

# New Zealand Telehealth Stocktake

## District Health Boards



*Promoting sustainable telehealth*

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**NZ Telehealth Forum:**

To find out more about the NZ Telehealth Forum and resources, visit

<http://ithealthboard.health.nz/telehealthforum>.

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## Executive summary

Telehealth is one of the enabling technologies that will underpin the changes we need to make in the delivery of healthcare to the New Zealand public, and the government is committed to increasing its effective and sustainable use. With this in mind, the National Health IT Board has commissioned the NZ Telehealth Forum to undertake a stocktake to provide a better understanding of the current uptake of telehealth technologies.

This report presents the results of Phase 1 of the stocktake, which has surveyed telehealth activity in New Zealand's twenty District Health Boards (DHBs). Phase 2, currently underway, is a survey of Primary Health Organisations and Non-Government Organisations.

The stocktake provides a baseline from which to measure progress, and an information resource to enable new investment in telehealth to be more effectively deployed. It will also help to build a network of telehealth expertise, and to identify the barriers to further progress.

The principal conclusions that we can draw from Phase 1 (and early responses to Phase 2) are:

- New Zealand appears to be close to a tipping point in terms of the uptake of telehealth enabled practices, particularly in relation to videoconferencing. The last 3-4 years has seen all DHBs utilise these technologies to at least some degree, and the appearance of telehealth specific governance groups and the appointment of telehealth leaders are further manifestations of the increasingly important role telehealth is playing in the delivery of sustainable services.
- Although this progress is encouraging, it is by no means indicative of a momentum that reflects the true potential of telehealth. In most cases telehealth services are introduced as a way of making an existing service model more efficient. Only rarely is it considered as providing a strategic opportunity to reshape the way patients receive care or are empowered to take responsibility for their own care. This tactical response arises from the lack of understanding and buy-in at the managerial and clinical policy levels of DHBs, and denotes a need for more leadership in this area.
- Although there is an increasing acceptance of telehealth by individual clinicians, there remains embedded resistance to adopting these technologies, resistance that is bolstered by a lack of nationally agreed approaches to aligning its use with appropriate remuneration frameworks. In the case of videoconferencing there is a residual concern about utility and especially integration that is only slowly being dispelled, notwithstanding the excellent progress that has been made by the National Health IT Board and the NZ Telehealth Forum in agreeing and implementing standards.
- If greater progress is to be made in the adoption of telehealth, it is vital that there is real investment in carrying out credible evaluations of the healthcare and financial benefits that arise from its effective use. This will enable the investment cases to be made on hard data rather than merely through the aspirational thinking and leadership of individuals.
- If, as this stocktake suggests, there is a burgeoning uptake in the use of telehealth, then New Zealand has a moment in time opportunity to 'do it right'. This will require not just

the effective efforts of individuals, clinical teams and DHB managements, but the ongoing involvement of national bodies such as the National Health IT board, the New Zealand Telehealth Forum and the Medical Council to ensure a coordinated approach, where lessons are learnt and communicated, and where investments are made based on experience and knowledge.

## Summary of results

For the purposes of the stocktake, telehealth is defined as meaning any technology enabled healthcare intervention where people are connected remotely. Specifically, the categories of telehealth include:

- Telemedicine: the use of interactive videoconferencing (VC) and store-and-forward technologies for remote consultations, diagnosis and treatment, including multi-disciplinary team meetings for shared care and health care related education, research and evaluation. Examples of store-and-forward include teleradiology and teledermatology.
- Telemonitoring: patients using simple medical devices in their domestic settings to inform their care providers about their condition.
- mHealth: the use of mobile communications technology (such as smartphones) to deliver healthcare and healthy lifestyle services.
- Interactive portals: the use of websites, social networks and supporting triage/consulting services to interact with patients.

The Chief Executive of each DHB was asked to nominate an individual to be responsible for completing the survey, and the questionnaires were sent to the nominees. Survey questions addressed governance, the use of videoconferencing for current and planned clinical services, the supporting technical infrastructure, and other technologies being used or planned. Questions were also asked about evaluations, barriers to uptake, and what support the NZ Telehealth Forum and the National Health IT Board should offer DHBs to enable them to increase their use of telehealth.

All twenty DHBs responded to the survey. The results in this report are predominantly as received in the survey responses, with some clarifications and updates made following direct contact with respondents. The level of detail in responses varied and we appreciate that in some cases the respondents may not have been aware of all of the operational or planned activities in different departments and services, since few DHBs have a readily accessible telehealth “knowledge hub”. We are also aware that new developments have taken place between conducting the survey and preparation of the report, and therefore will not be included.

Almost all of the DHBs are making use of telehealth technology to some degree with Northland, West Coast and Canterbury most active in using telehealth technologies for clinical services involving care of patients. Others that are providing some regular patient services, or are

conducting or planning to conduct trials, include Auckland, Waitemata, Waikato, Bay of Plenty, Lakes, MidCentral, Hawkes Bay, Nelson Marlborough and Southern.

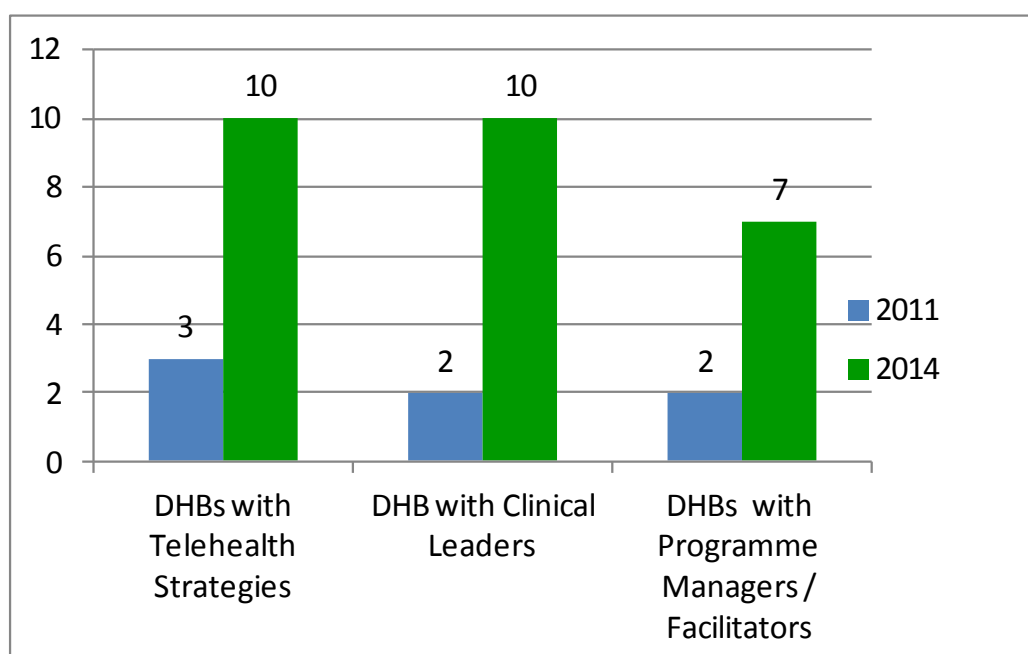
The dominant telehealth technology being used for patient interactions and for clinical networks is videoconferencing, hence the focus on its use in this report. Store and forward image transmission for radiology and pathology is an inherent part of video-based Multi-Disciplinary Meetings and patient consultations. Dermatology, particularly in Waikato DHB's Virtual Lesion Clinics, has been a pioneer in providing store and forward image-based diagnosis services for General Practitioner referrals.

Other technologies and applications are emerging, such as the use of mHealth / smartphone applications, the use of email consultations, and devices for remote telemonitoring.

## Governance

In 2011 three DHBs had documented telehealth strategies or procedures (Northland, Canterbury and West Coast) and only two had an appointed Telehealth Clinical Leader and a Telehealth Facilitator (Canterbury and West Coast shared).

**Figure 1: Telehealth governance in DHBs 2011 vs 2014**



In 2014 ten DHBs have strategies either in place or being developed. Most are individual strategies, the exception being the Midland Region, where Waikato DHB's strategy has been adapted as a regional strategy. There are now ten DHBs with appointed telehealth clinical leaders, although their roles vary widely in scope. Six DHBs now have full time telehealth programme manager or facilitator positions and one has a small part time position.



Thirteen DHBs have a Governance Group that provides oversight of telehealth investment. In most cases these are the Groups that oversee overall ICT governance. Four DHBs require approval of the Governance Group for equipment and other purchases. Some handle their equipment investments out of normal operating budgets.

Northland DHB also has an active senior management and clinical leadership Steering Group. Waikato DHB has a clinically-led Telehealth User Group, and there is now also a Midland Region Telehealth User Group. Its terms of reference include telehealth promotion, advising senior management on strategy, ensuring the adoption of standards and guidelines for the effective use of telehealth, and liaising with interested parties from other DHBs to promote collaboration.

Five DHBs have formal documentation for telehealth protocols, primarily for videoconferencing interactions. Two other DHBs are in the process of developing protocols.

While some DHBs have made good progress in terms of telehealth governance, some still lack formal governance structures. Amongst those DHBs which do have governance structures there is wide variance in the scope and responsibilities of those involved. Many DHBs also still lack protocols to govern the introduction and use of telehealth services into their organisations.

### **Videoconferencing (VC) usage**

Nineteen DHBs currently use VC for administrative / management meetings and clinical education (South Canterbury was the only DHB that indicated no current usage.)

Sixteen DHBs reported that they are using VC for direct clinician-patient interactions, although only twelve reported specific services in the survey template. The range of services has grown significantly since a telehealth survey taken in 2005/06, when the only services identified were for telepaediatrics, telepsychiatry, teledermatology, and teleradiology. Today, a wide range of services using VC are provided across the spectrum of Adult and Emergency, Ambulatory and Allied Health, Paediatrics, and Mental Health services. DHBs are using VC for follow-up visits, some first specialist assessments, acute assessments, ward rounds and nurse-led clinics. Most involve services between secondary/tertiary sites and smaller regional sites. A few services are provided directly to patients in their home.

All of the DHBs are using videoconferencing for multi-site Multi-Disciplinary Meetings or Multi-Disciplinary Team Meetings, or are in the process of establishing fit-for-purpose rooms for these meetings. Sixteen DHBs have MDM Co-ordinators and twelve indicated that they either have or are developing protocols for multi-site VC meetings. (Most of the MDM Co-ordinators and MDM protocols relate to the Cancer Networks.)

Other uses directly related to delivery of health services include discharge planning meetings, chart based ward rounds (usually for patients with long term or complex conditions), remote medication monitoring of patients in homes, supervision, and peer support.

Fifteen DHBs are planning on new telehealth services to be added in the next twelve months. These include extending current services to new sites and adding new services.

### Reporting of telehealth events

Despite the breadth of VC usage for patient interactions noted above, there has been little progress in the ability to track usage for patient consultations since a 2005/06 New Zealand Telehealth survey noted: "Usage statistics are hard to come by as there is no consistent method of tracking usage and the level of detail varies considerably from region to region and across services."

Only five of the DHBs reported having a method of counting telehealth consultations either within, or outside of, their Patient Administration Systems, and one of those is only being done as part of a current international trial. This capability is essential for telehealth consultations to become mainstream; credible data is necessary for evaluations, for relating the use of telehealth tools to health outcomes, and for appropriate recognition in contract matters and re-imbursement policies.

An important development with regard to reporting is that the Ministry of Health is implementing a change in the National Non-Admitted Patient collection that will allow for accurate counting of telehealth consultation as reported by DHBs. It is likely that this change will help to improve the quality of data being collected in the future, but its effectiveness will depend on the ability of the DHBs to accurately capture the information at source.

### Technical infrastructure

Only five DHBs said that their VC capacity either met or mostly met the demand. Eight of the remaining fifteen DHBs have, or are developing investment plans to meet unmet demand.

Twelve of the DHBs have centralised booking systems. Most respondents weren't sure if their VC systems met current HISO standards for interoperability and interconnectivity; this demonstrates a need for wider communication to users, as it is understood that all recently implemented systems do comply. Three VC network providers, Vivid Solutions Ltd, Gen-i and Dimension Data, are currently the main VC network providers for DHBs. These companies are also active members of the Telehealth Forum's VC Working Group, which has as its main goal the achievement of seamless and cost effective interconnectivity across networks.

Responses to questions about help desk and technical support indicated a need for clarification of the roles of internal IT departments and VC network providers. The lack of adequate support was also cited as a barrier to uptake.

The majority of VC systems are still hardware-based, but there is a trend toward software-based systems. A few DHBs have started providing VC clients on desktops and mobile devices that allow for secure connectivity to enterprise networks.

## Other telehealth technologies

Three DHBs are providing remote telemonitoring support for patients and five others are planning to provide or considering this type of support.

One DHB (Waitemata) is deploying mHealth and smartphone technologies in programmes for diabetes support, pregnant women and families of young children, and community alcohol and drugs service. DHBs are also using text messaging tools for communications between health professionals and for appointment reminders. Two DHBs have provided VC links for GPs to participate in teleconsultations with specialist services and two are planning to provide links.

Three DHBs will be implementing email patient consultations as part of the Shared Care planning initiatives (Waitemata, Hawkes Bay and Auckland). In all DHBs, email and telephone calls are most likely already being used for some consultations follow-ups, but as this activity is not counted it would be very difficult to quantify.

## Telehealth evaluation

Four DHBs have conducted evaluations of an operational service or pilot (Northland, Auckland, Waikato, West Coast), and an evaluation of a tele-stroke pilot at MidCentral is underway. Although not specifically reported in this survey, we are aware of other evaluations, for example for the Te Whiringa Ora telemonitoring service managed by Healthcare of New Zealand, and a 2011 report on a small telemonitoring trial in Lakes DHB.

Anecdotal information on services and events is also available, and business cases for investment have typically forecast benefits regarding increased access for patients, reduced clinical risk, and more efficient use of health provider resources. Yet there is a lack of documentation on benefits realisation and health outcomes that would help to justify the level of investment necessary to ensure that telehealth tools become part of mainstream health service delivery.

## Barriers to uptake and priorities for NHITB and Telehealth Forum support

The barriers to uptake cited by almost all DHBs are videoconferencing interconnectivity (across provider networks), infrastructure investment (including facilities, technology, and support staff) and adequate technical support.

Half of the DHBs cited the following factors as barriers to uptake: the lack of appropriate reimbursement models, protocols and guidelines for care pathways, quality of video/audio, and clinical support. Only three DHBs cited patient acceptance as a barrier.

Respondents felt that the most beneficial support the National Health IT Board and the Telehealth Forum could offer was the provision of generic guidelines and case studies, and telehealth advocacy at local, regional, and national levels.

## Commentary

The survey results, particularly the indications of planned growth in services and networks, are very encouraging for telehealth uptake. The survey shows that the most active DHBs are those that have addressed at least some of the success criteria for sustainable telehealth services. Agreed strategies, clinical champions, senior management sponsorship, dedicated resources (for programme management, facilitation, and technical support), protocols and guidelines, and appropriate investment in the ICT infrastructure, are absolutely essential to promote uptake.

