NZ TELEHEALTH
FORUM & RESOURCE CENTRE

Guideline for establishing & maintaining sustainable Telemedicine services in New Zealand

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Contents

1. Introduction

1.1 Purpose of this guideline

This section of the website is written for the benefit of anyone who is setting up, or running, a service to deliver healthcare by telemedicine in New Zealand. It draws on the experience and ideas of others who have set up telemedicine services both in New Zealand and overseas. The purpose is to make the establishment of any new service efficient and effective.

Information that applies to establishing any type of telehealth service is included in the implementation section of the website **(Click here)**, and what we have included below is additional information that relates specifically to telemedicine.

1.2 Definitions

In this guideline the term telemedicine refers specifically to real time videoconference consultations with direct patient involvement. There are a number of other ways of working that are also commonly referred to as telemedicine, including store and forward consultations, which are covered in a different section of the website.

The term clinician is used here to refer to any health professional providing care to patients using telemedicine.

1.3 Role of telemedicine in healthcare delivery

Telemedicine allows a patient and clinician to see and talk to each other, even though they are in different locations. This has a number of benefits including avoiding travel for the patient or clinician, giving the patient access to specific expertise, and decreasing the time patients wait to be seen if face to face visits are not frequent enough to keep up with demand for the service. In the acute setting telemedicine can allow a clinician present with the patient to have access to specialist advice and support.

The use of video allows the transfer of more clinical information more accurately than a telephone consultation, and also allows the consultation to be many to many, rather than one to one.

1.4 Justification for using telemedicine in NZ

The New Zealand population is distributed over a large geographic area. It is not possible to replicate all aspects of the health system in every geographic location, which means that individual patients may have unequal access to healthcare, depending on where they live and the nature of their problem. There are also a significant number of people who, because of decreased mobility, lack of access to transport, lack of access to money, or other reasons, find it hard to travel even over short distances to receive their healthcare.

In addition the demands placed on the health system are increasing faster than it is possible to increase the amount of resources available. Therefore the health system must become more efficient, or achieve relatively less. One of the greatest inefficiencies is that of poor use of time. This applies to clinician time, but to an even greater extent to patient time. When used appropriately telemedicine can give patients access to the right clinician, while concurrently reducing the amount of time and effort it takes for both to come together.

1.5 Regulation and professional statements

The Health Practitioners Competence Assurance Act, The Code of Health and Disability Services Consumers' Rights, and the Health Information Privacy Code all apply to the use of telemedicine.

A number of peak professional and regulatory bodies have produced statements and guidelines on the use of telemedicine for patient care. They can be found in the Resources section of the website **(Click here)**

2. Establishing a service

2.1 Determining need

Often the case for using telemedicine will seem obvious, but be difficult to describe. It can help to consider questions such as

How far are patients travelling to be seen?
How far are clinicians travelling to see patients?
Is access to care difficult because of disability, institutionalization, or other factors?
Is the waiting time to be seen longer than it should be?
Are patients being seen by the right clinician for their condition?

2.2 Determining appropriateness

There are circumstances where the advantages of using telemedicine are clear. For example, where it will enable better access to care, allows for a high standard of care, and will reduce travel commitments for doctors and/or patients. However, there will also be situations where telemedicine has disadvantages when compared to a face to face consultation. Therefore it is important to be sure that telemedicine is an appropriate way for a service to be provided.

In general it is not appropriate to replace a service based on direct patient consultation by telemedicine where:

- the primary driver is to save money or increase revenue; and/or
- a physical examination is required to allow a proper assessment to be made; and/or
- you are unable to meet the practical considerations outlined in section 4 below; and/or
- individual patient factors as outlined in section 4.1 below are present.

2.3 Patient engagement

In general patients understand the value proposition of telemedicine, because it is often they who have to go to the greatest effort to participate in the consultation. It is however important to avoid assuming that the patients you are hoping to see by telemedicine will be willing to participate, and if they are willing, it is important to make sure the service is developed in such a way that they find acceptable. This could also include seeking advice on the cultural appropriateness of seeing patients by telemedicine.

When engaging patients, it may be possible to involve already established consumer groups within your organization, patient support or advocacy groups for specific conditions, or individual patients and their families who are already using your service.

