Digital Enablement Oversight Group

Gap Analysis, November 2020

Contents

1   Executive summary

1.1   Aims
This gap analysis aims to help the Digital Enablement Oversight Group (the oversight group/DEOG) to:
- understand digital enablement changes already made and their sustained impact
- understand the remaining gaps, barriers and how to overcome them
- agree strategic objectives for the digital enablement program
- target funding so it will have the most significant and sustained impact on health equity and transforming healthcare
- direct strategic effort in health and influence it in other relevant sectors

1.2   Challenge: The Digital Divide
The biggest philosophical challenge posed is that improving healthcare in New Zealand is far more inconsistent than it should be for the size of our country. For digital enablement, this manifests as "The Digital Divide", with current unacceptable variation in the extent to which i) we offer digitally enabled healthcare options to supplement in-person services and ii) the populations who need it most, are able to access those options. There is consensus that the oversight group should be bold in tackling this through the following broad recommendations.

1.3   Recommendations

i)   Provide strong leadership
The oversight group occupies a unique space, bringing together key Ministry of Health directorates, healthcare providers, influential agencies and patient representation to progress digitally enabled healthcare. It should explicitly leverage that position to lead, champion and support much more consistent progress across New Zealand. The leadership role is laid out in more detail in section 15.1 of this report. Membership should expand to cover Māori, Pacific and unplanned care representation.

ii)   Agree strategic objectives: standardise, automate, transform
To tackle the digital divide, healthcare providers need to standardise, automate and transform services. They first need to *standardise* so that they collect consistent data to consistent scalable standards, report performance and share clinical details with everyone that needs it, irrespective of differing IT systems. They should then *automate* relevant existing workflows, removing steps to be far more efficient and effective. This should in turn release staff to add more value, specifically focusing the released time on supporting the most vulnerable populations. There are many other methods of releasing time, some of which are covered in section 12, but this is called out, as it is the most technically involved one. Finally, digitally enabled health systems can *transform* healthcare delivery, for example empowering patients and whānau to self-care rather than be over-dependent on healthcare providers. Key examples of all these changes are included in this report, but actual changes must be co-designed and delivered with the vulnerable populations who need them.

iii)   Digitally enable populations
Even if healthcare providers can offer digitally enabled services and release time to support the most vulnerable, many people who need that support most, will not be able to digitally access those services for the foreseeable future. We need to ensure high speed broadband and mobile data everywhere. Those whānau who need it, should also have free, high enough quality devices, with free data to access healthcare, supported by co-designed digital literacy programs embedded in their communities. The

definition of high needs populations should be tailored to include rurality and disability for digital enablement, as mentioned in section 8.

iv)   Publish a roadmap

Whilst there is a high degree of consensus on the broad vision, the type of barriers to achieving it and the cross-cutting themes such as those above, there are many specific solutions available. The examples included in the report are the key ones suggested by respondents as having the biggest claimed and likely relevant improvement to patient experience, service delivery and equity. However, much debate is possible about which of these specific solutions to progress, in which order and at what speed. The oversight group should transparently evaluate the solutions further, verifying with evidence the claims about existing and likely impact along with adopting a change management methodology for sustaining benefits. In particular, there is evidence that equity initiatives sometimes have the opposite effect, unintentionally widening the gap, so evaluation should treat intuitive claims sceptically. It should then publish a roadmap showing which improvements it will progress, how and why – namely how they contribute to: removing the digital divide; progressing the strategic objectives; releasing capacity for equity and empowering transformations like self-care.

v)   Agree a framework

Ideally the range of solutions in the roadmap should form a comprehensive and balanced framework which covers a range of enablers as well as clinical systems. These need to include a careful balance of national, regional and local services and infrastructure. A sample framework with such a balance is shown in Table 1 overleaf. The topics in the framework are designed to cover the critical aspects which need to be delivered together to provide sustainable improvements in digital enabled healthcare. The examples in each topic could be substituted and would definitely need to be extended.

vi)   Monitor and balance progress

The oversight group should then track and report progress widely. As well as being transparent about funding opportunities and progress, this should support all areas to get a minimum standard in each key area. Where deviations from progress are apparent, support should be agreed to ensure progress is balanced and delivers as close to equity as possible. Where solutions release benefit, providers should show that they have re-invested time and effort to improve equity and self-care.