Progress is certainly being made, but we have a long way to go to realise the full potential for telehealth technologies to improve access for patients, to reduce clinical risk, and to make more efficient use of clinical and administrative resources. For example, very few organisations are either providing or considering the use of remote monitoring technologies for management of chronic disease. In addition, more organisations need to be fully committed to making video teleconsultations a mainstream activity in the delivery of outpatient and acute services.

By its very nature, telehealth relies on effective and efficient clinical and technical networks. However, along with the growth in telehealth activity, there are signs of fragmentation that will constrain uptake, if not locally, then at inter-DHB and cross-region levels. There is also the risk that if the total cost of ownership in providing a telehealth-enabled service isn't adequately planned for, clinically supported, and appropriately resourced, it won't be sustainable.

Clinical collaboration and seamless technical interconnectivity between health providers is paramount. The stocktake shows that there are many opportunities for DHBs to share lessons learned regarding governance, equipment configurations, protocols and procedures used, technical support, and IT systems support. This collaboration should contribute to increased and sustainable uptake, and reduce unnecessary duplication.

## Next steps

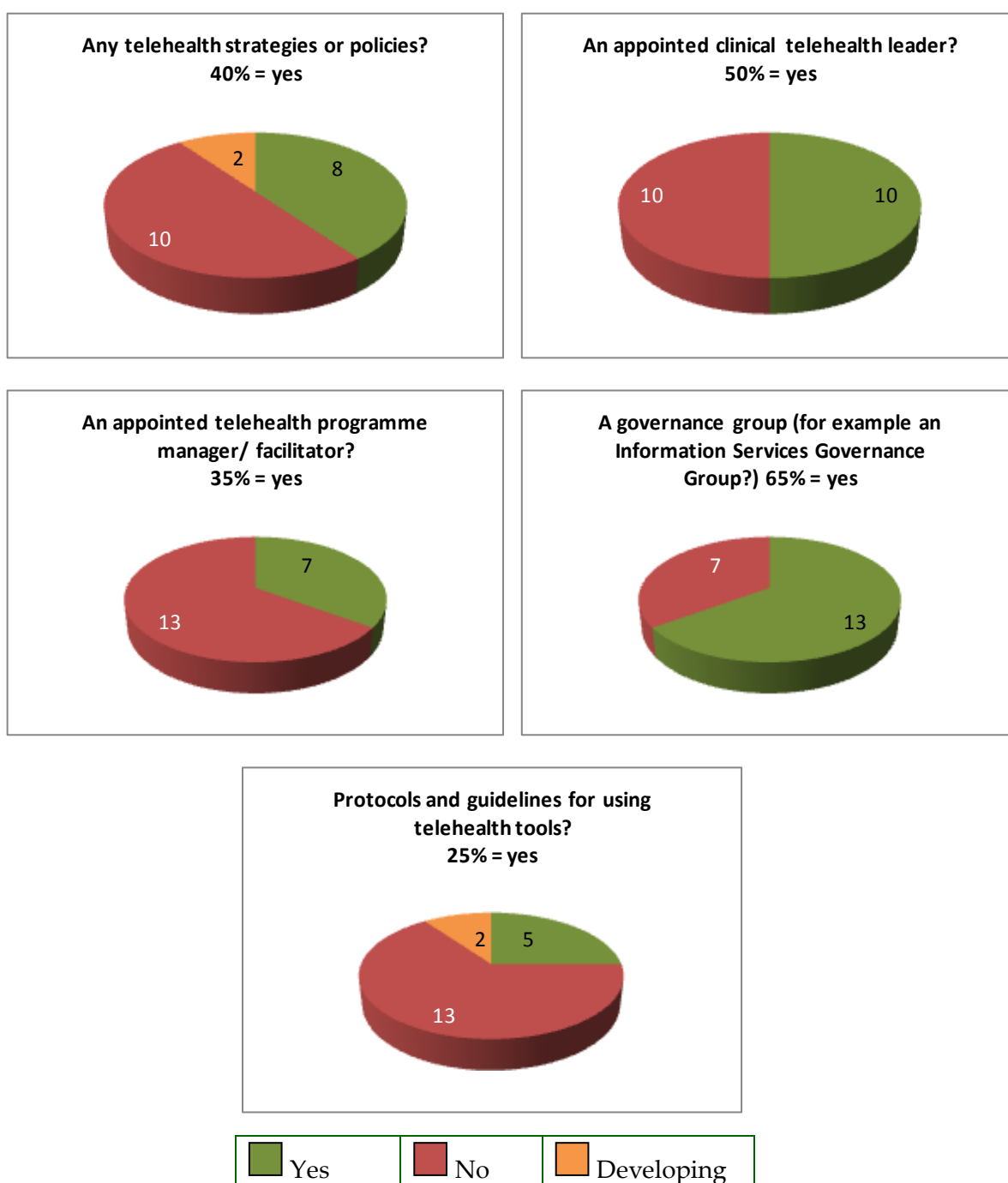
This report is intended to be a baseline that can be periodically updated. The results can be used by DHBs to identify sources for collaboration when planning telehealth services, and to share lessons learned. A high level set of Key Performance Indicators (KPIs) will also be used by the National Health IT Board and the Telehealth Forum to track progress on telehealth uptake. The KPIs will initially focus on governance (as shown above in Governance, Figure 1), the capacity to enable uptake, and the services offered. As the sector matures, there will be increased focus on capturing more evidence of telehealth's risks and benefits, with the goal of relating these to improved health outcomes.

There are many signposts that can be pursued to take advantage of the progress made. With the support of the National Health IT Board, the Telehealth Forum will continue, via its working groups and its advocacy role, to respond to the priorities cited in this survey, and to focus on promoting sustainable telehealth services. (All of the respondents indicated a willingness to discuss their views on the barriers to uptake.) We will also follow up with those respondents who asked for more information about the Telehealth Forum.

# 1 Telehealth governance

The DHBs were asked questions about telehealth governance relating to strategies, clinical leadership, the governance of investment decisions, availability of planning and operational support, and the availability of protocols and guidelines. The following charts show the responses to each question. Each chart shows a breakdown of the total for the twenty DHBs.

**Figure 2: Telehealth governance in DHBs 2014**



## Strategies and policies

Eight DHBs have strategies or policies in place and two are developing. The scope of strategy and policy documents varies, and the main focus for most is currently on videoconferencing based services.

The following figure shows highlights of the strategies and policies.

**Figure 3: Description of DHB telehealth strategies / policies**

Region	DHB	Strategies in place / being developed
Northern	Northland	Most of the projects and roadmap steps identified in Northland DHB's 2010 strategy have been implemented and the strategy is currently being updated.
	Waitemata (developing)	Draft policy covers a range of technologies and includes high level guidelines for establishing a telehealth service. The DHB is also developing a mobile strategy which will be aligned with the overall telehealth policy.
	Auckland (developing)	Strategy is expected to have a broad scope in addressing hospital and community services and multiple technologies.
Midland	Waikato	The strategy is broad in scope with four key focus areas for expanding the use of telehealth: tele-critical care, tele-ambulatory care, tele-workforce support and tele-home base care
	Midland Region: Waikato, Taranaki, Lakes, Bay of Plenty, Tairāwhiti	These DHBs have endorsed a Midland Region telehealth strategy based on the Waikato DHB strategy. The Region has also implemented a videoconferencing infrastructure strategy and platform, which will enable greater uptake of telehealth.
Southern	West Coast	The telemedicine policy has been in place for several years and has recently been updated. It prescribes the staff responsibilities and resources for clinical services using videoconferencing. Procedures are included for staff training, identification of suitable patients, scheduling of clinics and equipment, securing patient consent, and holding teleconsultations. The DHB's overall strategy is linked with services provided from Canterbury DHB.
	Canterbury / West Coast	The focus is primarily on videoconferencing-based telehealth services within Canterbury DHB and services provided by Canterbury to the West Coast. Key objectives are enhanced governance and clinical networks, expanding the specialist services and improving access for patients via endpoints closer to their domiciles. The strategy is based on an April 2010 review of the current and future use of telemedicine to support ongoing clinical care, shared care, professional education and service development between the two DHBs.

## Clinical leaders

Ten DHBs have appointed telehealth clinical leaders. The roles vary, and to some extent depend on the maturity and scope of the DHB's telehealth services. Leaders have

typically started with involvement in trials and services for their own disciplines and departments. Current DHB leaders are:

- Dr Walaa Saweirs, Consultant Nephrologist, Northland DHB
- Dr Robyn Whittaker, Public Health Physician, Research and Innovation, Waitemata DHB
- Gloria Crossley, Clinical Services Manager Allied Health, Taranaki DHB
- Dr Peter Freeman, Clinical Director for ED, Lakes DHB
- Andrew Stapleton, Consultant Anaesthetist/ Intensivist and Clinical Lead ICU, Hutt Valley DHB
- Jo Wailling, Clinical Nurse Manager, Wairarapa DHB
- Kristy Whitelaw, Nurse Technician, ICU, Capital and Coast DHB
- Dr John Garrett, General Paediatrician, Canterbury and West Coast DHBs (and Chair NZ Telehealth Forum)
- Dr Ruth Large, Emergency Physician and Clinical Director Thames Hospital, Waikato DHB. (As Chair of the DHB's and the Midland Region's Telehealth User Groups, Ruth is de facto Clinical Leader.)

Several DHBs reported that they have senior management sponsors for telehealth in addition to, or in lieu of, clinical leaders. The DHBs include Bay of Plenty, Hawkes Bay, and a shared sponsor for the 3 DHBs – Wairarapa, Hutt Valley, Capital and Coast. It is understood that there are sponsors in other DHBs, although not specifically mentioned in the survey responses.

### **Programme managers / facilitators**

The roles for the positions of Telehealth Programme Manager or Facilitator also vary:

- Northland and Auckland have full time Programme Managers responsible for strategy (in conjunction with clinical leaders and senior management), planning, procurement and overall co-ordination.
- Waitemata has recently appointed a full time Telehealth / VC Facilitator. Waitemata's clinical leader is also the strategic Telehealth Programme Manager.
- Waikato has a part time Facilitator (currently only 0.5 days/month).
- Canterbury and West Coast have a shared Telehealth Facilitator providing day to day planning and operational support including training.
- Bay of Plenty has a seconded Telehealth Project Facilitator for the Telehealth Demonstration Project, with the focus mainly on the Primary and Community sectors.



## **Governance groups**

Thirteen of the DHBs have a Governance Group that provides oversight on telehealth investment as appropriate. In most cases these are the Groups that oversee overall ICT governance. Four DHBs (Waitemata, Waikato, Taranaki and West Coast) require approval of the Governance Group for equipment and other purchases. Some handle their equipment investments out of normal operating budgets.

Northland DHB has an active senior management and clinical leadership Steering Group. The Midland Region also has a Telehealth User Group, initially established for Waikato DHB and now with a wider membership as a regional group. Its terms of reference include telehealth promotion, advising senior management on strategy, ensuring the adoption of standards and guidelines for the effective use of telehealth, and liaising with interested parties from other DHBs to promote collaboration.

## **Protocols and guidelines**

The operational documentation that DHBs currently have, or are developing, is primarily for videoconferencing based services. These include protocols for clinician-patient teleconsultations, which are generic in scope, and for Multi-Disciplinary Meetings, which tend to be discipline-specific. A reference listing of available documentation is being compiled by the Telehealth Forum.

The following figures show responses to Governance questions by Region and DHB.



Figure 4: Telehealth governance by region and DHB

	Northern			
<b>Governance</b> Does your organisation have:	Northland	Waitemata	Auckland	Counties Manukau
Any telehealth strategies or policies?	Yes	Developing	Developing	No
An appointed clinical telehealth leader?	Yes	Yes	No	No
An appointed telehealth programme manager/ facilitator?	Yes	Yes	Yes	No
A governance group (for example an Information Services Governance Group?)	Yes	Yes	Yes	No
Protocols and guidelines for using telehealth tools?	Developing	Yes	Developing	No

	Midland				
<b>Governance</b> Does your organisation have:	Waikato	Taranaki	Lakes	Tairāwhiti	Bay Of Plenty
Any telehealth strategies or policies?	Yes	Yes	Yes	Yes	Yes
An appointed clinical telehealth leader?	Yes	Yes	Yes	No	No
An appointed telehealth programme manager/ facilitator?	Yes	No	No	No	Yes
A governance group (for example an Information Services Governance Group?)	Yes	Yes	Yes	No	No
Protocols and guidelines for using telehealth tools?	Yes	No	No	No	Yes

	Central					
<b>Governance</b> Does your organisation have:	Hawkes Bay	MidCentral	Whanganui	Wairarapa	Hutt Valley	Capital and Coast
Any telehealth strategies or policies?	No	No	No	No	No	No
An appointed clinical telehealth leader?	No	No	No	Yes	Yes	Yes
An appointed telehealth programme manager/ facilitator?	No	No	No	No	No	No
A governance group (for example an Information Services Governance Group?)	No	No	No	Yes	Yes	Yes
Protocols and guidelines for using telehealth tools?	No	No	No	No	No	No

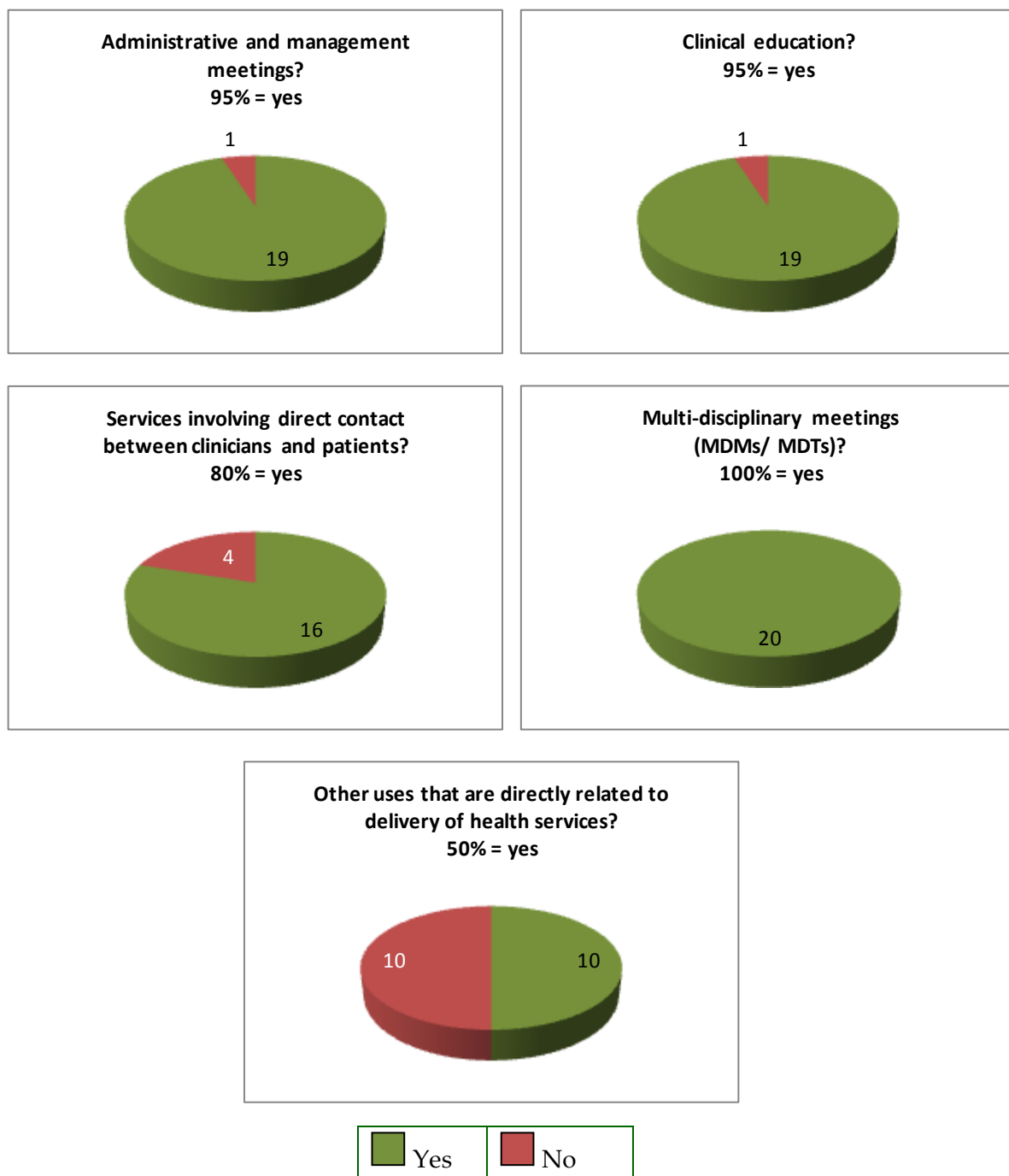
  

	Southern				
<b>Governance</b> Does your organisation have:	Nelson Marlborough	West Coast	Canterbury	South Canterbury	Southern
Any telehealth strategies or policies?	No	Yes	Yes	No	No
An appointed clinical telehealth leader?	No	Yes	Yes	No	No
An appointed telehealth programme manager/ facilitator?	No	Yes	Yes	No	No
A governance group (for example an Information Services Governance Group?)	Yes	Yes	Yes	No	Yes
Protocols and guidelines for using telehealth tools?	No	Yes	Yes	No	No

