcomes and establish a baseline against which to measure success.¹

Project planning needs to encompass a readiness assessment to understand the extent to which the organisation and the consumer community are ready to accept telehealth. Readiness for change considers capacity for making change and the extent to which individuals perceive the change as needed. Individual or organisational readiness to accept innovation may also be shaped by the readiness of others, indicating the importance of leadership in implementing telehealth innovations.

To consider

- Has a project plan been developed?
- Has a telehealth readiness assessment been undertaken to understand the capacity for organisational, clinician and consumer adoption of telehealth?
- Has an assessment of community health needs been undertaken?

Testing for readiness prior to implementation of a telehealth service saves time, money and energy. It can identify which clinicians, organisations and consumer groups are able to support successful implementation.

A range of aspects of readiness need to be considered, including organisational readiness, clinician and personnel readiness, and community and consumer readiness.

It is essential to explore the resources that can support this process. There is a range of toolkits, implementation guides and other information available from government agencies, clinical networks and other organisations that support the adoption of telehealth.

Readiness assessment for telehealth

A number of tools and resources are available online to assist in assessing readiness to implement a telehealth service.

The Telehealth Capacity Assessment Tool (TCAT) developed by the National Frontier and Rural Addiction Technology Transfer Centre Network in the United States provides questions across six key domains: organisational readiness, technology, regulatory and policy, financing and reimbursement, clinical and workforce.

Using the TCAT, organisations can identify their strengths and weaknesses—where they are meeting essential components and where they do not—as well as define activities that can strengthen the organisation's ability to refocus programs and continually improve the quality of their telehealth efforts. In addition, the TCAT can be used as a measurement tool over time to allow the organisation to assess its increased competency and capacity in the areas that support telehealth initiatives.

TCAT is available at: http://www.attcnetwork.org/regcenters/productDocs/20/NFAR_TCAT_web.pdf

The New South Wales Agency for Clinical Innovation (ACI) Rural Telehealth Working Group has also developed a readiness tool. This tool includes organisational, workplace, practitioner, technical and consumer/community readiness. Answering a series of questions will result in an assessment of factors that will impact on the use of telehealth and/or barriers to implementation.

The self-completion aspect of these tools can also foster a sense of ownership that can improve the success of telehealth services.

The ACI readiness tool is available at: http://www.aci.health.nsw.gov.au/_data/assets/pdf_file/0004/242878/Guidelines-for-the-use-of-Telehealth-for-Clinical-and-non-Clinical-Settings-in-NSW.pdf

5. Technology and clinical service needs are well matched

To implement a telehealth service, technological products or services required can be broadly categorised as:

- infrastructure: telecommunications connectivity, data and information exchange
- videoconferencing solutions and peripheral devices
- support technologies: sharing, session record keeping, billing, software integration.

There are examples of telehealth services being delivered using tablets and less sophisticated technologies. While these offer advantages of ubiquity, there are issues with standards, updates and quality that need to be considered.

In designing a technological solution for a specific clinical need it is important to undertake a 'fit for purpose' approach. This will reduce the risks associated with an overinvestment in technology and ensure that the technical capabilities match the service requirements. The technology to be used must not place further burden on healthcare professionals, but rather support them to work in a more efficient and effective way. In all situations, the technology must be easy to use, able to establish fast and reliable connections and decrease interruptions to communications.

A first step is to determine whether the existing infrastructure is capable of meeting the clinical needs or if additional investment is required. In many situations health services have a level of ICT infrastructure in place that can be adapted to specific clinical needs and deliver the capability required to support a similar initiative.

The focus should not be only on the specific needs of the health service instigating the services. Telehealth systems may be proprietary or standards based. Proprietary systems have limited interoperability and may only connect with a system using the same software. Standards-based systems have been developed using agreed communication protocols to enable communication with other standards-based systems, independent of the manufacturer. A general rule of thumb is to adopt standards-based solutions as this will foster interoperability between different platforms and technologies.

Infrastructure investment framework to support ICT decision making

The Statewide Expanding Paediatric Telehealth Project commissioned the Australian Centre for Health Innovation to develop a video evaluation tool that could be used by health services to aid video solution investment decisions.

To facilitate the decision-making process, an evaluation tool for cloud-based video solutions appropriate for telehealth video consultations was required.

The evaluation tool uses a series of questions to elicit the purpose, scope and capability required and identifies a range of technology options that will be potentially appropriate to support the service, taking into consideration sustainability and affordability. It also asks the respondent to consider future growth and service improvements that might be required over the medium-term to ensure the technical options will not limit future service requirements.

Ultimately, the tool guides health services of varying sizes in the selection of cloud-based video solutions that are interoperable.