Table 1 – Sample framework for digital enablement roadmap

Topic	Example(s)
National leadership	DEOG direct and oversee via strategy, roadmap framework, etc.
National infrastructure	Browser based telehealth tool NZ wide high speed internet and eradicate mobile blackspots NZ cloud infrastructure
National support services	Scheduling, booking and check service Nationally consistent interoperable eReferral/service directories Digital authentication e.g. RealMe
National clinical services	One NZ Tele-stroke service
National enablers	Funding mechanisms to incentivise digital enablement at all levels Consensus on acceptable charges for telehealth consultations Mandated inter-operability between systems
National intentions	Commissioned by DEOG to fill known gaps in this framework which could be used in all DHBs, PHOs, etc. such as AI
Primary care systems	Agree portal standards including billing Ensure portal functionality, experience and therefore take up
Secondary care systems	Paperless clinics
Sector wide systems	Shared care records Home monitoring systems
Outcome measures	Covering e.g: • Productivity gains • DNA reductions • Travel reductions • PREMs improvements • PROMs improvements • Equity improvements • Self care improvements
Evaluation framework	Ensuring that projects are clear enough on the benefits they should deliver, the mechanism by which they will be released and measured. e.g. social and cultural benefits, clinician time released, improved care, patient experience, cost efficiencies,
Change management	Understanding need through better designed patient surveys Modelling, fostering and promoting co-design Kaupapa Embedding continuous improvement methodology for adoption
Education	Ensuring that the various clinical schools embed digital competency and attitude in new graduates. Ensure system orientation and digital tikanga on arrival for immigrant workforce. Ensuring that CPD keeps professionals up to date with digital skills.
Standards	Covering e.g. • minimum fields required to monitor telehealth take-up • minimum fields to exchange data between relevant systems • mandatory use of approved systems and strong penalties for breaching privacy • vendor cybersecurity accreditation requirements
Patient data access	Hubs, fibre, mobile, more zero rating
Patient devices and literacy	Community based programmes

2   Introduction

There are several streams of MoH digital enablement/related funding and effort with the overall aim to increase:

- Telehealth – delivery of care to patients/ whānau in a different location to the clinician
- Teleworking – health professionals working in different locations to usual
- Digital inclusion – ensuring that we do not exclude vulnerable populations, especially Māori, Pacific, deprived and aged populations, thereby promoting equity.

It is important to acknowledge that to enable the above aims, changes are need across a wide area of supporting functions: e.g. for clinicians to work remotely they need remote access to systems which are often not configured for this and do not share information with systems they can access. Digital enablement is therefore much wider than the tools that directly and obviously support synchronous or asynchronous distant consultations. It is about getting all clinical support systems, and the staff who use them, to a minimum standard, such that we can make step changes in efficiency, access, accuracy, safety, quality and outcomes – in particular, outcomes towards equity.

3   Context

Despite much care being delivered digitally or at distance for years, there was a mass shift to telehealth during COVID. In primary care the switch was characterised as happening "overnight". Due to the speed and nature of the change, the same models of care were used but at a distance. This change a) risked excluding the most vulnerable and most in need, so making inequity worse b) was not designed to make fundamental changes to: efficiency, sustainability, skill mix utilisation, equity, outcomes, etc. c) was not generally embedded permanently and so, with notable innovative exceptions, has now largely reverted to in-person care due to COVID risk decreasing. Funds have already been invested in hardware to make many of these these purely operational changes. Where should we focus further money, effort and strategic thinking?

4   Aim

This gap analysis aims to answer the question "What are the biggest areas of need that digital enablement should target, so as to make the biggest difference to these relatively neglected aspects (efficiency, sustainability, skill mix utilisation, equity, outcomes, etc.) of care"? The initial focus was on primary, community and rural care due to the next funding stream being targeted on these sectors of health response, but is now broadened to include secondary and tertiary care.

5   Method

5.1   Primary sources

A semi-structured interview was designed to elicit views of clinicians and managers working in/on primary, community and rural care whether in practices, kaupapa Māori providers, NGOs, rural hospitals, PHOs, DHBs, colleges, GPNZ, NZ Telehealth Leadership Group (TLG), etc. The questions are included in Appendix 1. The interviewees included clinical leaders (medical, nursing and allied health), program and telehealth managers, CIOs and digital architects from across New Zealand and are listed in Appendix 2. They cover a range of settings, including areas with all forms of high need populations. Invited respondents were then widened to include DHB staff and the questions were not amended. The draft report was sent to all respondents inviting them to comment. Some respondents forwarded the draft to other colleagues and a number of people spent a lot of their precious time going through the entire draft report line by line making very helpful improvement suggestions. This version is amended in response to all the comments gratefully received.