## 2 Videoconferencing (VC) usage in the regions and DHBs

The following charts show general categories of videoconferencing (VC) usage across all twenty DHBs. Almost all DHBs are using VC for administrative and management meetings, for clinical education, and for multi-disciplinary team meetings (MDMs/MDTs).

Figure 5: How videoconferencing is used by DHBs



Nineteen DHBs use VC for administrative / management meetings and clinical education. South Canterbury indicated no usage.

Sixteen DHBs answered “yes” to the question “are you using VC for providing direct contact between clinicians and patients?” However, only twelve DHBs listed specific services in the survey template where VC is used for follow-up visits, first specialist assessments, acute assessments, ward rounds and nurse-led clinics. Most involve services between secondary/tertiary sites and smaller regional sites. A few services are provided directly to patients in home. The services are provided across the spectrum of Adult and Emergency, Allied and Community, Paediatrics and Mental Health Services. *See Section 3 for further details.*

All twenty DHBs use VC for multi-disciplinary meetings and/or multi-disciplinary team meetings (MDMs/ MDTs). *See Section 5 for further details.*

Examples of other uses of VC are shown below.

**Figure 6: Other uses of VC for health services**

Region	DHB	Other uses of VC for health services
Northern	Northland	Clinical supervision meetings and chart based ward rounds (Renal only)
	Waitemata	Assessments by the courts/justice system under the Mental Health Act
	Auckland	Remote monitoring of patient taking medications in home. This is Video Directly Observed Therapy (VDOT) with patients in community taking medication for treatment of tuberculosis
	Counties Manukau	Mental Health - regular discussions with satellite units/community staff
Midland	Waikato	Cancer MDM VC room for registrar teaching when not in use for MDMs
	Bay of Plenty	Supervision and peer support among clinicians
Southern	West Coast	<ul style="list-style-type: none"> <li>Discharge planning meetings when patients are being transferred to Greymouth (from Christchurch) or transferred home from another hospital, and a multidisciplinary team from the Coast will be taking over their care on return to the Coast</li> <li>Child protection team meetings.</li> <li>Child health service (Child Development, CAMHS, Paediatrics, and Ministry of Education triage meetings )</li> <li>Paediatric ward admission review meetings</li> </ul>
	Canterbury	<ul style="list-style-type: none"> <li>Discharge planning meetings for babies leaving the Neonatal Unit and returning to another DHB (usually the West Coast).</li> <li>Daily operations team across all the Christchurch Hospitals via VC to discuss bed capacity across the city and to plan resources</li> <li>Education</li> <li>Video remote interpreting service for deaf patients - a joint agency service <a href="http://www.vri.govt.nz">www.vri.govt.nz</a></li> </ul>
	Nelson Marlborough	<ul style="list-style-type: none"> <li>Supervision of remote staff and training</li> <li>Mental Health Addiction Services Team Meetings</li> </ul>

Figure 7: VC usage in regions and DHBs

	Northern			
Videoconferencing (VC) - are you using it for:	Northland	Waitemata	Auckland	Counties Manukau
Administrative and management meetings?	Yes	Yes	Yes	Yes
Clinical education?	Yes	Yes	Yes	Yes
Services involving direct contact between clinicians and patients?	Yes	Yes	Yes	No
Multi-disciplinary team meetings?	Yes	Yes	Yes	Yes
Other uses that are directly related to delivery of health services?	Yes	Yes	Yes	No

	Midland				
Videoconferencing (VC) - are you using it for:	Waikato	Taranaki	Lakes	Tairāwhiti	Bay Of Plenty
Administrative and management meetings?	Yes	Yes	Yes	Yes	Yes
Clinical education?	Yes	Yes	Yes	Yes	yes
Services involving direct contact between clinicians and patients?	Yes	No	Yes	Yes	Yes
Multi-disciplinary team meetings?	Yes	Yes	Yes	Yes	Yes
Other uses that are directly related to delivery of health services?	Yes	No	No	No	Yes

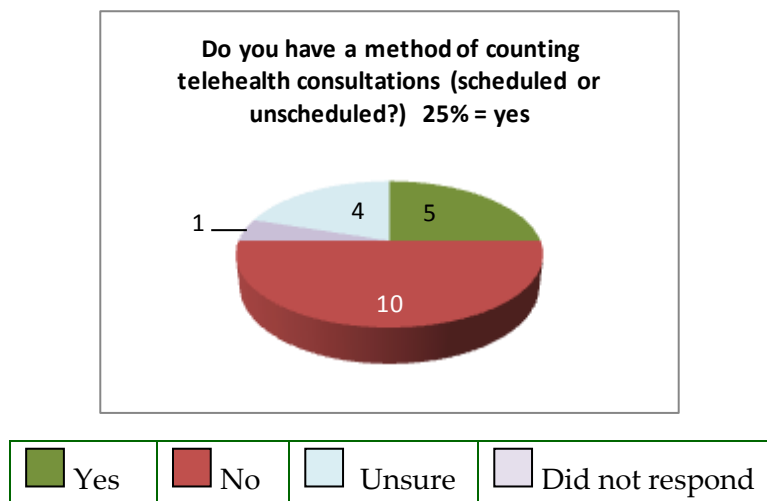
	Central					
Videoconferencing (VC) - are you using it for:	Hawkes Bay	MidCentral	Whanganui	Wairarapa	Hutt Valley	Capital and Coast
Administrative and management meetings?	Yes	Yes	Yes	Yes	Yes	Yes
Clinical education?	Yes	Yes	Yes	Yes	Yes	Yes
Services involving direct contact between clinicians and patients?	Yes	Yes	No	Yes	Yes	Yes
Multi-disciplinary team meetings?	Yes	Yes	Yes	Yes	Yes	Yes
Other uses that are directly related to delivery of health services?	No	No	No	No	No	No

	Southern				
Videoconferencing (VC) - are you using it for:	Nelson Marlborough	West Coast	Canterbury	South Canterbury	Southern
Administrative and management meetings?	Yes	Yes	Yes	No	Yes
Clinical education?	Yes	Yes	Yes	No	Yes
Services involving direct contact between clinicians and patients?	Yes	Yes	Yes	Yes	No
Multi-disciplinary team meetings?	Yes	Yes	Yes	Yes	Yes
Other uses that are directly related to delivery of health services?	Yes	Yes	Yes	Yes	Yes

## 2.1 Ability to count teleconsultations

Figure 8: Ability to count VC teleconsultations



Only five of the sixteen DHBs who are currently providing services, or trialling a service, indicated that they have a method of counting videoconferencing teleconsultations:

- Northland DHB is currently collecting information in the PAS, which will also incorporate the National Non-Admitted Patient Collection (NNPAC) changes for 2014<sup>1</sup>. See also *Note* below.
- Auckland DHB is in the process of developing this capability within the current outpatient system, with plans to incorporate the National Non-Admitted Patient Collection changes for 2014.
- Bay of Plenty's method is only for the Telehealth Demonstration Project involving GP-patient consultations. It relies on manual capture and isn't being effectively utilised.
- West Coast DHB has a method, but notes that it has some limitations and the method doesn't count phone or email contacts.
- Mid Central DHB's method is limited to recording consultations in the project methodology for the current Tele-stroke Pilot.

The remaining fifteen DHBs said they didn't have the capability, weren't sure, or didn't respond.

<sup>1</sup>

[http://www.health.govt.nz/system/files/documents/pages/change\\_notification\\_cn\\_2014\\_ncamp\\_nnpac\\_telehealth\\_v0.2.pdf](http://www.health.govt.nz/system/files/documents/pages/change_notification_cn_2014_ncamp_nnpac_telehealth_v0.2.pdf)

*Note:* The lack of an integrated method of counting teleconsultations means it is not possible to obtain comprehensive statistics that can be used for demonstrating the effectiveness of teleconsultations in improving patient access and workforce effectiveness, reducing travel and accommodation costs, reducing “did not attends” (DNAs) for outpatient clinics, and reducing waiting lists. This constraint may also delay implementation of a new Ministry of Health counting requirement for the National Non-Admitted Patient Collection (NNPAC), which allows for more accurate counting of face to face versus other types of patient consultations. (The Ministry’s Common Counting Group is developing data definitions to support implementation.)

Following are the responses for each DHB.

**Figure 9: Ability of DHBs to count telehealth consultations**

	Northern					
Clinical activity. If you are using videoconferencing for clinician - patient consultations:	Northland	Waitemata	Auckland	Counties Manukau		
Do you have a method of counting telehealth consultations (scheduled or unscheduled)?	Yes	Not sure	Yes	No		
	Midland					
Clinical activity. If you are using videoconferencing for clinician - patient consultations:	Waikato	Taranaki	Lakes	Tairāwhiti	Bay Of Plenty	
Do you have a method of counting telehealth consultations (scheduled or unscheduled)?	No	Did not respond	Not Sure	No	Yes	
	Central					
Clinical activity. If you are using videoconferencing for clinician - patient consultations:	Hawkes Bay	MidCentral	Whanganui	Wairarapa	Hutt Valley	Capital and Coast
Do you have a method of counting telehealth consultations (scheduled or unscheduled)?	Not sure	Yes	No	No	No	No
	Southern					
Clinical activity. If you are using videoconferencing for clinician - patient consultations:	Nelson Marlborough	West Coast	Canterbury	South Canterbury	Southern	
Do you have a method of counting telehealth consultations (scheduled or unscheduled)?	No	Yes	No	Not sure	No	

### 3 Clinical Services for patients provided via VC

The DHBs were asked to complete a template which included a list of services in each of the following general categories: Adult and Women's, Ambulatory / Clinical Speciality / Allied Health, Paediatrics, and Mental Health Services. They were also asked the types of sessions conducted with the options being: follow-ups, first specialist assessments, acute assessments, ward rounds, image transmission, and nurse-led clinics.

While sixteen DHBs indicated that VC is used for clinician-patient interactions, only twelve reported specific services in the template, and we believe that even where DHBs did report on specific services, additional clinical activity is taking place that hasn't been shown in the survey responses.

The following figures show the clinical services using VC for patient interactions that are currently provided, or planned. The information is presented by types of service and comments have been included where provided by survey respondents. In some cases links between two DHBs for the same service may be shown by each DHB or only one. (See Appendix B for the same information presented in DHB sequence.)

The results show that:

- the dominant usage of VC involving patients is for follow-up appointments
- the DHBs reporting the most number of current services using VC are Northland, Canterbury, West Coast, Nelson Marlborough and Bay of Plenty
- there is growth in the usage of VC for support of Emergency and Critical Care / ICU between tertiary, secondary and regional hospitals for both Adult and Paediatric services
- the usage by Mental Health may be under-reported, given that Mental Health has been a legacy user of VC since the mid-1990s
- there are many opportunities for DHBs to share lessons learned regarding governance, equipment configurations, protocols and procedures used, technical support, and IT systems support. This collaboration should contribute to increased and sustainable uptake, and reduce unnecessary duplication.

#### Image transmission / store and forward

Several DHBs reported the use of image transmission, primarily of radiology images. For example, Tairāwhiti reported that radiology images are transmitted for all specialties for out of hours reading and for informing patient transfer decisions. Bay of Plenty reported the use of image transmission for several specialties, and Counties Manukau reported use of image transmission for all specialties as required. If it wasn't specified that the image transmissions take place during interactive video sessions, the entries aren't included in the figures below.

However we have included the Teledermatology Virtual Lesion Clinic service provided by Waikato DHB, which has been in operation since 2009. The assessment of skin lesions includes off-site digital imaging provided in collaboration with MoleMap New Zealand.