The tool is available from the Department website: http://www.aci.health.nsw.gov.au/_data/assets/pdf_file/0004/242878/Guidelines-for-the-use-of-Telehealth-for-Clinical-and-non-Clinical-Settings-in-NSW.pdf

For further information:

Paulette Kelly

Statewide Paediatric Telehealth Project

Email: paulette.kelly@rch.org.au

In considering the most appropriate technical solution, it is also important to determine scalability and the capacity of the technology to adapt as the service requirements change.

Prior to deciding which technology will support the service, it is important to ensure that there is adequate technical support available. A range of telehealth providers now offer an advisory/technical support service to maintain and test the connections and the technology regularly and troubleshoot when problems are encountered.

It is essential to ensure that once the technology is in place that there is ample opportunity to use it regularly to ensure familiarity and build trust.

To consider

- Does the proposed clinical service lend itself to a telehealth service model?
- Has advice been sought on the types of telehealth technologies that are available and an assessment been made of which is most suitable?
- Is the proposed technology interoperable with end sites?
- Who will be responsible for product issues and troubleshooting technical problems?

6. A sustainable workforce model underpins the service

Telehealth services will enable all health services to provide their community with access to a broader range of health services. While there may be opportunities for workforce efficiencies through the use of telehealth, it is important to ensure that workforce needs are adequately assessed, and appropriately resourced. It is likely that a different mix of skills will be required. Metropolitan services that are providing specialist consultations will need to consider the additional workload that providing a telehealth service may generate. Similarly, the workforce capabilities in those services supporting patients receiving specialist services via telehealth may change.

Underestimating the additional resourcing required to support implementation, particularly in the establishment phase, has been identified as a common cause of telehealth failure, in particular, the under-estimation of the personnel requirements.

Telehealth consultations may take longer than traditional face-to-face services, due to the need to direct other staff to perform tasks at a distance. The mix of skills required may also change when incorporating telehealth.

To support a dedicated clinical workforce delivering services via telehealth, other resource requirements must be considered, including administrative and technical skills.

Another consideration is the support required by patients who are receiving care remotely. An appropriately skilled workforce must be available at both ends of a telehealth service. Clinicians may require nursing or medical staff to support the patient and ensure the clinician has access to the required information.

New roles may be established, or the requisite skills of existing staff may change. It is essential that skill needs are clearly identified and that roles are clearly articulated.

Looking to the future, the increasing adoption of telehealth may change our workforce needs, bringing a greater emphasis on public health and workforce mobility and flexibility. These issues need to be considered in workforce design, planning and training

To consider

- Is there an adequate workforce base to support the demand for telehealth services?
- What technical and administrative resources are required to support the service?
- How will any additional impacts on the health service or clinicians be monitored and managed?

Ensuring an appropriate workforce
- Townsville Cancer Centre

In 2007, the Department of Medical Oncology of the Townsville Cancer Centre (TCC), the tertiary cancer centre for northern Queensland (Australia), established the Townsville Teleoncology Network (TTN) over a vast geographical area. A key part of the implementation was building capacity to provide services via telehealth in Mt Isa, 900 km away.

Prior to the introduction of the TTN in Mt Isa, cancer patients were managed by the emergency department at Mt Isa Hospital. There were two nurses who had some competency in administering chemotherapy. All patients had to travel to Townsville for their first consultation, for reviews and for the first doses of chemotherapy.

In establishing the delivery of services from Mt Isa, nurses at Mt Isa Hospital were given extra training to treat patients. Each case discussion via video link also served as an opportunity for continuing medical education for rural doctors.

Once the service was running well, the following changes in process were able to be implemented:

- all new patients could be seen first via videoconferencing
- patients from Mt Isa did not need to travel to Townsville unless requested by the patients or the treating teams
- all solid chemotherapy regimens could be administered in Mt Isa
- all admitted inpatients were seen by medical oncologists in ward rounds via videoconferencing.

As the complexity of services provided at rural sites increased, the number of medical, nursing and allied health practitioners at providing and rural sites increased. Reflecting on implementation of the model, one of the main reasons for success was the expansion and capacity building of remote sites to accommodate services from TCC. Providing additional levels of resources and support, along with implementation of quality improvement activities, resulted in increased buy-in from the rural sites.

For further information:

Sabe Sabesan

Director of Medical Oncology/Senior Staff Specialist
Queensland Health

Email: sabe.sabesan@health.qld.gov.au

7. Change management is a focus

Implementation of telehealth can confront staff with unfamiliar and unpredictable technologies; the need to develop new skills, new protocols and workplace practice; and fears associated with privacy and security of consultations.

The importance of continuing change management cannot be underestimated. In most cases, failing to commit to a robust and structured change management program can either lead to a telehealth program not getting off the ground or not able to be sustained.