3. Technical considerations

The technical aspects of establishing a telemedicine service tend to be the least complicated. This is more a reflection of how complicated the human and organizational factors are, rather than a justification to make hasty decisions about equipment and networks.

3.1 Meeting Standards

In addition to the regulatory and professional standards mentioned above, a number of technical standards exist in New Zealand that apply to telemedicine, and there are links to them in the technical section of the website **(Click here)**. They are comprehensive and technical documents which are worth reading, particularly for those with a governance role, or involved in the purchasing and commissioning of equipment.

In the remainder of this section we have tried to translate and outline some of the important aspects of the standards.

3.2 Choosing equipment

A very extensive range of videoconference equipment is available, and frequently added to. More detailed information about endpoints and peripherals can be found here **(Click here)**

Making decisions about camera, screen, device, software, and mounting method should primarily be driven by the clinical situation the equipment will be used in, rather than cost. While an application based videoconference between two mobile devices could work for a one to one conversation as part of a follow up consultation, it would not be suitable for use in the acute setting. In that situation a mobile telemedicine unit with high definition pan tilt zoom camera and far end camera control would be required. Each piece of equipment should be specified not just for the purpose it will be most commonly used for, but for the range of uses it will be put to.

A key prerequisite to uptake is ease of use, and this will be determined by three factors -

1. The design and functionality of the equipment, including how easy it is to access.
2. A comprehensive training program for users.

3. Easy availability of simple and comprehensive instructions, and the contact details for the IT and network help desks.

3.3 Interconnectivity

Careful consideration needs to be given to what other endpoints your telemedicine service will need to connect to. If you need to call someone who uses telemedicine equipment provided by a different manufacturer, or which is operating on a different network to the one you use, interconnection may not technically be possible. In some circumstances interconnection may be possible but with additional costs, loss of functionality such as far end camera control or content sharing, or the need to follow a complicated interconnection process. All of these could act as barriers to uptake of the service. You should ask whoever you are considering getting to supply your network and equipment to demonstrate the interconnectivity you need before signing a contract.

3.4 Privacy and confidentiality

A telemedicine consultation involves the transfer of patient information; therefore it needs to be done in such a way as to maintain the privacy and security of that information. Collecting the information privately means conducting the consultation in such a way that no one who isn't supposed to be involved in the consultation can see or hear the consultation. Sending the information securely means that only those who have a right to access it by being directly involved in the care of the patient are able to.

The privacy aspects are generally managed by controlling the environment in which the consultation takes place, and are covered in section 4 below. The security aspects are technical, and understanding them is beyond the capability of most clinicians and patients. HISO Standard 10029, the Health Information Security Framework **(Click here)** give a thorough but readable description of the issues to consider, and the Connected Health Network has been established as an environment for the safe sharing of health. This includes accrediting and certifying vendors.

At present there is no organsiation in New Zealand that sanctions particular videoconference services as meeting the requirements of the Health Information Security Framework. The onus is on the clinician and their oganisation to do so. Careful consideration should be given to using a network provider that uses the Connected Health network, and if this is not possible you should find out whether the information you transfer during a telemedicine consultation is encrypted (it should be), and whether any of it is stored by the system you are using (it shouldn't be). We have an information sheet on risk management using Skype (Click here) and the considerations in this could be applied to any other of the dozens of similar web based videoconference solutions now available.

3.5 Choosing network, equipment and service providers

A number of different vendors are in the market place supplying equipment, networks, and other services. Establishing and maintaining a good relationship with your vendors is very important, and if done correctly they will make a great contribution to the success of your service. Timely and transparent communication, along with clear and concise service level agreements make things much easier.

Depending on the size of the telemedicine project and organizational policies, it may be necessary to go through a formal procurement process. Even if that is not required vendors should be asked the following questions about the system they propose –

Does it meet New Zealand standards for interoperability?
Does it allow interconnectivity with other networks?
Does it operate over the Connected Health Network?
Does it meet the clinical requirements you have defined?
What level of quality and reliability can you expect?
What support services are available and what is the escalation process for faults?
Is there a working relationship with other involved parties like your IT Department?
What are the establishment and ongoing costs?

The practical aspects mentioned above should be demonstrated in the environment they will be used in.