### 3.1 Adult and Womens

Figure 10: Clinical telehealth services - Adult and Womens

Adult & Womens	DHB	Follow-ups	FSAs	Acute Assessments	Ward Rounds	Image Transmission	Nurse-led Clinics	Comment
Adult Emergency	Auckland			Plan				
	Bay of Plenty			Plan		x		
	Hawkes Bay			Trial				Trial underway to use VC unit for support and assistance in major trauma / Peri Arrest or Arrest situations between Wairoa GP Emergency Room and Hastings ED
	Lakes			x				Link from Taupo Resus Room to Rotorua ED Clinician
	Waikato			x				ED support from Waikato Hospital for Taumarunui Hospital
	West Coast			x				Links with Canterbury DHB to consult with ICU, Plastics, Paediatrics, Pain Team around acutely unwell patients
Cardiology	Nelson Marlborough	x	x			x		VC Cardio clinic; implantable defibrillator/pacemaker followup; Consultant in Nelson to nurse and patient in Wairau and Golden Bay
	Northland	x						
Cardiothoracic	None							

Adult & Womens	DHB	Follow-ups	FSA's	Acute Assessments	Ward Rounds	Image Transmission	Nurse-led Clinics	Comment
Critical Care	Canterbury			x				
	West Coast			x				Link available between CCU in Grey and ICU in ChCh for consultation between units when being transferred
Fetal and Maternal Medicine	Canterbury	x						
General Medicine	Northland	x					x	
	West Coast	x						
	West Coast						x	Most General Practices on the Coast are DHB owned and support is provided to some of the remote Nurse led clinics by GPs in Greymouth
General Surgery	West Coast	x						
Gynaecology	Canterbury					x		Colposcopy slide reviews across two sites
Haemophilia	None							
Infectious Diseases	Auckland						x	Nurses and Social Workers Videoconferencing (Skype) with HIV patients out of Auckland
Neurology	None							
Neurosurgery	None							

Adult & Womens	DHB	Follow-ups	FSAs	Acute Assessments	Ward Rounds	Image Transmission	Nurse-led Clinics	Comment
Older Persons Health	Southern	x						Successful trial between Wakari Hospital in Dunedin and Assessment Treatment and Rehabilitation team for patients at Southland Hospital
	West Coast			x				One case where a Specialist Wound Care Nurse from CDHB reviewed a patient on the Coast. Otherwise is MDT meetings without direct patient involvement
Oncology	Auckland	x						Links to Northland DHB
	Canterbury	x						Used for pre-chemotherapy reviews for patients on the West Coast
	Northland	x						
	West Coast	x	x					Mostly medical but some radiation oncology
Ophthalmology	None							
Orthopaedics	Auckland	x						Link with Corrections Facilities in Auckland
	Bay of Plenty					x		
	Northland	x						
	West Coast	x						

Adult & Womens	DHB	Follow-ups	FSA's	Acute Assessments	Ward Rounds	Image Transmission	Nurse-led Clinics	Comment
Palliative Care	Bay of Plenty	x						Being progressed within Telehealth Demonstration Project
	Canterbury	x						
	West Coast	x	x					Connecting patients and local palliative care staff with Specialists in CDHB
Renal	Northland	x		x		x		
Trauma	None							
Urology	Bay of Plenty	x						
	West Coast	x						Being progressed within Telehealth Demonstration Project

## 3.2 Ambulatory / Clinical Specialty, Allied Health

Figure 11: Clinical telehealth services - Ambulatory / Clinical Specialty / Allied Health

Ambulatory / Clinical Specialty, Allied Health	DHB	Follow-ups	FSAs	Acute Assessments	Ward Rounds	Image Transmission	Nurse-led Clinics	Comment
Audiology	None							
Dermatology	Waikato					x		Virtual Lesion Clinics. Teleconsultation clinics held with Taranaki discontinued as now have local Dermatologist
Endocrinology	None							
Immunology	Auckland	Plan						
Nutrition / Dietetics	Auckland	Plan						Planning group sessions into Correction Facilities
	Bay of Plenty	x						
	Canterbury	x						Paediatrician dietician clinics to the West Coast
	West Coast	x						
Occupational Therapy	West Coast	x						

Ambulatory / Clinical Speciality, Allied Health	DHB	Follow-ups	FSAs	Acute Assessments	Ward Rounds	Image Transmission	Nurse-led Clinics	Comment
Physiotherapy	Hawkes Bay						x	
	Northland						x	
	West Coast	x						
Regional Public Health	Auckland	x						Remote monitoring of medication taking for TB patients via links to patients in home
Rheumatology	Northland						x	
Sexual Health	None							
Social Service	Northland						x	
Speech & Language Therapy	Auckland	Plan						
	Bay of Plenty	x						
	West Coast	x						

### 3.3 Paediatrics

Figure 12: Clinical telehealth services – Paediatrics

Paediatrics	DHB	Follow-ups	FSAs	Acute Assessments	Ward Rounds	Image Transmission	Nurse-led Clinics	Comment
Cardiac	Auckland	Plan						
	West Coast	x						Two episodes only of consultation with Paediatric Cardiologist in Auckland
Child Development	Auckland	Plan						
	Nelson Marlborough	x				x		Treatment sessions with patients; training sessions; peer review; supervision
Child Emergency	None							See ICU
Child Protection	West Coast			x				Some assessments of suspected inflicted injuries for Child Youth and Family by VC, where a local GP is with the patient and the paediatrician is present by VC
Child Psychiatry	Bay of Plenty	x	x					
	Northland	x						
	West Coast	x						
Diabetes	Northland	x						

Paediatrics	DHB	Follow-ups	FSAs	Acute Assessments	Ward Rounds	Image Transmission	Nurse-led Clinics	Comment
Endocrinology	Auckland	Plan						
	Nelson Marlborough	x		x		x		Regular diabetic clinics via VC
Gastro-enterology	Auckland	Plan						
General Paediatrics	Bay of Plenty	x	x					
	Canterbury	x		x				Primarily to the West Coast and to a lesser extent Ashburton
	Northland	x					x	
	West Coast	x		x	x			
Haematology and Oncology	Auckland	x						Ad-hoc and Planning
	Canterbury	x						The Paediatric Oncologists in ChCh cover the South and lower portion of the North Island and provide backup to local clinicians via their Shared Care Network
	Nelson Marlborough	x	x	x	x	x		Regular VC to ChCh for all aspects for care including discharge planning
Home Health Care	None							
Infectious Diseases	None							



Paediatrics	DHB	Follow-ups	FSAs	Acute Assessments	Ward Rounds	Image Transmission	Nurse-led Clinics	Comment
Intensive Care Unit	Auckland			Plan				Awaiting purchase of unit
	Canterbury			x				ChCh ICU runs the retrieval service and is able to connect to the West Coast and Ashburton for children it is going to collect.
	West Coast			x				A child in the CCU in Grey Base Hospital could be reviewed by the ICU retrieval team from ChCH prior to transfer
Neonatal	Canterbury			x				
	West Coast			x				Pre-retrieval reviews by the Neonatal team in CDHB of unwell newborns in Grey Base Hospital
Nephrology	Auckland	Plan						
	Nelson Marlborough	x						Occasional
Neurology	Auckland	x						Ad hoc
	Nelson Marlborough					x		VC for funny turns
	Northland	x						
Neurosurgery	None							
Orthopaedics	None							
Palliative Care	Auckland	Plan						

Paediatrics	DHB	Follow-ups	FSAs	Acute Assessments	Ward Rounds	Image Transmission	Nurse-led Clinics	Comment
Respiratory	Auckland	Plan						

### 3.4 Mental Health

Figure 13: Clinical telehealth services - Mental Health

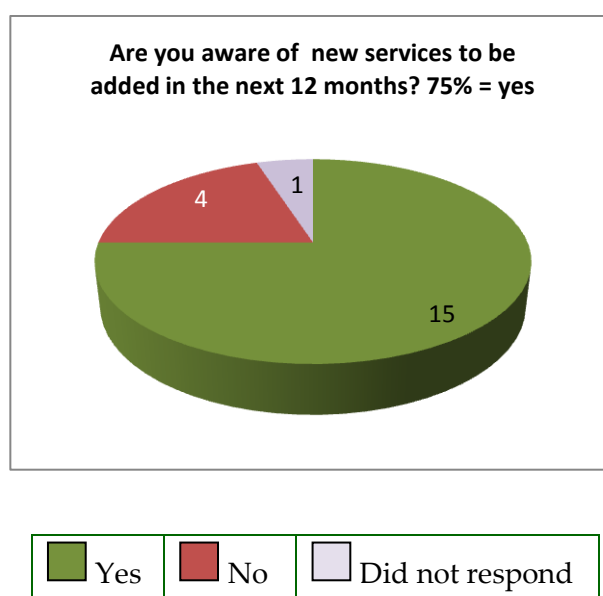
Mental Health	DHB	Follow-ups	FSAs	Acute Assessments	Ward Rounds	Image Transmission	Nurse-led Clinics	Comment
Alcohol and Drug	Northland						x	
Eating Disorders Unit	Canterbury	x						
Forensic	Waitemata	x		x				Forensic assessments between Mason Clinic and Northland Region Corrections Facility in Kaikohe. (Mason Clinic staff using VC at DoC facility in Auckland.)
Methadone Clinics	Northland	x						
	West Coast	x						

Mental Health	DHB	Follow-ups	FSAs	Acute Assessments	Ward Rounds	Image Transmission	Nurse-led Clinics	Comment
Mental Health	Auckland	Plan						Planning links between MH sites in ADHB
	Bay of Plenty	x	x	x				Used for CAMHS consultations, Locum Consultations, and occasionally when a consultant is not available in Whakatane Hospital
	Hawkes Bay	x					x	
	Nelson Marlborough	x			x			VC between inpatient in Nelson and Community Services in Blenheim (daily). Inter-DHB acute units - clinical supervision and case reviews
	Northland	x						
	South Canterbury	x						
	West Coast	x						Used in many areas of Mental Health, including for the regional Eating Disorders, Forensic and Mothers and Babies Services
	West Coast	x						

### 3.5 Clinical services planned

Fifteen of the DHBs are planning on new services to be added in the next 12 months, or are running trials that may lead to new services.

Figure 14: Percentage of DHBs planning new services using VC



The following figure shows services planned. Some may also be shown in the preceding figures on Clinical Services.

Figure 15: Telehealth services planned

Region	DHB	Services planned
Northern	Northland	<ul style="list-style-type: none"> <li>• Links with Auckland DHB tertiary services (Paediatrics and Immunology)</li> <li>• Pilot project in conjunction with University of Queensland for Adult ICU (Whangarei Hospital support for regional sites).</li> </ul>
	Waitemata	Pilot project is awaiting funding for Community Allied Health staff to use VC for follow-up visits with patients in their own homes.
	Auckland	<ul style="list-style-type: none"> <li>• Extending the use across services and in particular tertiary Paediatric Services</li> <li>• Department of Correction Services across multiple specialties</li> </ul>
	Counties Manukau	<ul style="list-style-type: none"> <li>• Expansion of MDM facilities</li> <li>• Samoan and Cook Islands VC links being set up</li> </ul>

Region	DHB	Services planned
Midland	Waikato	A business case for telehealth investment has been approved and planning is underway for the development of new services. This includes links with Thames Hospital and a Nurse Practitioner and a Clinical Nurse Specialist holding wound and stoma care clinics between Taumarunui and Waikato DHB.
	Tairāwhiti	<ul style="list-style-type: none"> <li>• Mental Health consultations for consumers on the East Coast from Gisborne</li> <li>• Clinical reviews of patients in the ED at Te Puia Hospital remotely from Gisborne</li> </ul>
	Bay of Plenty	<ul style="list-style-type: none"> <li>• Virtual clinics</li> <li>• More remote monitoring</li> <li>• Addiction services</li> <li>• Several Maori initiatives</li> </ul>
Central	Hawkes Bay	<ul style="list-style-type: none"> <li>• MDMs as per Cancer Network roll outs</li> <li>• Link between Wairoa Resus and Hawkes Bay Hospital ED is in operational testing. <i>See also Section 4.6 below.</i></li> </ul>
	3DHBs: Wairarapa / Hutt Valley, Capital and Coast	Hutt Valley and Capital and Coast DHBs may implement ICU service support for Wairarapa DHB, pending the outcome of trials.
Southern	West Coast	Several services are considering using telemedicine including plastic surgery, pathology/laboratory, urology, and gynaecology, although it is unlikely all these services will be operating within 12 months.
	Canterbury	<ul style="list-style-type: none"> <li>• Urology clinics in the prisons, if an adequate connection can be established</li> <li>• Pathology clinical review sessions with the West Coast</li> <li>• Infectious diseases for home IV programme supervision</li> <li>• Radiology for operational meetings and MDMs</li> <li>• Plastic surgery for acute assessment and outpatient clinics</li> <li>• Rheumatology clinics</li> <li>• Respiratory medicine.</li> <li>• Infectious diseases</li> </ul>
	Nelson Marlborough	<ul style="list-style-type: none"> <li>• New MDM Facilities Wairau</li> <li>• More MDM Facilities Nelson</li> <li>• Expanded consults to Golden Bay Community Hospital</li> <li>• Tertiary consultations to Auckland and Christchurch</li> <li>• Expanded use of Lync</li> <li>• MDMs inter-DHB</li> </ul>
	Southern	Based on a successful trial for Older Persons Health linking the ISIS rehabilitation ward at Wakari Hospital in Dunedin to the Assessment Treatment and Rehabilitation team at Southland Hospital, the DHB is installing additional video links in Lakes District and Balclutha Hospitals for clinician to clinician telemedicine calls and for patient appointments. This will include Dietetic appointments for Lakes patients linked to Southland Hospital.

### 3.6 Clinical service and education opportunities

In addition to the planned services noted above, Hawkes Bay DHB commented that a current review of videoconferencing requirements and opportunities has involved consultation with several clinical groups across the DHB. Early indications see many future opportunities in both community based and secondary-tertiary hospital based services. These include: remote consultation and monitoring of patients in their own homes, kiosk based health checking, GP/specialist consults using Skype/Face Time, remote or sensitive health clinics such as rural clinics and prisons, and pre-hospital emergency response (St John) with visual connectivity back to Emergency Department from the field. Benefits have largely been grouped into:

- better decision making leading to better outcomes (quality and cost avoidance), and
- reduction in unnecessary non-clinical activity, i.e. travel (hard cost reduction and productivity gains).

The range of opportunities described above would be applicable to all DHBs, and as shown in Sections 3.1-3.5 above, as well as in Section 6 "Other telehealth technologies", some are already being provided or planned.

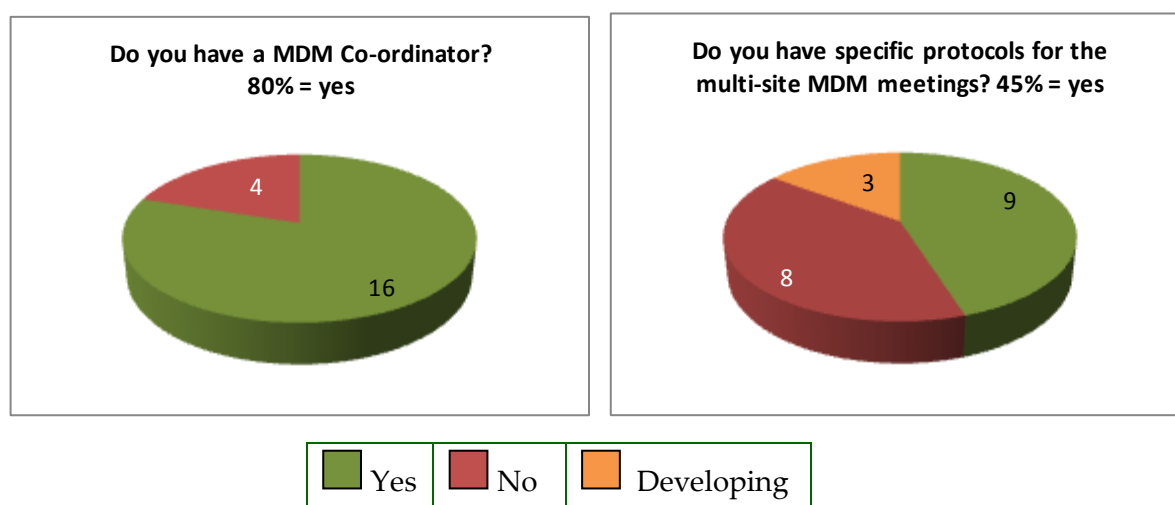
A further comment on an approach to increasing access for education was provided on behalf of the 3 DHBs (Wairarapa, Hutt Valley and Capital and Coast): "The 3DHBs would like to use technology to increase the reach of training and education aimed at clinicians. Education may be in the form of individual clinician to clinician teaching, small group workshops (fifteen or less attendees) or large teaching sessions (up to 100 people). Clinicians who would need access to sessions may be based at any site or any of the sub-regional DHBs at one time. Some of their desk top computers may not currently have sound. Ideally the technology would allow for interaction across sites during the broadcast. The clinicians using the technology may do so only infrequently and could have limited knowledge of technology so access needs to be straight forward and easy to use instructions need to be provided."