A key part of change management is bringing staff along for the journey. Training and information sessions to engage with clinicians and other staff will enable the issues to be negotiated and resolved early. The change management process should acknowledge the capacities and perceptions of people within the organisation and actively engage them in the process of change. Identifying a telehealth contact at a local level can assist in coordinating training, encourage uptake and support behaviour change.

Training can be delivered in-house through the development of a train-the-trainer approach, where key personnel are trained to deliver ongoing training in telehealth services. This will ensure that training can be delivered locally and respond to specific health service needs. It will also build local expertise and skills. Timing is often as important as content.

Incorporating telehealth training into position descriptions and key performance indicators (KPIs) will help embed telehealth into normal practice. Many organisations have also introduced accreditation for clinicians providing services via telehealth, which reflects the value of the training to staff. The University of Queensland has developed an accredited telehealth training program that attracts continuing professional development (CPD) points. The training package is targeted to general practitioners but can be used by a range of professionals and can be counted towards CPD.

To consider

- How will change be sustained over time?
- Have targeted training programs for clinicians and nurses been established?
- How will the health service ensure that staff are aware and fully competent in the use of the technology over time?
- Have existing clinical and administrative processes been mapped and the impact of the telehealth service on these been assessed?
- A change management plan should be completed as part of the planning phase (see page 22)

Change management to support successful telehealth adoption – the experience of the Virtual Trauma and Critical Care Unit telehealth project

The Virtual Trauma and Critical Care Unit (ViTCCU) telehealth project was implemented by the Loddon Mallee Rural Health (LMRHA) in 2008 to deliver specialist trauma and critical care support to regional hospitals using telehealth technologies. Under the model, major Melbourne hospitals provided specialist clinical support to assist with the diagnosis and stabilisation of patients and enable local, ongoing treatment of some patients in regional hospitals.

In the early stages, clinicians were reluctant to accept new models of care and there was lower than expected support from regional GPs.

To overcome these obstacles, a range of change management initiatives were put in place to increase awareness, promote use and embed the changed models of care.

A specialist roadshow was undertaken, with clinicians from the metropolitan hospitals visiting the participating regional hospitals. This approach offered regional clinicians an opportunity to engage with those clinicians providing the care remotely and built respect. The regional sites were able to understand the expertise of those providing care remotely and how this would be beneficial for improving patient outcomes. It also promoted an appreciation of the different working environments.

An interactive webpage was developed and regular newsletter updates distributed to clinicians and

nursing staff at all participating sites to highlight technical improvements and distribute other materials to support use of ViTCCU, including protocols and clinical processes.

Training was provided to staff at each of the health services involved in the project at the provider and receiver ends and a manual was developed to support training. Targeted training and familiarisation activities were also undertaken with regional general practitioners (GPs) to raise awareness and understanding of the aims of ViTCCU.

A clinical working party (CWP) was established with representation from all participating hospitals. During the implementation phase of the project the CWP supported the development of processes to tailor the use of ViTCCU to meet the needs of the participating agencies. The CWP also marketed and promoted the project with members of the group championing the use of ViTCCU within their organisations.

Formal evaluation of the trial found improvements in patient care and a 10 per cent reduction in unnecessary ambulance transfers. The use of ViTCCU is now embedded as a model of care across the Loddon Mallee and has been deployed at Bendigo Hospital to underpin the Victorian Stroke Telemedicine (VST) project.

For further information:

Bruce Winzar

Chief Information Officer

Bendigo Health

Email: bwinzar@bendigohealth.org.au

8. Clinical responsibility and governance protocols have been clearly articulated

It is generally accepted that introducing or adapting service models requires a redesign of existing practice and process to enable integration and ensure that a telehealth service becomes a routine part of service delivery. Current service models and processes need to be assessed to determine the extent to which they will support the adoption of telehealth.

Protocols that identify roles and responsibilities of different organisations and how interactions between sites are managed are required to manage risk and reassure consumers. Where possible, standard protocols for use of equipment, examinations and documentation should be developed and should follow the protocols for non-telehealth delivery as much as possible. There must be mechanisms in place to assure quality and accountability.

Consumers need to be confident that their privacy is adequately protected and systems are secure. It is important to establish rigorous security measures to reduce risks of data breaches.

Clinical governance guidelines – Geelong Hospital Intensive Care Telehealth Project

In 2013, the Department funded a collaborative telehealth project to facilitate the provision of specialist care for critically ill patients in intensive care units (ICU) and urgent care centres (UCC) across the Barwon-South Western region.

Specialist advice is provided via videoconference from the Alfred and the Royal Children's Hospitals to the Geelong Hospital ICU. Geelong Hospital ICU provides support to other ICUs and UCCs in the region, including Hamilton and Warrnambool.