4. Practical considerations

4.1 Scheduled Consultations

Most videoconference consultations are able to happen in a planned way and will be follow up outpatient visits where the patient has previously been seen in person by the same clinician, usually at a face to face clinic appointment. Some will have been seen while inpatients and had their follow up requested from the ward. A minority will be being seen for first specialist assessment as their care does not require them to be able to be examined physically eg Paediatric Dietetics, or as a form of enhanced triage eg lesion examination prior to a Plastic Surgical Clinic.

Usually the consultation is between the remote clinician and the patient, with or without their family members/support people. It is however also possible for local clinicians to be present with the patient, and this has the advantage of them providing direct input into the treatment plan that is developed, as they will often be helping to implement it.

The complicated part of scheduled telemedicine appointments is scheduling the clinics, as most patient administration systems don't have the capacity to book two locations and sets of videoconference equipment for one consultation. The outpatient waiting list needs to be able to identify the subgroup of patients waiting for a telemedicine appointment in such a way that they can be grouped into an entirely telemedicine clinic, or fitted in to a face to face clinic appointment slot that the clinician is otherwise conducting. The tracking of patients needs to be able to take into account the time frame in which they are due to be seen.

Clinic booking
The booking clerk needs the following information to book a telemedicine clinic

1. The closest telemedicine facility to the patient
    a. Either identified when the consultation is requested or
    b. Automatically generated based on the patient's location
2. The telemedicine location the clinician will be using

3. The contact information for the location the patient will be at for the consultation

The booking clerk needs to do the following to book a telemedicine consultation

1. Confirm with the patient that they are happy to be seen by telemedicine, and if not offer a face to face appointment.
2. Book the patient telemedicine facility.
3. Book the clinician telemedicine facility.
4. Provide the patient with clear information as to the location they need to present to for the consultation.
5. Obtain arrival and follow up information for the visit.

The complexity of booking the telemedicine clinic should not be underestimated. The patient location could be in a DHB facility, a primary care location such as an Integrated Family Health Centre or General Practice, or another location such as a Prison Clinic. The clinician could be in a DHB facility, primary care, or at home. Most telemedicine equipment is hardware based and in a fixed location, but some is mobile and shared between a number of locations, or on a mobile device and therefore truly portable. This last example particularly relates to the clinician end of the consultation, but some consultations in the future will be conducted into the patient's home.

Choosing appropriate patients

Patients who are able to be seen in a telemedicine clinic are those who don't require a physical examination (or are able to be examined competently by a local clinician with the findings relayed to the remote clinician), and who are willing and able to participate in a videoconference.

Prior to the clinic patients should be given and explanation of what the telemedicine clinic will involve, and the opportunity to opt for a face to face appointment. This can be done by written information included in their appointment letter, as long as it includes information about who to call if they would like to change their appointment type, and will ensure that the patient is **willing** to participate in the telemedicine consultation.

Because of the nature of a videoconference it may not be an appropriate way to see some patients with visual, hearing, cognitive, or psychiatric problems. Consideration of these issues prior to offering an appointment, and if necessary, consultation with the patient and their family, will ensure that the patient is **able** to participate in the telemedicine consultation. In terms of hearing impairment consider having a sign language interpreter with the patient, or using the Video Remote Interpreting Service www.vri.govt.nz

Conducting the consultation

At the start of a telemedicine consultation the clinician needs to be sure they have correctly identified the patient they are seeing, and confirm that the patient is willing and able to proceed with the consultation (see the sections on informed consent and patient selection below). They should check that the patient can see and hear them adequately.

They should introduce themselves and anyone else involved with the consultation, and explain to the patient that the consultation is private and that there is no one out of the field of view of the camera, or if there is, explain to the patient why they are there and seek the patient's consent for them to be part of the consultation.

The clinician will need to have access to clinical information systems to be fully informed about the patient, and this may require some form of remote access. Once the consultation is complete the consultation should be documented, and this may require the establishment of a system that allows remote dictation of a clinic letter. There will need to be some way to communicate the outcome of the appointment to the booking service.

There should be a contingency plan in place for three situations

1. Failure of the videoconference connection during the consultation.
2. The patient becoming unwell during the consultation.
3. It becoming apparent that a physical examination is required before a treatment plan can be made.