## 4 Multi-disciplinary meetings

All of the DHBs are using VC for multi-disciplinary meetings, or are in the process of setting up fit-for-purpose rooms for the multi-site meetings. Key requirements for the rooms include high quality audio and video and the ability for high quality content sharing of radiology and pathology images and pro-forma templates for recording treatment decisions.

Sixteen DHBs have MDM Co-ordinators and twelve indicated that they either have or are developing protocols for multi-site VC meetings. In some cases where the survey response indicated that there was no MDM Co-ordinator, we have been able to clarify that there is a Co-ordinator for Cancer MDMs – usually for the DHBs hosting the MDM meetings – and we have included this in the statistics. *Hence most of the “yes” responses to having MDM Co-ordinators and having MDM protocols relate to the Cancer Network resources.* (The Ministry of Health published an MDM Guidance document for best practice in 2012. It is understood that a subsequent document is being considered that will include standards for multi-site meetings and the appropriate use of videoconferencing and content sharing tools.)

Figure 16: MDM Co-ordinators and protocols



Results for the individual DHBs are shown in the figure below.

Figure 17: DHBs with MDM co-ordinators and protocols

	Northern					
Clinical activity. If you are using videoconferencing for multi-disciplinary team meetings:	Northland	Waitemata	Auckland	Counties Manukau		
Do you have an MDM Co-ordinator?	Yes	Yes	Yes	Yes		
Do you have specific protocols for the multi-site MDM meetings?	Yes	No	Developing	No		
	Midland					
Clinical activity. If you are using videoconferencing for multi-disciplinary team meetings:	Waikato	Taranaki	Lakes	Tairāwhiti	Bay Of Plenty	
Do you have an MDM Co-ordinator?	Yes	Yes	No	Yes	Yes	
Do you have specific protocols for the multi-site MDM meetings?	Developing	No	No	No	Yes	
	Central					
Clinical activity. If you are using videoconferencing for multi-disciplinary team meetings:	Hawkes Bay	MidCentral	Whanganui	Wairarapa	Hutt Valley	Capital and Coast
Do you have an MDM Co-ordinator?	Yes	Yes	No	No	Yes	Yes
Do you have specific protocols for the multi-site MDM meetings?	Developing	No	Yes	Yes	Yes	Yes
	Southern					
Clinical activity. If you are using videoconferencing for multi-disciplinary team meetings:	Nelson Marlborough	West Coast	Canterbury	South Canterbury	Southern	
Do you have an MDM Co-ordinator?	Yes	Yes	Yes	No	Yes	
Do you have specific protocols for the multi-site MDM meetings?	No	Yes	Yes	No	Yes	

The following figure shows MDMs and MDTs being held via VC for a broad range of specialist services. The list is not all inclusive. *It is understood that additional MDMs and MDTs are being held, but haven't been shown in the survey responses.* In some cases, Cancer Network MDMs being held for specific tumour streams are shown under the general heading of Oncology. Comments are as provided by the respondents.

See Appendix C for the same information presented in DHB sequence.



Figure 18: MDMs / MDTs being held in DHBs

Service	DHB	Comment
<b>Adult / Womens</b>		
Adult Emergency	South Canterbury	
Cardiology	Nelson Marlborough	
Gastroenterology	Hawkes Bay	Cancer Networks MDM
General Medicine	Canterbury	These MDTs have recently stopped as the general medical wards have all returned to the Christchurch site
	Hawkes Bay	Cancer Networks MDM
	South Canterbury	Cancer Networks MDM
General Surgery	Hawkes Bay	Cancer Networks MDM
	Tairāwhiti	
Gynaecology	Hawkes Bay	MDM (Hosted by MCDHB/CCDHB) internal unit from Hastings to Wairoa
Haematology	Tairāwhiti	
Obstetrics	Canterbury	
Older Persons Health	West Coast	The acute assessment was one case where a Specialist Wound Care Nurse from CDHB reviewed a patient on the Coast. Otherwise these are MDT meetings without direct patient involvement.
Oncology	Auckland	Cancer Network MDMs
	Bay of Plenty	
	Counties Manukau	Respiratory Oncology MDM
	Hawkes Bay	Lymphoma MDM (Hosted by MCDHB/CCDHB)
	Nelson Marlborough	Cancer Network MDMs
	Northland	
	South Canterbury	
	Tairāwhiti	
	Waikato	Cancer Network MDMs
	West Coast	Mostly medical but some radiation oncology
Orthopaedics	Canterbury	Some MDT meetings with the West Coast
	West Coast	

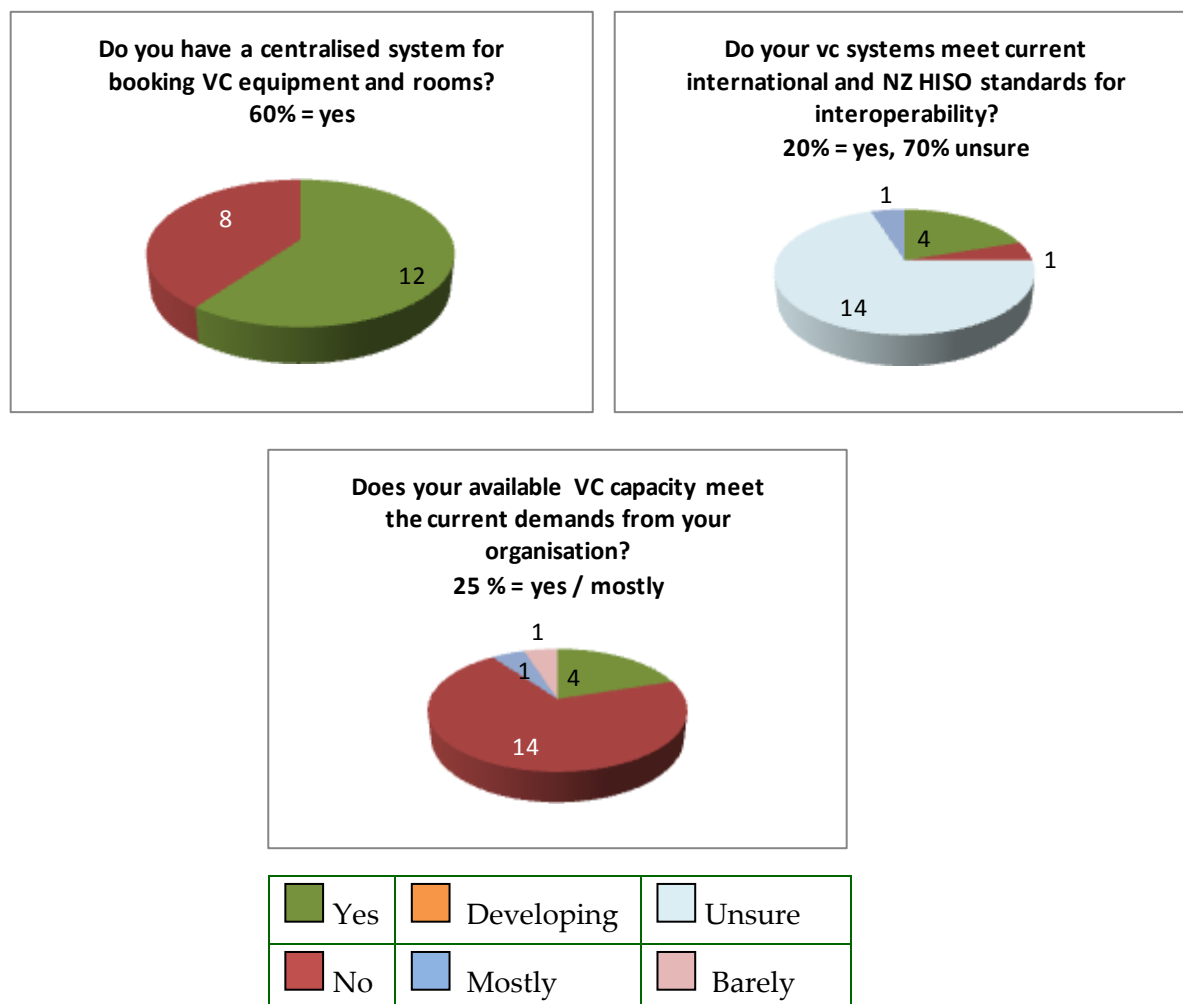
Service	DHB	Comment
Palliative Care	Canterbury	
	Hawkes Bay	Rarely - Telepaeds unit (Vivid)
	West Coast	Connecting patients and local palliative care staff with Specialists in CDHB
Renal	Auckland	
	Bay of Plenty	
	Hawkes Bay	Telepaeds unit (Vivid)
	Northland	
	Tairāwhiti	
Respiratory	Auckland	
Trauma	South Canterbury	
Urology	Hawkes Bay	Cancer Networks MDM
Vascular Surgery	Canterbury	With South Canterbury and West Coast DHBs
	Northland	
<b>Ambulatory / Clinical Specialty, Allied Health</b>		
Occupational Therapy	Hawkes Bay	Internal unit to Wairoa and Central Hawkes Bay Health Centre in Waipukurau
Social Service	West Coast	
<b>Paediatrics</b>		
Child Development	Hawkes Bay	Telepaeds unit (Vivid)
	Nelson Marlborough	
Child Psychiatry	West Coast	
Endocrinology	Nelson Marlborough	Treatment sessions with patients, training sessions, peer review and supervision
Gastro-enterology	Hawkes Bay	Telepaeds unit (Vivid)
General Paediatrics	Bay of Plenty	
	Canterbury	Primarily to the West Coast and to a lesser extent Ashburton
	Hawkes Bay	Telepaeds unit (Vivid)
	South Canterbury	
	West Coast	
Haematology and Oncology	Canterbury	The Paed Oncologists in ChCh cover the South and lower portion of the North Island and provide backup to local clinicians via their Shared Care Network
Neonatal	Canterbury	
ORL	Hawkes Bay	Head and Neck Cancer Network MDM
Palliative Care	Hawkes Bay	Telepaeds unit (Vivid)

Service	DHB	Comment
Respiratory	Counties Manukau	Respiratory Cancer MDM
<b>Mental Health</b>		
Alcohol and Drug	Northland	
Mental Health	Bay of Plenty	Used for CAMHS consultations, Locum consultations, and occasionally when a consultant is not available in Whakatane Hospital
	Hawkes Bay	
	Nelson Marlborough	
	South Canterbury	
	West Coast	Used in many areas of Mental Health, including for the regional Eating Disorders, Forensic and Mothers and Babies services

## 5 Technical infrastructure for videoconferencing

The following figures show the DHB responses to questions about the availability of centralised booking systems, compliance with HISO standards and capacity.

Figure 19: VC booking systems, compliance with HISO standards and capacity vs demand



### Booking systems for VC equipment and rooms

Twelve of the DHBs have centralised booking systems, although it is not known if the systems cover all facilities in the DHBs that now have multiple provider networks and equipment.

### Compliance with HISO VC interoperability standards

Only four DHBs said that their systems met current standards for interoperability / interconnectivity, with one indicating that their systems were mostly compliant, possibly due to pending upgrades. With fourteen respondents unsure, and one reporting non-compliance, there is a need for further communication. Based on

information available to the Forum via its VC Working Group and other sources, it is believed that most if not all of the recently implemented DHB systems will be compliant; this needs to be confirmed and communicated to the user community.

## Capacity

Only four DHBS said that their VC capacity met demand (Bay of Plenty, Waikato, Whanganui and South Canterbury) and Northland said that capacity mostly met the demand.

If respondents said that capacity didn't meet demand, they were asked if they had an investment plan for the current unmet demand and future growth. The following figure shows their responses.

**Figure 20: Investment plan for unmet VC demand and future growth**

Region	DHB	Investment plan for unmet demand?
Northern	Waitemata	No specific plan, but are upgrading obsolete equipment and are part of Northern Region implementation of Cancer MDM systems.
	Auckland	Capacity only barely meets demand. Investment plan under development.
Midland	Waikato	Yes for Cancer MDMs
	Taranaki	Yes
	Lakes	No
	Tairāwhiti	Yes
Central	Hawkes Bay	No current plan, but have undertaken a review of demand/capacity and developing strategic options as a starting point
	MidCentral	No, however infrastructure is currently being upgraded to support more capacity
	3DHBs (Wairarapa, Hutt Valley, Capital and Coast)	No
Southern	Nelson Marlborough	Yes
	Canterbury	No
	West Coast	Yes, based on first ensuring optimum use of current capacity, then considering software based solutions
	South Canterbury	Yes
	Southern	No – no funds available

Further research with the DHBs will be necessary to more definitively understand the supply/demand gap, and to what extent the shortfall is constraining uptake.

## Help desk and technical support for VC users, and VC network providers

The following figure shows responses to the questions “who provides Help Desk and technical support for your VC users?” and “who are your VC providers?” The variety of responses may be due in part to the perspective of the survey respondents.

- In some DHBs the IT Department may be the intended first level support, but it may not be adequately resourced or have the appropriate skill level to meet the support demand, especially for clinical services. The accountabilities and procedures for all levels of support should be clearly defined and communicated to end-users, and provision for both internal and external resourcing should be included in business cases for telehealth services.
- Three VC network providers are the main vendors for the DHB enterprise networks: Vivid Solutions Ltd, Gen-i and Dimension Data. These providers are also members of the NZ Telehealth Forum’s VC Interoperability / Interconnectivity Working Group.

Figure 21: Who provides help desk and technical support / network providers

Region	DHB	Help Desk and Technical Support Provided by?	VC Network Provider(s)
Northern	Northland	First level VC support provided by healthAlliance, 2nd level technical support by Vivid Solutions Ltd (Vivid), 3rd level technical support by healthAlliance Desktop Support and Network teams. Telehealth clinics are supported by Vivid for first level support and the Telehealth Programme Manager as escalation and service management.	Vivid Solutions
	Waitemata	VC Facilitator (recent FTE appointment) and Vivid	Vivid Solutions
	Auckland	Vivid for VC and healthAlliance for network or PCs attached to the VC units.	Vivid Solutions
	Counties Manukau	healthAlliance	Vivid Solutions
Midland	Bay of Plenty	The IT Help Desk in relation to services provided within the DHB network. Vivid and Dimension Data for services provided by them.	See <i>Note</i> below
	Lakes	Vivid for the Vivid units only	See <i>Note</i> below
	Tairāwhiti	IT Help Desk	See <i>Note</i> below
	Taranaki	The TDHB ICT Service Desk provides first level support, Vivid provides 2nd level support.	See <i>Note</i> below
	Waikato	Self-appointed champions in a variety of areas and some support from IT Department. Also support by the Cancer	See <i>Note</i> below

Region	DHB	Help Desk and Technical Support Provided by?	VC Network Provider(s)
		MDM Co-ordinator. Network provider support by Vivid and Dimension Data.	
Central	Hawkes Bay	IT Help Desk at the DHB	Vivid and Gen-i
	MidCentral	MidCentral Health information system	Six units are on Connected Health network (Gen-i) and two are on the Vivid network.
	Whanganui	Gen-i and Vivid	Vivid and Gen-i
	3DHBs (Wairarapa, Hutt Valley, Capital and Coast)	Largely unprovided and unsupported. Mostly the support comes internally across the 3 DHBs from our ICT department.	Vivid, Gen-i, Videopro (infrastructure support)
Southern	Nelson Marlborough	Internal IT Help Desk, Vivid	Vivid and Gen-i
	Canterbury	CDHB IT, Telehealth team, Vivid, Gen-i	Vivid for the majority, and Gen-I for the Southern Cancer network MDMs
	West Coast	Local IT Department, Vivid , Gen-i	Vivid for the majority, and Gen-I for the Southern Cancer network MDMs
	South Canterbury	IT Department and Staff Development staff	Vivid for the majority, and Gen-I for the Southern Cancer network MDMs
	Southern	Gen-i and Vivid	Gen-I, Vivid and Lync

*Note:* The VC network for the Midland Region DHBs is currently serviced by a combination of Vivid, Gen-i, direct Internet attached units, and a proof of concept architecture developed in Bay of Plenty DHB that is managed in house. The proof of concept is now being rolled out to all of the Region's DHBs with Dimension Data's One.Govt solution. This will provide a managed service through HealthShare (the Region's shared service agency), which interconnects each DHB and all other VC providers together. The Region's DHBs will manage all VC hardware in-house with Dimension Data providing Tier 3 support where necessary.