To ensure that the clinicians conducting telehealth consultations have the necessary support and skills, the Telehealth Statewide Reference Group was convened for the 12-month project period with responsibility for developing and disseminating information to support the implementation phase. This has now been replaced by the Geelong Hospital Telehealth Special Interest Group (TSIG).

A suite of guidelines and protocols to assist with using telehealth have been developed, including:

- a remote site telehealth guideline that identifies the process to initiate a telehealth consultation with a specialist for support or advice
- a telehealth retrieval service guideline to define the process for initiating a retrieval by Adult Retrieval Victoria (ARV) or Paediatric Emergency Transport Service (PETS) and to also consider a retrieval service telehealth consultation;

- a medico-legal guideline that outlines key legal considerations when providing clinical support using telehealth
- a clinical governance in telehealth guideline.

The project has developed other tools, including a clinical audit guideline and an education evaluation form.

The sharing of protocols and guidelines has assisted in standardising best practice and decreasing the burden of telehealth implementation. The Geelong Hospital ICU is available as both a resource and a demonstration site and is committed to supporting other health services to change their work flow practices.

An evaluation of the project has indicated that the routine use of telehealth has the potential to facilitate early, appropriate identification of patients and improve referral pathways and patient care in a critical setting. It also found that using telehealth may enhance regional and remote professional recruitment and retention by reducing isolation and providing improved access to specialists.

Guidelines developed as part of the project are being shared across all ICU sites and are available from the Department website: <http://www.health.vic.gov.au/telehealth>

For further information:

Gerry Keeley
Regional Project Coordinator – ICU
gekeel@barwonhealth.org.au

Tools and services that support telehealth consultations should be used where possible, including simplified scheduling, measurement, documentation and billing protocols and systems.

Clinical forums are a mechanism for the development of telehealth clinical governance arrangements, clinical standards, ethics and quality assurance.

The Australian College for Rural and Remote Medicine (ACCRM) received Commonwealth Government funding to develop a Telehealth Standards Framework and range of support materials to assist medical practitioners, patients and health facility staff in adopting telehealth, including the clinical usage aspects and clinical process.

To consider

- Have clinical protocols been developed to guide the use of telehealth across the organisation?
- Who will be responsible for overseeing adherence to these and what governance arrangements will be in place?
- The ACCRM telehealth standards framework identifies a range of technical and clinical processes that will support implementation of telehealth services is (<http://www.ehealth.acrm.org.au/telehealth-standards>)

9. A sustainable funding model is in place

The financial sustainability of any service is essential to ensure long-term success.

In Australia, some telehealth services provided by private specialists are provided by private specialists are eligible for reimbursement under the Medicare Benefits Scheme (MBS) video consultation items numbers. The telehealth item numbers that were introduced into the MBS in 2012 enable private specialists to bill for telehealth services provided to regional consumers who meet specific criteria. Should a GP also be supporting a consumer, an MBS reimbursement is available for that GP. There are numerous limitations to be aware of and it is important to review eligibility criteria.

Many telehealth initiatives are funded through seed or grant funding. For these services to become business as usual and sustainable, funding models need to ensure that the cost of providing the service can be recovered through a reimbursement mechanism or through cost savings generated. With telehealth this is a difficult task as the savings primarily accrue to the consumer rather than the provider, with direct savings being more difficult to quantify.

Services interested in establishing telehealth programs are encouraged to undertake a cost benefit analysis to assist in understanding the costs and potential cost savings that can be realised through a telehealth service. This provides a rational basis to consider the merit of investment and identify potential options to redirect funding from other program areas as a result of financial savings achieved through telehealth services.

Evidence of costs and potential savings through investing in telehealth models is mixed. Some studies show that a telehealth service will reduce the costs of providing services and therefore be a sound business investment. For example, tele-stroke services introduced in the United States were shown to be cost-effective for rural hospitals that don't have full-time neurologists on staff. Other telehealth models have shown cost savings through the use of a regional practitioner who is not a doctor (for example, a nurse or an allied health professional) linking in with the specialist remotely. This reduces the need (and cost) of having a medical specialist at the patient end of the consult.

Healthy, Happy in the Home telehealth initiative – a sustainable model, Royal District Nursing Service (RDNS)

In 2012, the RDNS trialled a new service model using remote videoconferencing facilities between RDNS Customer Service Centre (CSC) and approximately 50 client homes for the purpose of safe self-medicine management and monitoring.

The key purpose of the project was to develop an acceptable complementary service to daily face-to-face visits for medicines management for RDNS patients, with the potential of providing the patient with greater flexibility and independence. The project also sought to test whether a telehealth service could deliver increased productivity for RDNS and enable them to deliver cost-effective quality care to more patients.