The first two situations rely on the clinician having telephone contact details for the patient location. If a physical examination is required then the clinician should explain this to the patient, and book them in to the next available face to face clinic.

4.2 Unscheduled Consultations

Unscheduled telemedicine consultations typically occur in the management of an acute illness, involve a local clinician with the patient seeking specialist advice from a remote clinician, and can occur at any time. They can involve primary care, emergency departments, intensive care units, retrieval services, or ward rounds. They will typically be initiated by a telephone call from the local clinician to the remote clinician, and it is important at the time of this conversation that information such as where the patient is located, which videoconference units will be used, as well as a direct dial telephone number, are exchanged. This means that if there are any problems initiating a videoconference, contact will be able to be re-established.

When videoconferencing is used in the acute setting and there is more than one clinician involved, the question can arise as to who is then responsible for the care of the patient. The answer will depend very much on the situation, and the best approach is for the clinicians involved to recognise that they have an individual responsibility to contribute to a joint decision making process. A very useful discussion of interdisciplinary collaboration, of which acute telemedicine is an example, can be found in Chapter 16 of Cole's Medical Practice in New Zealand.[1]

4.3 Consultation location

[1] http://www.mcnz.org.nz/assets/News-and-Publications/Coles/Coles-Medical-Practice-in-New-Zealand-2013.pdf

Because traditionally most health related videoconferencing in New Zealand has been for meetings and education sessions, most videoconference equipment is located in meeting rooms.

For a patient consultation however, the location the patient attends should be the same as, or very similar to, the location they would attend if they were being seen face to face (except that it will usually be closer to home). In other words, the location should be a medical or health clinic wherever possible, and videoconference equipment must be available. This means that the surroundings will provide the right context for the patient, that the right equipment will be available (eg to take a blood pressure), and that all the other aspects of the consultation can be completed.

There needs to be a place for the patient to be greeted, somewhere to wait until they are able to be seen, someone to obtain recording such as weight and height and blood pressure should they be required, and facilities to maintain the patient's privacy during the consultation. In addition someone needs to be present with the patient to make sure the telemedicine equipment is functioning and that the patient is comfortable using it. If this person needs to assist with examination of the patient, or to interpret communication between the clinician and the patient, they should be a health professional, and competent to undertake those tasks.

For acute consultations the patient will be in the setting best suited to providing their care, such as an emergency department or intensive care unit. The videoconferencing therefore needs to be made available in that location. As the patient will have clinicians at their side providing care, the videoconference equipment needs to be unobtrusive, but also allow a good view of the whole situation. It is therefore best if it can be placed at the foot of the bed pointing toward the head, which is usually where the local clinician managing the patient's airway would be. In some rooms the layout allows for a screen and camera to be placed on the wall opposite the head of the bed. If the patient requires resuscitation the remote clinician may take the role of leading the resuscitation and as such, as well as being able to see the clinician managing the patients airway, they should also be able to view the patient monitor, and share content from their unit so they can display treatment algorithms etc.

The location of the clinician conducting the consultation can be less specific, but should be convenient – such as their usual outpatient clinic room or office. They need to remain uninterrupted during the consultation, be somewhere that maintains the patient's privacy, and will need to have access to clinical information systems. Technically this can all be done outside a usual clinical setting, or even outside a health care facility.

4.4 Room setup

Aside from the effectiveness of the technology being used, the next main influencer of the success of a video conferencing consultation is the setup of the room where the video conference will take place. Poor lighting, poor sound quality, and visible or audible distractions all have the potential to negatively impact a patient's participation in a video conferencing session. Here are some tips on how to maximise the effectiveness of your video consultations.

1) Aim for Brightness

One of the most important requirements for conducting an effective video conference is lighting. The whole room needs to be well lit - normal office fluorescent lighting is usually more than adequate. A desk lamp can be used if extra light in needed, but it should be pointed towards a wall to bounce the light off rather than shone directly at the patient or clinician's face; this gives better quality of light with less glare and reflection, making the consultation more comfortable for those involved.

2) Minimise contrast

Try to avoid large differences in brightness (i.e. between the background and foreground). If the patient or clinician is sitting with a bright window behind them, the other end will only see them as a silhouette. To amend this issue, close the blinds or curtains (which may need to be changed to blackout quality). Where there are none to close, position the camera so that it faces somewhere else in the room where the participant can sit without having the bright window behind them.