## VC equipment

The survey asked for the geographical sites within each DHB that have VC equipment and types and numbers of VC units currently in use, including hardware-based units, software-based units, clinical carts, and mobile devices equipped with VC clients. Given that the completion rate for this data was low, it hasn't been

included in the report. There were also anomalies between some of the responses and the information regarding VC endpoints in a national VC Directory that is being compiled by the Telehealth Forum's VC Working Group. However the following is noted:

- Of the DHBs providing equipment information, there are over 200 hardware-based units currently in DHB locations, with many on mobile carts. DHBs reporting the highest number of units are Northland, Waitemata, Canterbury and West Coast, with on average 30 units each.
- While not evident in the numbers supplied in the survey, there is a trend toward replacing hardware-based units with software-based systems, along with a rapidly growing demand for VC functionality on mobile devices.
- There is also a trend toward procurement of mobile clinical carts, which are typically used in hospitals for outpatient clinics, remote ward rounds, and in areas such as ED/ICU.

The following figure shows individual DHB responses for booking systems, standards and capacity.



Figure 22: VC booking systems, standards, capacity

	Northern			
Technical Infrastructure. If using videoconferencing (VC):	Northland	Waitemata	Auckland	Counties Manukau
Do you have a centralised system for booking VC equipment and rooms?	Yes	Yes	No	No
Do your vc systems meet current international and NZ HISO standards for interoperability?	No	Not sure	Mostly	Not sure
Does your available VC capacity meet the current demands from your organisation?	Mostly	No	Barely	No

	Midland				
Technical Infrastructure. If using videoconferencing (VC):	Waikato	Taranaki	Lakes	Tairāwhiti	Bay Of Plenty
Do you have a centralised system for booking VC equipment and rooms?	No	Yes	Yes	Yes	Yes
Do your vc systems meet current international and NZ HISO standards for interoperability?	Not sure	Not sure	Not sure	Not sure	Yes
Does your available VC capacity meet the current demands from your organisation?	Yes	No	No	No	Yes

	Central					
Technical Infrastructure. If using videoconferencing (VC):	Hawkes Bay	MidCentral	Whanganui	Wairarapa	Hutt Valley	Capital and Coast
Do you have a centralised system for booking VC equipment and rooms?	Yes	No	Yes	No	No	No
Do your vc systems meet current international and NZ HISO standards for interoperability?	Not sure	Not sure	Not sure	Not sure	Not sure	Not sure
Does your available VC capacity meet the current demands from your organisation?	No	No	Yes	No	No	No

	Southern				
Technical Infrastructure. If using videoconferencing (VC):	Nelson Marlborough	West Coast	Canterbury	South Canterbury	Southern
Do you have a centralised system for booking VC equipment and rooms?	Yes	Yes	No	Yes	Yes
Do your vc systems meet current international and NZ HISO standards for interoperability?	Not sure	Not sure	Yes	Yes	Yes
Does your available VC capacity meet the current demands from your organisation?	No	No	No	Yes	No

## 6 Other telehealth technologies

The DHBs were asked to indicate other telehealth technologies being used or considered, including telemonitoring, mHealth and smartphone applications, links with GPs, and other technologies such as email.

*As with other sections of the survey, it is understood that there may be other initiatives within the DHBs that weren't reported in the responses.*

Three DHBs are providing remote telemonitoring support for patients and five others are planning to provide or considering this type of support.

One DHB (Waitemata) is deploying mHealth and smartphone technologies in programmes for diabetes support, pregnant women and families of young children, and community alcohol and drugs service. DHBs are also using text messaging tools for communications between health professionals and for appointment reminders.

Two DHBs have provided VC links for GPs to participate in teleconsultations with specialist services and two are planning to provide links.

Three DHBs will be implementing email patient consultations as part of the Shared Care planning initiatives (Waitemata, Hawkes Bay and Auckland). In all DHBs, email and telephone calls are most likely already being used for some consultations and follow-ups, but as this activity is not counted it would be very difficult to quantify.

Figure 23: Other technologies being used / planned

Technology	DHB	Services provided / planned
Telemonitoring	Auckland	<b>Providing:</b> remote Virtual Directly Observed Therapy (VDOT) undertaken for medication management of Tuberculosis patients. <b>Planning:</b> early plans for Paediatric Palliative Care
	Bay of Plenty	<b>Providing:</b> Te Whiringa Ora service has been operating in Eastern Bay of Plenty for some time. Expansion is being researched to include cardio and COPD patients.
	Nelson Marlborough	<b>Providing:</b> implantable defibrillators; automatically triggers alerts and provides regular monitoring. Monitoring service is provided by third parties.
	Hawkes Bay, Wairarapa, Hutt Valley, Capital and Coast, and Waitemata	<b>Planning</b> to provide or considering: Waitemata has had a small pre-testing project with four people with diabetes and one diabetes nurse specialist and is considering further provision.

Technology	DHB	Services provided / planned
mHealth / smartphone applications for health and wellness	Waitemata	<b>Providing:</b> Implementing programmes for diabetes support (including the telemonitoring mentioned above), pregnant women and families of young children and community alcohol and drugs service.
	Nelson Marlborough	<b>Providing:</b> defibrillator monitoring from internet or iPad apps. Patients and GPs are also sending videos and photos from smartphones to aid in diagnostics.
	Other DHBs	Using text messaging tools for communications between health professionals and for clinic appointment reminders
Links with GPs (Note- a typographical error in the survey question may have resulted in some not responding.)	West Coast	<b>Providing:</b> further planning required to improve uptake on existing links for GPs
	Bay of Plenty	<b>Providing:</b> The Telehealth Demonstration Project is focused on connecting patients in remote locations with GPs, with links being introduced progressively. Working examples include Matakana Island, Te Kaha, and Waihou Bay. Other locations are being planned with specific emphasis on Maori Health.
	Canterbury	<b>Planning:</b> Rural Canterbury PHO is developing telemedicine capacity which will enable connection to the DHB for patient consultations, as well as the Rangiora Integrated Family Health Centre
	Northland	<b>Planning:</b> As part of Northland Health Services Plan, primary health engagement is a key priority. Under this stream, work opportunities have and will come up such as use in IFHCs and for GP clinics specified as suitable.
Other (email consultations)	Northland	<b>Planning:</b> email consultation service
	Waitemata and Auckland	<b>Planning:</b> Will be implemented as part of pilot and implementation of the national Shared Care plan platform. Patients are increasingly communicating with their clinicians via email and appropriate policies and procedures are being developed.
	Hawkes Bay	<b>Planning</b> to provide
	Canterbury	<b>Providing:</b> In some cases email may be being used for consultations and telephone follow-ups, but is not a formal or counted service.

The following Figure shows individual responses for the DHBs.

**Figure 24: Other telehealth technologies used / planned**

	Northern			
Other telehealth technologies and services: are you providing or planning to provide?	Northland	Waitemata	Auckland	Counties Manukau
Telemonitoring for remote support of patients? For example those with chronic conditions?	No	Planning	Providing / Planning	No
mHealth/smartphone applications for health and wellness remote patient support?	No	Providing	No	No
Links with GPs? (there was a typo in questionnaire "GPs3")	Planning	Planning	Planning	No
Other, such as email consultations?	No	Planning	Not sure	No

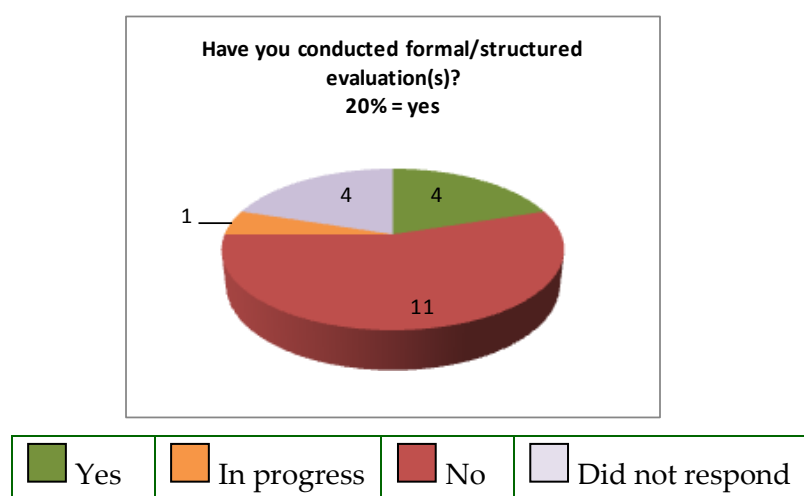
	Midland				
Other telehealth technologies and services: are you providing or planning to provide?	Waikato	Taranaki	Lakes	Tairāwhiti	Bay Of Plenty
Telemonitoring for remote support of patients? For example those with chronic conditions?	No	No	No	No	Providing
mHealth/smartphone applications for health and wellness remote patient support?	Providing	No	No	No	No
Links with GPs? (there was a typo in questionnaire "GPs3")	Some exchange	No	No	No	Providing
Other, such as email consultations?	No	No	No	No	No

	Central					
Other telehealth technologies and services: are you providing or planning to provide?	Hawkes Bay	MidCentral	Whanganui	Wairarapa	Hutt Valley	Capital and Coast
Telemonitoring for remote support of patients? For example those with chronic conditions?	Planning	No	No	Planning	Planning	Planning
mHealth/smartphone applications for health and wellness remote patient support?	Planning	No	No	No	No	No
Links with GPs? (there was a typo in questionnaire "GPs3")	Planning	No	No	No	No	No
Other, such as email consultations?	Planning	No	No	No	No	No

	Southern				
Other telehealth technologies and services: are you providing or planning to provide?	Nelson Marlborough	West Coast	Canterbury	South Canterbury	Southern
Telemonitoring for remote support of patients? For example those with chronic conditions?	Providing	No	No	No	No
mHealth/smartphone applications for health and wellness remote patient support?	Providing	No	Providing	No	No
Links with GPs? (there was a typo in questionnaire "GPs3")	No	Planning	Planning	No	No
Other, such as email consultations?	No	No	Providing	No	No

## 7 Telehealth evaluations

Figure 25: DHBs that have carried out formal evaluations



Four of the DHBs have completed formal evaluations and one is in progress. Some case studies have been documented, and many more examples of telehealth success stories can be documented. Strategies and business cases for investment typically forecast benefits regarding increased access for patients, reduced clinical risk, and more efficient use of health provider resources. However there is a significant lack of documentation on benefits realisation and health outcomes that would help to justify the level of investment necessary to ensure that telehealth tools become part of mainstream health service delivery.

The reports cited below are for operational services and pilots and vary in scope and rigour with regard to formative and summative analyses.

Figure 26: Evaluations completed/planned

DHB	Evaluations carried out / in progress or project reports
Auckland	<b>Completed:</b> Evaluation of Auckland Regional Public Health Video Directly Observed Therapy of TB patients.
MidCentral	<b>In progress:</b> Academic evaluation on the telestroke trial currently underway, in conjunction with Scotland Centre for Telehealth .(Dr Anna Ranta)
Nelson Marlborough	Not specified
Northland	<b>Completed:</b> Evaluation of renal service (Dr Walaa Saweirs) and patient feedback survey. <b>Pending:</b> Research partnership with University of Queensland Centre for Online Health (trial of the Queensland NICU system for adult ICU).
Waikato	<b>Completed:</b> Several academic journal articles available on Teledermatology services and Virtual Lesion service. (Dr Amanda Oakley)
West Coast DHB	<b>Completed:</b> Evaluation of <a href="#">West Coast Buller Pilot</a>
Bay of Plenty	<b>Completed:</b> Telehealth Demonstration Project – <a href="#">report on lessons learned</a>

In addition to the reports cited in the survey, reports and case studies are available on telemonitoring trials and services provided in the Eastern Bay of Plenty Te Whiringa Ora by Healthcare of New Zealand. See [NZ Telehealth Forum](#) website for case studies. A report is also available on a small trial which piloted the use of devices to support chronic care management in the Lake Taupo community [Telehealth support for patients with long term conditions: Evaluation of a rural pilot](#), Sapere, 2011. An academic report on the findings of the University of Auckland telemonitoring trial for chronic disease patients (ASSET) is pending.