Implementing a successful model of service delivery required resourcing in terms of staff administration. There were also set-up infrastructure costs and ongoing technology costs. These additional costs were offset through increased productivity and reductions in the per-patient costs of the program, associated with reductions in travel time and costs (or example, motor vehicle expenses). The time saved also increased nursing productivity and enabled more patients to be serviced through the program with existing nursing staff.

Since the completion of the operational stages of the telehealth project, RDNS has sought to establish whether the telehealth service delivery model is a financially viable method of care that can be self-sustaining beyond the funding period.

Overall, the use of telehealth to provide medication management to the patients included in the trial resulted in an overall benefit to patients and the RDNS nursing workforce. With the increase in patient volumes, the Healthy, Happy in the Home Model of Care could become a standard service delivery method of care for Australians in need.

Further information:

Mat Tyler

Royal District Nursing Service

Email: mt Tyler@rdns.com.au

In competitive healthcare environments, deploying telehealth services may result in increased market share and, as a result, increased revenue from billing for consultations.

Other measures that may be quantified in determining the overall cost impact of using telehealth could include emergency department use, hospitalisations and readmissions, costs of providing outreach services and workforce productivity measures.

There may also be cost implications for the broader economy when considering telehealth alternatives. This could include reductions in costs to consumers for travel and accommodation associated with receiving specialist healthcare at a distance and increases in overall productivity as a consequence of reductions in time spent out of the workforce for medical reasons.

Quantifying the benefits of a telehealth service in these terms may assist in identifying alternative revenue sources or support for funding.

Most importantly, it is essential to address these sustainability issues at the beginning of the project, rather than considering this when the project funding is coming to an end. The length of time before the project reaches a sufficient level of maturity for it to be sustainable and become integrated into service delivery should also be considered.

To consider

- How will this project be funded?
- Have the costs, revenues and risks to create sustainable business models been analysed and documented?
- Is the service eligible for funding under MBS telehealth? The MBS telehealth website provides further details about eligibility (<http://www.mbsonline.gov.au/telehealth>)
- How will the service attract a sustainable revenue base?
- The Mid-Atlantic Telehealth Resource Centre offers resources to assist in developing a business case for telehealth and information about the potential cost savings from telehealth initiatives (<http://matrc.org/return-on-investment-roi>).

10. Services are consumer-centred and consumers are supported in adopting telehealth

Telehealth services need to be usable, useful, effective, reliable and affordable for all involved.

Success will still depend on the uptake and acceptance by the consumer community, which in turn demands improvements in accessibility and quality of services.

As part of the engagement process consumers need to be equipped and supported to use the technology and reassured that service quality will be retained when providing the service remotely.

Different levels of support will be required for different groups of consumers. It is necessary to consider the population the service is being targeted at when designing the approach. For example, there is some correlation between age of consumers and acceptance of new technologies. Research has found that older adults or consumers who feel anxiety, apprehension or less control over computers or who are physically, cognitively or perceptually limited would have more difficulty using the technology. Other factors such as gender, education level and computing experience will also be important in understanding consumer capability and acceptance of telehealth. In designing a service, a key step will be to understand the technical capability as well as the physical, psychological and social needs of consumers that the service is being designed for and, if necessary, providing the skills to improve use and build rapport with the technology. Consumer-end support should also be considered to ensure that consumers have access to immediate assistance should they require it.

Training programs, information sheets and troubleshooting guides that assist consumers as they familiarise themselves with the equipment are options that will build consumer capability and also assist in stimulating demand for telehealth options.

To consider

- Have the end-users' technological capability and acceptance of technologies been assessed?
- Have issues of cultural responsiveness been considered in the design of the service and technology used?
- Is there training and support provided to assist end-users in using the telehealth service?

Impacts on end-user adoption among older adults - learning from the research

Research conducted to better understand the factors that impact on the uptake of telehealth services, in particular home monitoring health services, among older adults found that there were a number of factors that influence.

The simplicity and intuitiveness of graphical user interfaces, price of the technologies and technical support were identified in the research as the most important factors determining the success of the initial adoption of home telehealth services.

Research found that older users have specific concerns regarding access to their personal health data by an unauthorised person and the need to control authorisation for third-party access. Those involved in the study also expressed the need to be able to limit access by closer family members.

Social influence was another important predictor. The physician was reported as an important source of information and recommendations by the physician and other healthcare professionals were identified as an important factor that influences whether consumers decide to use a telehealth service.

The research aimed to identify some practical considerations to promote adoption of telehealth. The influence of computer anxiety requires consideration of different visual equipment that focuses on functionality. The presence of secure mechanisms must also be clearly visible to create a trustworthy environment. It suggested that providers should focus on technology support for existing processes, which may encourage the adoption of more advanced services later.