3) Working with skin tone

Those with pale skin may show up on video with washed out faces if they are wearing black or dark clothing. Conversely, those with dark skin may appear as a dark shadow if they are wearing white or pale clothing. In each case, these participants should sit closer to the camera to have their face take up most of the screen. This will usually solve the problem, but moving to have a neutral-coloured screen behind them may help too.

4) Calm background for clarity

The busier the visual environment is, the more information needs to be processed by the computer or video conferencing unit. The chance of the image breaking up therefore increases accordingly. In addition, when the bandwidth is limited (such as over a shared ADSL internet connection) the entire transmission including the sound can be affected by a busy visual environment.

To mitigate this, we suggest you avoid wearing stripes, or fabric with a busy pattern. Cluttered backgrounds and rapid movement should also be avoided. As well as being clear the walls in view of the camera should be painted a pale blue or grey. Most cameras have automatic aperture control, and if the wall colour contracts with the skin tones of the person in front of the camera, they may appear under or over exposed. If it is not possible to change wall colour easily then a drop down of roll up screen placed behind the person on camera is a suitable alternative.

5) Clear sound

Microphones are not as good as human ears at filtering out unwanted sounds, meaning background noises such as the hum of a fan or a heat pump can be prominent and distracting. The quieter the room, the clearer the speaker's voice.

The microphone should be positioned relatively close to the participant– usually they are sensitive enough that it can be approximately a metre away without any loss in clarity or volume. Where possible, the microphone should also be positioned far enough away as possible from any sources of background noise that cannot be quietened. The speaker should also be conscious not to rustle paper or tap fingernails or a pen near the microphone as these sounds can be picked up quite clearly and are often very distracting.

6) Be aware of the field of view

The field of view captured by the camera should to be checked prior to use, especially if more than one person will be appearing on screen. It should be adjusted accordingly by positioning the camera further back or closer to the chair(s) or vice versa. This can be quite difficult in smaller rooms, and if there are multiple users appearing on screen at the same time, the chairs may need to be positioned closer together or staggered in rows.

7) Position the participants

As far as possible the image transmitted to the far end should show people as they appear in real life. This means that participants should sit close to the camera, or close together if there is more that one person involved. Check how you appear to the far end by using the Picture In Picture function, and if necessary reposition yourself or the camera.

4.5 Informed Consent

Careful attention to the process of informed consent is particularly important when a proposed treatment is in any way innovative[2]. This is true when talking about complementary and alternative medicine, new medicines and new ways of providing treatment – including telehealth.

The informed consent process outlined in the Health and Disability Services Consumers' Code of Rights 1996 is intended to be interactive. It begins with the practitioner and the patient establishing effective communication and should be followed by open-ended discussion where the patient has the opportunity to ask, and receive honest and accurate answers to, questions. At the end of this process the patient is entitled to make an informed choice, and only then can the chosen treatment be provided. Ideally this process should occur by way of a discussion between the practitioner (or a surrogate) and the patient. If the telehealth services you are providing are new, experimental, include a research element, or involve significant risk of adverse events on the patient then the patient's informed consent must be provided in writing.

You should avoid any consent process that simply involves providing the patient with written information and a request for their agreement to proceed. Both patients and practitioners can become enthused (often quite rightly) by the promises of new technology. During any discussion with the patient you should be careful to make sure that your enthusiasm, and the patient's, doesn't taint the information you provide to them; their understanding; or the choices that they make.

Telehealth technology can often allow you to provide a very high standard of care, but sometimes those high standards might not meet the same standards as could be provided in an in-person consultation. The Medical Council has mandated that if, because of the limits of technology, you are unable to provide a service to the same standard as a face-to-face consultation then you must advise the patient of this[3].

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[2] Medical Council of New Zealand, *Statement on complementary and alternative medicine.* March 2011. Paragraph 13.

[3] Medical Council of New Zealand, *Statement on telehealth.* June 2013. Paragraph 8.

There are many examples of telehealth consultation consent forms available on the internet. The one provided by the Australian College of Rural and Remote Medicine in their Teleheath Toolkit is clear and concise http://www.ehealth.acrrm.org.au/acrrm-telehealth-tool-kit.