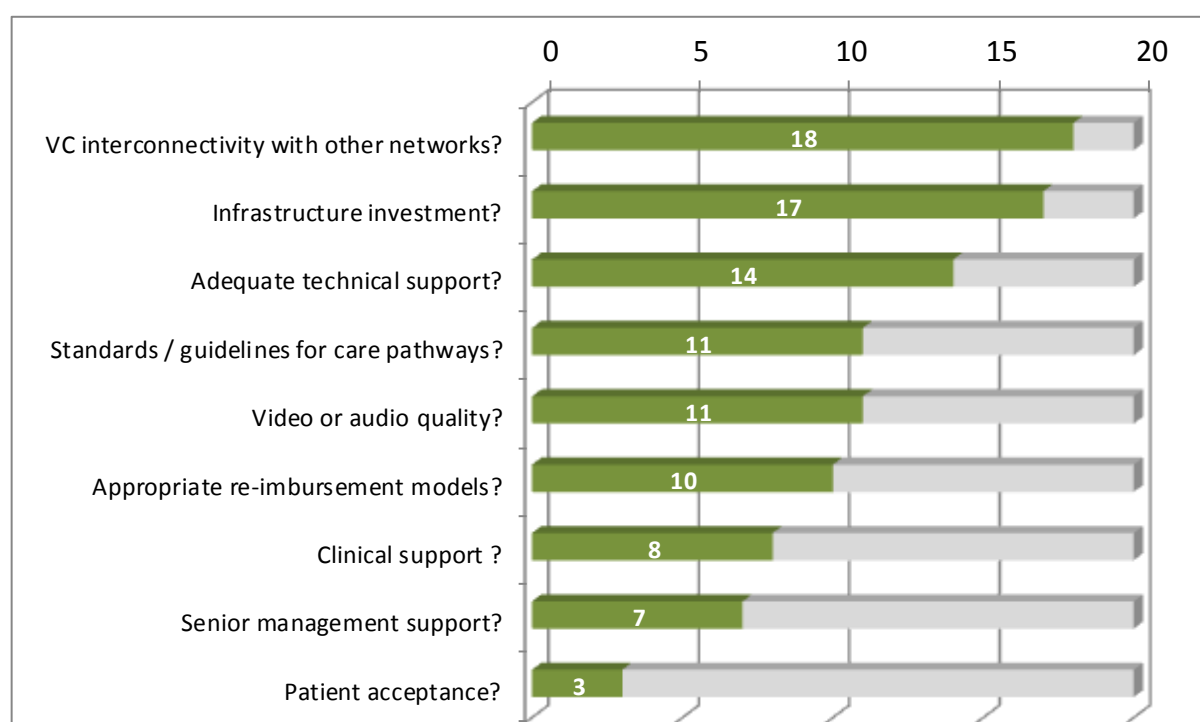
## 8 Barriers to uptake of telehealth

The survey asked respondents to cite if any of the following factors were barriers to the uptake of telehealth:

<ul style="list-style-type: none"> <li>• Clinical support and concerns about clinical accountability?</li> <li>• Appropriate re-imbursement models at individual or organisational level?</li> <li>• Adequate technical support?</li> <li>• Standards or protocols /guidelines for care pathways?</li> <li>• VC interconnectivity with other networks?</li> </ul>	<ul style="list-style-type: none"> <li>• Infrastructure investment, e.g. for facilities, technology, support staff?</li> <li>• Senior management and planning/funding acceptance (or understanding) of the telehealth value proposition?</li> <li>• Inadequate or inconsistent video or audio quality?</li> <li>• Patient acceptance?</li> </ul>
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The following figure shows the total “yes” responses for each factor.


Figure 27: Telehealth barriers prioritised



Almost all of the DHBs (eighteen) cited videoconferencing interconnectivity across networks as a barrier. Infrastructure investment was cited by seventeen DHBs and adequate technical support by fourteen. Eleven DHBs cited inadequate or inconsistent video/audio quality and standards, protocols/guidelines as barriers. Ten DHBs cited appropriate re-imbursement models, eight cited clinical support and concerns about clinical accountability. Seven cited senior management and planning/funding support, and only three said that patient acceptance was a barrier.

The following figure shows the responses for each DHB.

Figure 28: Barriers to uptake cited by DHBs

 = Yes, this is a barrier to uptake

	Northern				Midland					Central						Southern				
Barriers to uptake	Northland	Waitemata	Auckland	Counties Manukau	Waikato	Taranaki	Lakes	Tairāwhiti	Bay Of Plenty	Hawkes Bay	MidCentral	Whanganui	Wairarapa	Hutt Valley	Capital and Coast	Nelson Marlborough	West Coast	Canterbury	South Canterbury	Southern
Clinical support and concerns about clinical accountability?																				
Patient acceptance?																				
Infrastructure investment, e.g. for facilities, technology, support staff?																				
Appropriate re-imbursement models at individual or organisational level?																				
Standards or protocols/guidelines for care pathways?																				
Senior management and planning/funding acceptance (or understanding) of the telehealth value proposition?																				
Adequate technical support?																				
VC interconnectivity with other networks?																				
Inadequate or inconsistent video or audio quality?																				

Additional barriers and comments were cited by some respondents.

- Co-operation with other DHBs should be increased.
- Increased level of awareness is needed amongst clinicians on how telemedicine could be used.
- Video or audio quality has been acceptable in proof of concept but not consistent or adequate in production. Clinicians are still participating despite glitches. Audio/video quality issues experienced at some (rural) sites should be addressed by the Rural Broadband rollout.
- Rural communications infrastructure is inadequate, including slow availability, marketing, and update of Ultra Fast Broadband and Rural Broadband initiative.
- Support for other technology and infrastructure linked into or used during a telehealth event needs to be specified. This needs to come from a combination



of internal ICT departments and VC providers. The two providers need to communicate and trouble shoot issues together. Internal service desks are inclined to refer users to the VC provider as soon as the word “video conference” is mentioned, without understanding that there is a lot of technology and infrastructure in the VC rooms that is supported by the internal ICT provider rather than the VC provider.

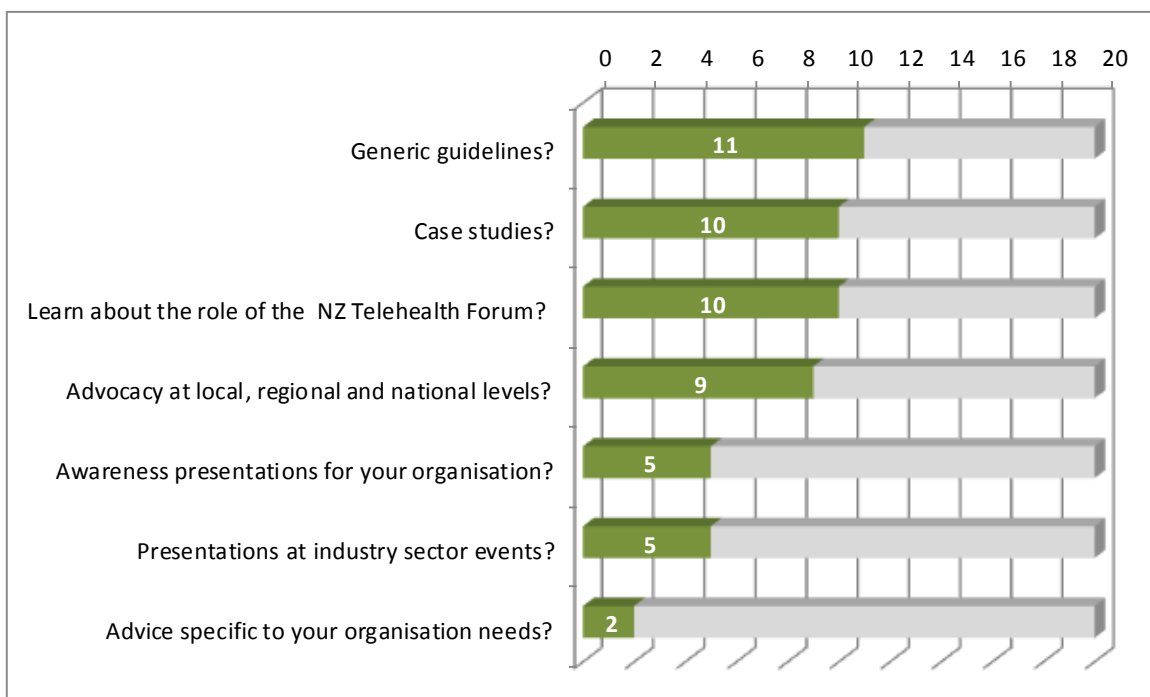
- Indemnity - who will be responsible if a patient comes to harm as a result of a virtual consultation?
- Funding models based on face to face interventions only, can determine viability and sustainability of a service. There is a risk that a substantial use of VC in smaller outreach clinics would lead to their closure or reduction of frequency, requiring those needing a classical consultation to travel long distances.
- The decentralised nature of the medical record, labs and radiology is a barrier to virtual consultation.
- A focus on virtual consults being an opportunity to reduce costs can be a barrier to uptake if there is a perception that there will be a reduction in SMO job sizing. Focus should instead be on improvement in quality and patient experience and the opportunity to see more patients.

## 9 Support from NHITB and the Telehealth Forum

DHBs were asked to cite support services provided by the NHITB and the Telehealth Forum that would be most beneficial. Highest priorities were generic guidelines, case studies, learning more about the role of the Telehealth Forum and telehealth advocacy at local, regional, and national levels.


The Forum is addressing most of the support preferences in its current work programme, and will take the priorities shown by the DHBs into consideration when updating its work programme.

Figure 29: Support preferences from NHITB and Telehealth Forum prioritised



The following figure shows the responses for each DHB.

Figure 30: Support preferences cited by DHBs

 = Yes

	Northern				Midland					Central					Southern					
NHITB and NZ Telehealth Forum Support	Northland	Waitemata	Auckland	Counties Manukau	Waikato	Taranaki	Lakes	Tairāwhiti	Bay Of Plenty	Hawkes Bay	MidCentral	Whanganui	Wairarapa	Hutt Valley	Capital and Coast	Nelson Marlborough	West Coast	Canterbury	South Canterbury	Southern
Would you like to know more about the role of the NHITB and the NZ Telehealth Forum in promoting sustainable telehealth uptake?																				
Generic guidelines?																				
Awareness raising presentations for your organisation?																				
Presentations at events held by industry and sector groups?																				
Case studies?																				
Advice specific to your organisation needs?																				
Advocacy at local, regional and national levels?																				

## Appendix A: Reference documents

The following documents were provided by survey respondents, and are available from the Forum on request. We will also work with the providing DHBs to determine which documents can be made more widely available on the Forum's website.

Figure 31: Listing of reference documents provided by respondents

Region	DHB	Document
Northern	Northland	<ul style="list-style-type: none"> <li>• Telehealth Strategy Framework 1.0</li> <li>• Renal Services Telehealth Review Jan 2014 v1.0</li> <li>• Telehealth Programme Manager Job Description</li> <li>• Telehealth Clinic Patient Opinion Survey Results March 2013</li> </ul>
	Auckland	<ul style="list-style-type: none"> <li>• Telehealth Summative Evaluation Dec 2013 ( Re: Directly Observed Therapy of TB Patients)</li> <li>• Telehealth Programme Manager Position Description July 2012</li> </ul>
Midland	Waikato	<ul style="list-style-type: none"> <li>• DRAFT Waikato Health Telehealth Clinical Strategy v0.3</li> <li>• Guidelines for Telehealth v0.4</li> <li>• MDM Configurations</li> <li>• Terms of Reference 2013 (Waikato DHB Telehealth Interest Group)</li> <li>• Midland Region Telehealth Strategy</li> </ul>
	Hawkes Bay	<ul style="list-style-type: none"> <li>• Lung MDM TOR</li> <li>• Lung MDM Process (for Referrals)</li> </ul>
Central	MidCentral	<ul style="list-style-type: none"> <li>• Terms of Reference June 2013 Lung II (MDM)</li> </ul>
Southern	Canterbury	<ul style="list-style-type: none"> <li>• Telehealth Protocol Guide Draft 2 (Under Review January 2013)</li> <li>• MDM Coordinator March 2013 PD</li> <li>• Urology Terms of Reference (Cancer MDM)</li> <li>• WCDHB CDHB Telemedicine Report April 2010</li> <li>• HDX Quick Guide and Remote-Ceiling Microphone (double sided) Ref 3413 and 3427</li> <li>• HJDX Quick Guide and Remote 2013 (double sided) Ref 3428</li> <li>• HDX 4500 Control Panel (copy of Med III 20110116)</li> </ul>
	West Coast	<ul style="list-style-type: none"> <li>• Telemedicine Procedure (revised Feb 2014)</li> <li>• Buller Telehealth Reports (available on Forum Website)</li> </ul>

## Appendix B: Clinical services provided for patients by VC (for each DHB)

The following figure shows the data presented in Section 3, Figures 10-13, sorted by DHB.

### Service Categories:

Amb Allied = Ambulatory / Clinical Specialty / Allied Health

Paed = Paediatrics

AW = Adult and Womens

MH = Mental Health

Figure 32: Clinical services Using VC for patients sorted by DHB

DHB	Service Category	Service	Follow-ups	FSAs	Acute Assessments	Ward Rounds	Image Transmission	Nurse-led Clinics	Comment
Auckland	Amb Allied	Immunology	Plan						
Auckland	Amb Allied	Nutrition / Dietetics	Plan						Planning group sessions into Correction Facilities
Auckland	Amb Allied	Regional Public Health	x						Remote monitoring of medication taking for TB patients via links to patients in home
Auckland	Amb Allied	Speech & Language Therapy	Plan						
Auckland	AW	Adult Emergency			Plan				
Auckland	AW	Infectious Diseases						x	Nurses and Social Workers Videoconferencing (Skype) with HIV patients out of Auckland
Auckland	AW	Oncology	x						Links to Northland DHB
Auckland	AW	Orthopaedics	x						Link with Corrections Facilities in Auckland
Auckland	MH	Mental Health	Plan						Planning links between MH sites in ADHB

DHB	Service Category	Service	Follow-ups	FSAs	Acute Assessments	Ward Rounds	Image Transmission	Nurse-led Clinics	Comment
Auckland	Paed	Cardiac	Plan						
Auckland	Paed	Endocrinology	Plan						
Auckland	Paed	Gastro-enterology	Plan						
Auckland	Paed	Haematology & Oncology	x						Ad-hoc and Planning
Auckland	Paed	Intensive Care Unit			Plan				Awaiting purchase of unit
Auckland	Paed	Nephrology	Plan						
Auckland	Paed	Neurology	x						Ad hoc
Auckland	Paed	Palliative Care	Plan						
Auckland	Paed	Respiratory	Plan						
Auckland	Paed	Child Development	Plan						
Bay of Plenty	Amb Allied	Nutrition / Dietetics	x						
Bay of Plenty	Amb Allied	Speech & Language Therapy	x						
Bay of Plenty	AW	Adult Emergency			Plan		x		
Bay of Plenty	AW	Orthopaedics					x		
Bay of Plenty	AW	Palliative Care	x						Being progressed within Telehealth Demonstration Project
Bay of Plenty	AW	Urology	x						
Bay of Plenty	MH	Mental Health	x	x	x				Used for CAMHS consultations, Locum Consultations, and occasionally when a consultant is not available in Whakatane Hospital
Bay of Plenty	Paed	Child Psychiatry	x	x					

DHB	Service Category	Service	Follow-ups	FSAs	Acute Assessments	Ward Rounds	Image Transmission	Nurse-led Clinics	Comment
Bay of Plenty	Paed	General Paediatrics	x	x					
Canterbury	Amb Allied	Nutrition / Dietetics	x						Paediatrician dietician clinics to the West Coast
Canterbury	AW	Critical Care			x				
Canterbury	AW	Fetal and Maternal Medicine	x						
Canterbury	AW	Gynaecology					x		Colposcopy slide reviews across two sites
Canterbury	AW	Oncology	x						Used for pre-chemotherapy reviews for patients on the West Coast
Canterbury	AW	Palliative Care	x						
Canterbury	MH	Eating Disorders Unit	x						
Canterbury	Paed	Intensive Care Unit			x				ChCh ICU runs the retrieval service and is able to connect to the West Coast and Ashburton for children it is going to collect.
Canterbury	Paed	Neonatal			x				
Canterbury	Paed	General Paediatrics	x		x				Primarily to the West Coast and to a lesser extent Ashburton
Canterbury	Paed	Haematology and Oncology	x						The Paediatric Oncologists in ChCh cover the South and lower portion of the North Island and provide backup to local clinicians via their Shared Care Network
Hawkes Bay	Amb Allied	Physiotherapy						x	