While this research was specific to the use of home telehealth services, it identifies the various factors that need to be considered in developing a telehealth service for different consumer cohorts and possible approaches to improve uptake among specific groups.

Source: Cimperman, M. et al (2012) Older Adults Perceptions of Home Telehealth Services. Available at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3787386/>

11. There is ongoing review and evaluation

Establishing evaluation processes during a trial or implementation will guide rollout, identify future challenges and assist in determining how to overcome barriers as they arise.

Evaluation of projects is also essential to inform ongoing implementation and assess the effectiveness, appropriateness and cost of a telehealth service.

Establishing an evaluation process early will ensure that foundational data collection mechanisms are in place to enable an effective evaluation outcome. Action should be taken in the planning phase to develop an evaluation framework.

Telehealth evaluation can be complex with many potential inputs, outputs, outcomes and stakeholders. It is important to identify which criteria are more important and how they should be measured. Success and failure of an initiative needs to consider the goals of the program over the short, medium and long terms. Short-term goals of a service may be quite different from long-term goals, which needs to be factored into the evaluation. For example, a goal of a project in the short-term may be to improve access to services for a population. This may lead to increased demand for services and higher costs associated with providing these services. Financial sustainability may not be realised in the short term while processes are being developed and refined. However it may be a long-term goal that can be achieved as the service evolves and is embedded into practice.

A broader assessment of effectiveness needs to be considered, although it is far more complex. This goes beyond the individual aspects of how a service is achieving its objectives to consider whether the initiative is achieving broader health outcomes and priorities for the sector. Evaluation measures to assess this could include whether the telehealth service is providing greater access to speciality services in a geographical area and/or contributing to improved health outcomes for specific consumer groups.

A unified approach to telehealth evaluation for Australia

In 2013 the Institute for a Broadband Enabled Society (IBES) developed a conceptual framework that incorporates the key dimensions, criteria and measures that should be considered in the evaluation of telehealth implementations in Australia.

The framework identifies four key criteria against which the project should be measured: patient control, the clinical quality of care, organisation sustainability and technology capacity/capability.

Dimensions of the evaluation are linked to the Australian Institute of Health and Welfare National Health Performance Framework, which provides precise health performance indicators. The technical dimensions of the framework are linked to the technical standards put forth by the Australian College of Remote and Rural Medicine (ACCRM).

This framework provides a starting point to undertake evaluation of any Australian telehealth implementation, to produce more widely applicable findings, to share these and to improve practice based on the collective results.

This framework provides just one option for undertaking comparable evaluations into telehealth projects. It is available from:

<http://www.broadband.unimelb.edu.au/resources/white-paper/2013/Evaluation-of-Telehealth-Implementations-in-Australia.pdf>

To consider

- Is there an evaluation process in place?
- What data is going to be captured?
- Has an evaluation plan been developed?
- What measures are being used and have baseline measures been established and data collected?
- How will results be reported to the sector?

The effectiveness of a telehealth service against sector-wide priorities or government targets will provide a sound evidence base to illustrate the benefits of telehealth.

The results of telehealth projects should be shared and subjected to peer review. It should be a core principle for any telehealth system that ideas, methods, outcomes and further research questions should be documented and published.

There is a great deal of information sharing in the telehealth field at present, with several academic journals, an increasing number of international and national conferences, and many dedicated telehealth websites.

The act of publication, teaching and sharing knowledge and expertise is very important in building the evidence around healthcare reform. In addition to the value it delivers to others, the activity of writing or presenting the telehealth experience and lessons learnt creates a level of self-awareness, self-discipline and self-assessment that might not otherwise exist. Programs presenting or publishing their results at least once per year appear to do significantly better than those that do not.

12. Involvement and collaboration across the sector

Success of a telehealth initiative hinges on collaboration and support across the sector. Commitment from the executive, clinicians and nurses, administrators and consumers is needed to make telehealth successful. Health system support is needed to ensure telehealth is seen as an acceptable alternative to current service models.

Shared responsibility across the system will build trust and eliminate personal barriers and concerns that telehealth will challenge and disrupt the traditional delivery of health services.

Aspects of telehealth that appear to be inhibiting uptake include perceptions from regional clinicians that telehealth will diminish their role and that consumers may bypass local services. There have also been concerns raised that the potential of telehealth will mean that specialists no longer travel beyond metropolitan settings, thereby reducing access to specialist advice and support that currently comes through specialist outreach programs.

While these concerns may be genuine for health services and individual clinicians, it is essential that these issues are worked through collaboratively across the sector to ensure that the potential for telehealth to improve service delivery and access for consumers is realised.

Sector-wide collaboration will also reduce duplication of effort and competition between services for limited resources. Consideration should be given across the sector to how new telehealth initiatives can be leveraged from and used more broadly across a range of services. The use of telehealth infrastructure across organisations and clinical specialties will contribute to greater cost-efficiencies.