4.6 Prescribing

The issuing of prescriptions is legally restricted. In particular it is noted that:

- Under clause 39 of the Medicines Regulations 1984 no doctor is permitted to prescribe medication to an individual unless it is for the treatment of a patient under his or her care.
- Prescriptions must be legibly and indelibly printed and personally signed by the prescriber with his or her usual signature (not a facsimile or other stamp). Therefore those issued only by email or other electronic means do not meet New Zealand legislative standards under clauses 40-41 of the Medicines Regulations[4].

The Medical Council has issued a *Statement on telehealth* to provide some clarity around how these legal requirements apply in the context of telehealth. The Council's statement advises that you may issue a prescription, including repeat prescriptions only when you:

- Have adequate knowledge of the patient's health.
- Are satisfied that the drugs or treatment are in the patient's best interests.

The Council also expects that before any prescription is issued you should have had at least one face-to-face meeting with the patient – or have discussed the patient's treatment with another New Zealand registered health practitioner who can verify the patient's physical data and identity[5]. Some exemptions apply, but you should be very cautious to issue a prescription by means of telehealth outside of this broad expectation.
If you are not the patient's usual doctor, then you also need to seek the patient's permission and share information about your prescribing with the patient's principal health provider (who will usually be their general practitioner)[6].

5. Monitoring the service

There are a number of reasons to monitor a telehealth service, with the most important being to detect any fall in the quality of the service which might represent a risk to patients. Monitoring is also a prerequisite to service development, may be required to fulfill contractual or funding obligations, and can contribute to the development of telehealth more broadly through scientific research. In addition the Ministry of Health has asked DHBs to start collecting data about the use of telemedicine from 1 July 2015 in the National Non-admitted Patient Click here for information).

[4] However, it is worth noting that clause 43 of the Medicines Regulations 1984 allows the Director-General of Health to issue a waiver and authorise a form of prescription that does not comply with all of the requirements in regulation 41, including the requirement that the prescription must be personally signed. If your telehealth service may be unduly compromised by this requirement you might consider contacting the Ministry of Health to request a waiver.
[5] Medical Council of New Zealand. *Statement on telehealth.* June 2013. Paragraphs 12-14.
[6] Medical Council of New Zealand. *Good Medical Practice.* April 2013. Paragraphs 46-49.

An almost endless amount of data could be collected about telehealth services, and so a monitoring plan should be developed early on in setting up a service. It should identify the data that is practical to collect, reliable, easy to access once collected, and relevant to the goals of the service. Data may be collected to measure the activity of the service, recording each time the 'demographics' of the consultation (date, time, locations, specialty, who is involved etc). The acceptability and usability of the service could be monitored by patient and clinician feedback questionnaires administered for a set period of time after the service is established or changed, and the effectiveness and efficiency of the service could be monitored by looking at patient outcomes or costs. In addition there could be a system for ad hoc monitoring of for example episodes of technical difficulty or equipment failure, so that these can be fixed. Activity data is relatively easy to collect, as it is often available via systems already in place, acceptability and usability data is harder to collect, and effectiveness and efficiency data is very hard to collect. Don't underestimate the importance of making a good monitoring plan, and the time it will take to implement this plan.

When the data you collect is used to make changes to the way the service is delivered it becomes meaningful, so the monitoring plan should include deliberate analysis of the data that is collected, with this analysis available to those charged with making refinements to the service.

6. Summary

Telemedicine is becoming an increasingly common part of medical practice. If we fail to take advantage of new technology then we risk failing to meet patient expectations and some of our patients, particularly isolated patients and those with mobility issues, may continue to struggle to access the care that they need. But leaping without careful thought also presents its own risks. There are a number of ways clinicians can ensure their telemedicine work is of a high standard:

1. Check regulatory body guidance
2. Check for guidelines from the relevant College or professional body
3. Check for local employer guidelines
4. Consider for each consultation:
    a. Is a consultation by telehealth in the best interests of the patient?
    b. Does the telehealth consultation allow the collection of enough information to make the correct treatment decision?
    c. Has communication been clear and effective?
    d. Can the consultation take place securely and privately?