DHB	Service Category	Service	Follow-ups	FSAs	Acute Assessments	Ward Rounds	Image Transmission	Nurse-led Clinics	Comment
Hawkes Bay	AW	Adult Emergency			Trial				Trial underway to use VC unit for support and assistance in major trauma / Peri Arrest or Arrest situations between Wairoa GP Emergency Room and Hastings ED
Hawkes Bay	MH	Mental Health	x					x	
Lakes	AW	Adult Emergency			x				Link from Taupo Resus Room to Rotorua ED Clinician
Nelson Marlborough	AW	Cardiology	x	x			x		VC Cardio clinic; implantable defibrillator/pacemaker followup; Consult Nelson to nurse and patient in Wairau and Golden Bay
Nelson Marlborough	Paed	Haematology and Oncology	x	x	x	x	x		Regular VC to ChCh for all aspects for care including discharge planning
Nelson Marlborough	Paed	Neurology					x		VC for funny turns
Nelson Marlborough	MH	Mental Health	x			x			VC between inpatient in Nelson and Community Services in Blenheim (daily). Inter-DHB acute units - clinical supervision and case reviews
Nelson Marlborough	Paed	Child Development	x				x		Treatment sessions with patients; training sessions; peer review; supervision
Nelson Marlborough	Paed	Endocrinology	x		x		x		Regular diabetic clinics via VC
Nelson Marlborough	Paed	Nephrology	x						Occasional



DHB	Service Category	Service	Follow-ups	FSAs	Acute Assessments	Ward Rounds	Image Transmission	Nurse-led Clinics	Comment
None	Amb Allied	Audiology							
None	Amb Allied	Endocrinology							
None	Amb Allied	Sexual Health							
None	AW	Cardiothoracic							
None	AW	Haemophilia							
None	AW	Neurology							
None	AW	Neurosurgery							
None	AW	Ophthalmology							
None	AW	Trauma							
None	Paed	Child Emergency							See ICU
None	Paed	Home Health Care							
None	Paed	Infectious Diseases							
None	Paed	Neurosurgery							
None	Paed	Orthopaedics							
Northland	Amb Allied	Physiotherapy						x	
Northland	Amb Allied	Rheumatology						x	
Northland	Amb Allied	Social Service						x	Two episodes only of consultation with Paediatric Cardiologist in Auckland
Northland	AW	Cardiology	x						
Northland	AW	General Medicine	x					x	
Northland	AW	Oncology	x						
Northland	AW	Orthopaedics	x						
Northland	AW	Renal	x		x		x		

DHB	Service Category	Service	Follow-ups	FSAs	Acute Assessments	Ward Rounds	Image Transmission	Nurse-led Clinics	Comment
Northland	MH	Alcohol and Drug						x	
Northland	MH	Mental Health	x						
Northland	MH	Methadone Clinics	x						
Northland	Paed	Child Psychiatry	x						
Northland	Paed	Diabetes	x						
Northland	Paed	General Paediatrics	x					x	
Northland	Paed	Neurology	x						
South Canterbury	MH	Mental Health	x						
Southern	AW	Older Persons Health	x						Successful trial between Wakari Hospital in Dunedin and Assessment Treatment and Rehabilitation team for patients at Southland Hospital
Waikato	Amb Allied	Dermatology					x		Virtual Lesion Clinics provided in collaboration with MoleMap New Zealand. ( VC teleconsultation clinics formerly held with Taranaki are discontinued as now have a local Dermatologist)
Waikato	AW	Adult Emergency			x				ED support from Waikato Hospital for Taumarunui Hospital
Waitemata	MH	Mental Health – Forensic	x		x				Forensic assessments between Mason Clinic and Northland Region Corrections Facility in Kaikohe. (Mason Clinic staff using VC at DoC facility in Auckland.)

DHB	Service Category	Service	Follow-ups	FSAs	Acute Assessments	Ward Rounds	Image Transmission	Nurse-led Clinics	Comment
West Coast	Amb Allied	Nutrition / Dietetics	x						
West Coast	Amb Allied	Occupational Therapy	x						
West Coast	Amb Allied	Physiotherapy	x						
West Coast	Amb Allied	Speech & Language Therapy	x						
West Coast	AW	Adult Emergency			x				Links with Canterbury DHB to consult with ICU, Plastics, Paediatrics, Pain Team around acutely unwell patients
West Coast	AW	Critical Care			x				Link available between CCU in Grey and ICU in ChCh for consultation between units when being transferred
West Coast	AW	General Medicine	x						
West Coast	AW	General Practice						x	Most General Practices on the Coast are DHB owned and support is provided to some of the remote Nurse led clinics by GPs in Greymouth
West Coast	AW	General Surgery	x						
West Coast	AW	Older Persons Health			x				One case where a Specialist Wound Care Nurse from CDHB reviewed a patient on the Coast. Otherwise is MDT meetings without direct patient involvement
West Coast	AW	Oncology	x	x					Mostly medical but some radiation oncology
West Coast	AW	Orthopaedics	x						
West Coast	AW	Palliative Care	x	x					Connecting patients and local palliative care staff with Specialists in CDHB

DHB	Service Category	Service	Follow-ups	FSAs	Acute Assessments	Ward Rounds	Image Transmission	Nurse-led Clinics	Comment
West Coast	AW	Urology	x						Being progressed within Telehealth Demonstration Project
West Coast	MH	Mental Health	x						Used in many areas of Mental Health, including for the regional Eating Disorders, Forensic and Mothers and Babies Services
West Coast	MH	Methadone Clinics	x						
West Coast	Paed	Cardiac	x						Two episodes only of consultation with Paediatric Cardiologist in Auckland
West Coast	Paed	Child Protection			x				Some assessments of suspected inflicted injuries for Child Youth and Family by VC, where a local GP is with the patient and the paediatrician is present by VC
West Coast	Paed	Child Psychiatry	x						
West Coast	Paed	General Paediatrics	x		x	x			
West Coast	Paed	Intensive Care Unit			x				A child in the CCU in Grey Base Hospital could be reviewed by the ICU retrieval team from ChCH prior to transfer

## Appendix C: MDMs for each DHB

### Service Categories:

Amb Allied = Ambulatory / Clinical Specialty / Allied Health

AW = Adult and Womens

Paed = Paediatrics

MH = Mental Health

Figure 33: MDMs using VC sorted by DHB

DHB	Service Category	Service	Comment
Auckland	AW	Oncology	Cancer Network MDMs
Auckland	AW	Renal	
Auckland	AW	Respiratory	
Bay of Plenty	AW	Oncology	
Bay of Plenty	AW	Renal	
Bay of Plenty	MH	Mental Health	Used for CAMHS consultations, Locum Consultations, and occasionally when a consultant is not available in Whakatane Hospital
Bay of Plenty	Paeds	General Paediatrics	
Canterbury	AW	General Medicine	These MDTs have recently stopped as the general medical wards have all returned to the Christchurch site
Canterbury	AW	Obstetrics	
Canterbury	AW	Orthopaedics	Some MDT meetings with the West Coast
Canterbury	AW	Palliative Care	
Canterbury	Paeds	Neonatal	
Canterbury	AW	Vascular Surgery	With South Canterbury and West Coast DHBs
Canterbury	Paeds	General Paediatrics	Primarily to the West Coast and to a lesser extent Ashburton
Canterbury	Paeds	Haematology and Oncology	The Paed Oncologists in ChCh cover the South and lower portion of the North Island and provide backup to local clinicians via their Shared Care Network

DHB	Service Category	Service	Comment
Counties Manukau	AW	Oncology	Respiratory Oncology MDM
Counties Manukau	Paeds	Respiratory	Respiratory Cancer MDM
Hawkes Bay	AW	Gastroenterology	Cancer Networks MDM
Hawkes Bay	AW	General Medicine	Cancer Networks MDM
Hawkes Bay	AW	General Surgery	Cancer Networks MDM
Hawkes Bay	AW	Gynaecology	MDM (Hosted by MCDHB/CCDHB) Internal unit from Hastings to Wairoa
Hawkes Bay	AW	Oncology	Lymphoma MDM (Hosted by MCDHB/CCDHB)
Hawkes Bay	AW	Palliative Care	Rarely - Telepaeds unit (Vivid)
Hawkes Bay	AW	Renal	Telepaeds unit (Vivid)
Hawkes Bay	AW	Urology	Cancer Networks MDM
Hawkes Bay	MH	Mental Health	
Hawkes Bay	Paeds	Child Development	Telepaeds unit (Vivid)
Hawkes Bay	Paeds	Gastro-enterology	Telepaeds unit (Vivid)
Hawkes Bay	Paeds	General Paediatrics	Telepaeds unit (Vivid)
Hawkes Bay	Paeds	ORL	Head and Neck Cancer Network MDM
Hawkes Bay	Paeds	Palliative Care	Telepaeds unit (Vivid)
Hawkes Bay	Amb Allied	Occupational Therapy	Internal unit to Wairoa and Central Hawkes Bay Health Centre in Waipukurau
Nelson Marlborough	AW	Cardiology	
Nelson Marlborough	AW	Oncology	Cancer Network MDMs
Nelson Marlborough	MH	Mental Health	
Nelson Marlborough	Paeds	Child Development	
Nelson Marlborough	Paeds	Endocrinology	Treatment sessions with patients; training sessions; peer review; supervision
Northland	MH	Alcohol and Drug	
Northland	AW	Oncology	
Northland	AW	Renal	
Northland	AW	Vascular Surgery	

DHB	Service Category	Service	Comment
South Canterbury	AW	Adult Emergency	
South Canterbury	AW	General Medicine	Cancer Networks MDM
South Canterbury	AW	Oncology	
South Canterbury	AW	Trauma	
South Canterbury	MH	Mental Health	
South Canterbury	Paeds	General Paediatrics	
Tairāwhiti	AW	General Surgery	
Tairāwhiti	AW	Haematology	
Tairāwhiti	AW	Oncology	
Tairāwhiti	AW	Renal	
Waikato	AW	Oncology	Cancer Network MDMs
West Coast	Amb Allied	Social Service	
West Coast	AW	Older Persons Health	The acute assessment was one case where a Specialist Wound Care Nurse from CDHB reviewed a patient on the Coast. Otherwise the Older Persons Health works is MDT meetings without direct patient involvement.
West Coast	AW	Oncology	Mostly medical but some radiation oncology
West Coast	AW	Orthopaedics	
West Coast	AW	Palliative Care	Connecting patients and local palliative care staff with Specialists in CDHB
West Coast	MH	Mental Health	Used in many areas of Mental Health, including for the regional Eating Disorders, Forensic and Mothers and Babies Services
West Coast	Paeds	Child Psychiatry	
West Coast	Paeds	General Paediatrics	

## Appendix D: Survey questionnaire

### 1 Governance – does your organisation have:

a. any telehealth strategies or policies? <i>If yes, can you provide the documents?</i>
b. an appointed clinical telehealth leader? <i>If yes, please provide name and contact details.</i>
c. an appointed telehealth facilitator / programme manager? <i>If yes, can you provide the job descriptions?</i>
d. a governance group (for example an Information Services Governance Group?) <i>If yes, is the approval of this group required for the purchase of new VC equipment or the use of other telehealth tools such as text messaging?</i>
e. protocols and guidelines for using telehealth tools? <i>If yes, can you provide the documents?</i>

### 2. Videoconferencing (VC) - are you using it for:

a. Administrative and management meetings?
b. Clinical Education?
c. Services involving direct contact between clinicians and patients? <i>If yes, please complete Question 3.</i>
d. Multi-Disciplinary Team Meetings? <i>If yes, please complete Question 4.</i>
e. Other uses that are directly related to delivery of health services? <i>If yes, please describe.</i>

### 3. Clinical activity. If you are using videoconferencing for clinician – patient consultations:

a. Please complete the attached template, which lists clinical services and types of telehealth within each.
b. Do you have a method of counting telehealth consultations (scheduled or unscheduled)? Please refer to the <a href="#">Ministry's new National Collections procedure for counting telehealth events</a> , including teleconsultations by video.
c. Are you aware of any new services to be added in the next 12 months? If so, please list here.



**4. Clinical activity. If you are using videoconferencing for multi-disciplinary team meetings:**

a. Do you have an MDM Co-Ordinator(s)? <i>If yes, would we be able to contact the person? (Provide contact details)</i>
b. Do you have specific protocols for the multi-site MDM meetings? <i>If yes, can you provide the documents?</i>

**5. Technical Infrastructure. If using videoconferencing (VC):**

a. Please identify types and numbers of units. Complete sections below or provide your own list if easier.  Hardware-based units (number and type)  Software-based units (number and type)  Mobile carts (number and type)  Mobile devices equipped with VC client (number and type)
b. Who is your VC network provider (or providers)?
c. Do you have a centralised system for booking VC equipment and rooms?
d. Do your VC systems meet current international and <a href="#">NZ HISO standards for Interoperability?</a>
e. Does your available VC capacity meet the current demands from your organisation? <i>If no, do you have an investment plan for the current unmet demand and future growth?</i>
f. Who provides Help Desk and technical support for your VC users?
g. The Telehealth Forum is compiling a centralised directory of VC addresses across the provider networks. However this information doesn't necessarily indicate which sites are used for telehealth services. If you are providing these services, can you identify the geographic sites that you interact with for patient consultations, ward rounds, MDMs etc.

**6. Other telehealth technologies and services: are you providing or planning to provide?**

a. Telemonitoring for remote support of patients? For example those with chronic conditions? <i>If planning or providing, please describe</i>
b. mHealth / smartphone applications for health and wellness remote patient support? <i>If providing or planning, please describe</i>
c. links with GPs? <i>If providing or planning, please describe</i>
d. Other, such as email consultations? <i>If providing or planning, please describe</i>

## 7. Telehealth Benefits. If you are providing telehealth services:

a. Have you conducted formal / structured evaluation(s)? *If yes, can you make these available?*

If evaluations aren't available, do you have any anecdotal examples or observations about the benefits? *If yes can you provide here or would you prefer being contacted to discuss?*

## 8. Barriers to uptake.

a. The NZ Telehealth Forum is working to overcome telehealth barriers. Are any of the following barriers to uptake for existing or possible services? (please tick)

- ☐ Clinical support and concerns about clinical accountability?
- ☐ Patient acceptance?
- ☐ Infrastructure investment, e.g. for facilities, technology, support staff?
- ☐ Appropriate re-imbursement models at individual or organisational level?
- ☐ Standards or protocols / guidelines for care pathways?
- ☐ Senior management and planning/funding acceptance (or understanding) of the telehealth value proposition?
- ☐ Adequate technical support?
- ☐ VC interconnectivity with other networks?
- ☐ Inadequate or inconsistent video or audio quality?
- ☐ Other? (Please describe)

b. If you have ticked any of the above, can we contact you to discuss your views on what is needed to overcome the barriers?

## 9. NHITB and NZ Telehealth Forum support.

a. Would you like to know more about the role of the NHITB and the NZ Telehealth Forum in promoting *sustainable* telehealth uptake?

What type of support would be helpful to your organisation? (please tick)

- ☐ Generic guidelines?
- ☐ Awareness raising presentations for your organisation?
- ☐ Presentations at events held by industry and sector groups?
- ☐ Case studies?
- ☐ Advice specific to your organisational needs?
- ☐ Advocacy at local, regional and national levels?
- ☐ Other? (Please describe)