The Department recommends leveraging from existing projects to ensure that the current investment in telehealth services achieve maximum impact rather than continuing to fund local pockets of innovation that do not support each other or have scope to expand. It is important that the sector continues to identify opportunities for sharing existing investments and building on current initiatives.

Several organisations across Australia are driving the adoption of telehealth and supporting executives, clinicians, administrators and other stakeholders to collaborate and support the adoption of telehealth more broadly. The efforts of these groups to ensure that telehealth remains on the agenda and that the results from telehealth initiatives and the learnings from implementation are shared and provide policy and practice improvements are essential.

To consider

- Has an environmental assessment been undertaken to determine other projects across the sector that could be leveraged?
- Are there any other projects within the organisation or clinical speciality that provide opportunities for partnerships?

Feedback and contributions to this document

The Department is keen to continue to improve this document and complement it with other resources that will assist health services in implementing telehealth services.

Feedback and contributions to this document and the development of other resources can be provided to:

Department of Health & Human Services Telehealth Unit

Phone: 03 9096 1405

Email: telehealth@health.vic.gov.au

Contact details for Victorian agencies that can provide advice and assistance

Department of Health & Human Services

Telehealth Unit

Phone: 03 9096 1405

Email: telehealth@health.vic.gov.au

Website: www.health.vic.gov.au/telehelath

Barwon Region

Barwon-South West Telehealth Program

Phone: 03 4215 5660

Email: barwonhealth.org.au

Website: www.bswtelehealth.org.au

Gippsland

Gippsland Rural Health Alliance

Phone: 03 5136 5000

Website: www.gha.net.au

Grampians

Grampians Rural Health Alliance

Phone: 03 5136 5000

Website: www.grha.com.au

Hume

Hume Rural Health Alliance

Phone: 03 5832 8300

Email: enquiry@hrha.org.au

Website: www.hrha.net.au

Loddon Mallee

Loddon Mallee Rural Health Alliance

<http://www.lmrha.org.au/>

Useful websites and further information about telehealth

Australasian Telehealth Society

<http://aths.org.au/>

Australian College of Rural and Remote Medicine (ACRRM)

<http://www.ehealth.acrrm.org.au>

Australian Medicare Local Alliance

<http://www.amlalliance.com.au/>

Australian Nursing Midwifery Federation

<http://anmf.org.au/pages/telehealth>

Department of Health and Ageing - MBS online Telehealth information

<http://www.mbsonline.gov.au/telehealth>

How to Make Telehealth Work: Defining Telehealth Processes and Procedures

http://www.e-unicare.com.au/wp-content/uploads/2014/10/unicare_ebook_edition_2.pdf

New South Wales Agency for Clinical Innovation Readiness Tool

http://www.aci.health.nsw.gov.au/_data/assets/pdf_file/0004/242878/Guidelines-for-the-use-of-Telehealth-for-Clinical-and-non-Clinical-Settings-in-NSW.pdf

Nursing and Midwifery Telehealth Consortia

<http://www.apna.asn.au/scripts/cgiip.exe/WService=APNA/ccms.r?PageId=11973>

Royal Australian College of General Practitioners (RACGP)

<http://www.racgp.org.au/yourpractice/e-health/telehealth/>

Telehealth Capacity Assessment Tool

http://www.attcnetwork.org/regcentres/productDocs/20/NFAR_TCAT_web.pdf

University of Queensland Education and Training in Clinical Telehealth

<http://www.uq.edu.au/coh/clinical-telehealth>

References drawn on in developing critical success factors

- Calvin K.L. Or, Ben-Tzion Karsh, A systematic review of patient acceptance of consumer health information technology, *J Am Med Inform Assoc.* 2009 Jul-Aug; 16(4): 550–560.
- Craddock, T.D. Sustainability – the holy grail of telehealth? *Journal of Telehealth and Telecare* 2002 8:7, http://jt.sagepub.com/content/8/suppl_2/7
- Desai, N. *The 10 Secrets of Telehealth Success*, Hands On Telehealth, accessed July 2014, <www.handsontelehealth.com>
- Edwards, J. *The Potential and Reality of Telemedicine*. Gartner Consulting, accessed 09/09/2013, <<http://www.gartner.com/technology/research/hype-cycles/?fnl=search>>
- European Momentum for Mainstreaming Telemedicine Deployment in Daily Practice (Momentum) 2014, *Empowering patients and supporting widespread deployment of telemedicine services – List of Critical Success Factors*, accessed August 2014, <[http://www.knowledge.scot.nhs.uk/media/CLT/ResourceUploads/4050440/Momentum_18_critical_success_factors_v01_6may2014\[1\].pdf](http://www.knowledge.scot.nhs.uk/media/CLT/ResourceUploads/4050440/Momentum_18_critical_success_factors_v01_6may2014[1].pdf)>
- Forducey, P. Telehealth for Persons with Severe Functional Disabilities and their Caregivers: Facilitating Self-care Management in the Home Setting, accessed August 2014, <<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3375593/#R66>>
- Foster, M. A. et al 2006, Telehealth Business Models: An assessment tool for telehealth business opportunities in remote rural communities, accessed July 2014, <<http://www.iser.uaa.alaska.edu/Publications/TelehealthReport1b.pdf>>
- Gray I. & Smith A et al 2011 Telehealth Assessment Final Report. accessed 27/12/13, <[http://www.mbsonline.gov.au/internet/mbsonline/publishing.nsf/Content/EC471B2E09EE7370CA2578A4001092BE/\\$File/UniQuest%20Telehealth%20Assessment%20Report%20.pdf](http://www.mbsonline.gov.au/internet/mbsonline/publishing.nsf/Content/EC471B2E09EE7370CA2578A4001092BE/$File/UniQuest%20Telehealth%20Assessment%20Report%20.pdf)>
- Hailey D, Crowe B. A profile of success and failures in telehealth – evidence and opinion from the Success and Failure in Telehealth conference. *J Telemed Telecare.* 2003;9 Suppl 2:S22-4
- Janet P, Yeo M, Pauls M & Graham J. Organizational readiness for telemedicine: implications for successes and failure. *Journal of Telemedicine and Telecare* 2003; 9 (Suppl. 2): S2:27–30
- Jennett P.A., Gagnon, M.P., Brandstadt, H.K., Preparing for Success: Readiness models for Rural Telehealth, accessed August 2014, <<http://www.jpgmonline.com/article.asp?issn=0022-3859;year=2005;volume=51;issue=4;spage=279;epage=285;aulast=Jennett>>
- Judi H, Razak A, Sha ari N, Mohomah H. Feasability and critical success factors in implementing telemedicine. 2009 *Information Technology Journal* 8 (3):326-332
- Koch, S, Year of publication? *Home telehealth-Current state and future trends*, Centre for eHealth, place of publication?
- Kodukula, S. Evaluation of critical success factors for telemedicine implementation, *International Journal of Computer Applications* (0975 – 8887), Vol 12– No.10, January 2011
- Monash University 2011, *Potential telehealth benefits of high speed broadband*, accessed June 2014, <<http://www.digitalpeel.com.au/wp-content/uploads/2013/06/Potential-telehealth-benefits-of-high-speed-broadband.pdf>>
- National E-Health and Information Principal Committee 2008, *National E-Health Strategy*, 2008, accessed June 2014 <<http://www.health.gov.au/>>
- National Frontier and Rural Addiction Technology Transfer Centre Network 2013, Telehealth Capacity Assessment Tool (TCAT), accessed June 2014, <http://www.attcnetwork.org/regcenters/productDocs/20/NFAR_TCAT_web.pdf>
- Sabesan, S. Practical aspects of telehealth: establishing telehealth in an institution: Telehealth Series, *Internal Medicine Journal*(44) 2014
- Scott R, Mars M. Principles and strategies for ehealth strategy development. *J Med Internet Res* 2013;15(7):e155
- Standards Australia Telehealth Subcommittee IT-014-012 <http://www.ehealthstandards.org.au/IT014SubjectAreas/Telehealth.aspx>

Thacker D, Money Penny R, Olver I, & Sabesan S. Cost savings from a telemedicine model of care in northern Queensland, Australia. *Med J Aust* 2013; 199 (6): 414-417.

Vanderwerf, M Ten Critical Steps for a Successful Telemedicine Program, accessed August 2014, <www.amdtelemedicine.com>

Wade V & Elliot J. The role of the champion in telehealth service development: a qualitative analysis. *Journal of Telemedicine and Telecare* 2012; 18: 490–492

Wade V et al. A qualitative study of sustainability and vulnerability in Australian telehealth services. *Stud Health Technol Inform.* 2010;161:190-201

Wade, V. How to Make Telehealth Work: Defining Telehealth Processes & Procedures, accessed November 2014 <http://www.e-unicare.com.au/wp-content/uploads/2014/10/unicare_ebook_edition_2.pdf >

Wade, V, Jaklin A, Elliott and Hiller, JE, Clinician acceptance is the key factor for sustainable telehealth services, *Qual Health Res* published online 31 March 2014, <<http://qhr.sagepub.com/content/early/2014/03/31/1049732314528809>>

Wooton R & Herbert M. What constitutes success in telehealth? 2001 *J Telemedicine & Telecare* 2001 7: 3