5.2   Secondary sources

A number of other relevant initiatives are ongoing and these have been treated as secondary sources of information. These include:

- NZ TLG webinars
- Healthcare Homes Collaborative
- funding from other MoH departments/programmes such as Planned Care and Sustainability
- internal initiatives by DHBs and PHOs
- the University of Auckland (UoA) monthly [surveys](#) of general practice, including a recent focus on barriers to telehealth
- the TAS co-ordinated, DHB funded scheme on Telehealth in Primary Care focused on Equity
- The Chief Allied Health Officer's post COVID survey of DHBs

While they generally confirm the views of the primary respondents, the most important thing to note is that, as of early November 2020, there appears to be insufficient co-ordination across all these initiatives.

5.3   Limitations

Due to various time and resource constraints, the number of full interviews was limited to around 30 respondents listed in Appendix 2 plus group discussions. This is a relatively small but targeted sample so the report lends insights but cannot be said to be based on a representative sample.

Not all interviews followed the interview structure as several respondents had very specific national lead roles so the discussions were either tailored to elicit their specific knowledge, insights and guidance or were more freeform allowing them to focus on their topic area. The interviews were supplemented by the same and other respondents submitting evidence and documents by email.

The views given were opinions and have not been formally validated, other than through a) a high sense of correlation between initial views, giving internal validation and b) some respondents following up with, for example, evidence of improvements already delivered. However, as noted in specific sections of the report, there was no consensus on some topics. In particular, comments submitted by two respondents who only saw the draft report (and were not interviewed) were particularly opposed to the worries of many respondents about a) lack of digital access by vulnerable populations and b) the proposed adverse impacts of private providers. They submitted data to counter these worries showing that this issue is one worthy of further debate. However, while contentious, these debates do not detract from the overall aim and recommendations about improving digital enablement. Some comments about the draft report (both from initial respondents and from those who were not interviewed) were extremely positive, stating that it is an accurate, comprehensive and much needed analysis of the problems and relevant solutions.

6   Inherent and workforce sustainability

Many respondents agree that the biggest underlying problem with primary care / tier 1 provision (the initial focus of the gap analysis), both in the most deprived, and in remote and rural areas is inherent unsustainability of practice models. If providers are not sustainable (in the wider senses of work-life balance, range of services and financial) they find it hard to recruit and retain staff. This means many providers have had to close their books to new patients, which in turn leaves the most vulnerable populations struggling to physically access primary care services, regardless of the pandemic. Note

that primary / tier 1 includes general practice, NGOs, community pharmacies and dentists, iwi/kaupapa providers, etc.

Many practices in this position are small, often sole practitioners and lack the scale to employ a range of clinicians such as allied health professionals, who are viewed as an essential part of the overall skill-mix required to comprehensively meet needs. Small practices also have less administrative and managerial capacity to support changes in models of care than a larger practice, or a practice which is part of a network (whether the network is owned or affiliate). Whilst intuitively valid, the assumption that size relates to agility needs to be tested and there is apparently research in progress to do this. The lead researcher did not respond to contact so the work is not referenced more explicitly here. However, even larger practices with the most forward thinking, change oriented leaders describe the constraints of funding that prevent or limit them from changing models of care, becoming proactive in preventative care, or supporting the most vulnerable patients, i.e. by stopping them from supporting equity initiatives. Practices are also known to provide an inconsistent range of services. The services they do provide are alleged to be of varying quality. One respondent mentioned the scarcity of standards to which practices should adhere, at least in comparison to secondary care. Rural communities are also served by rural hospitals which bridge tier 1 and 2 services, some owned by DHBs, some independent, but all face similar challenges though on a different scale.

DHB secondary and tertiary care services also have workforce and sustainability problems, and have had to close or restrict some services, especially in smaller specialities. On a larger scale, several DHBs have forecast the size and number of hospitals (beds, clinics, etc.) they will need to deliver care in several decades. They have been told that the money is not available nationally to afford such investment and they must change models and modes of delivery to bridge the gap. The Northern DHBs hope that regional collaboration and digital enablement will, together with other key levers, help address this. As of yet though, the efforts to deliver such change are not scoped, quantified or planned to the required degree.

7   Digital sustainability

Although all healthcare providers switched to delivering digital care during the height of the COVID pandemic, they mostly only did this because it was mandatory and many are said to have switched back to in-person delivery, with some claiming that patients hate digital delivery. The UoA survey summary notes that telehealth [should only] be used for consultations where appropriate. Many clinical leaders and managers suspect that the real reasons behind switching back are the difficulties of sustaining a mixed model of in-person and digital, selecting each appropriately with minimal financial, managerial or administrative support and no supportive or technological framework.

In other words, the inability to sustain digital delivery to supplement in-person delivery is an example of the difficulty in sustaining any significant change in an inherently unsustainable business model. This is compounded by the fact that most providers are still catching up with the backlog of patients that were not seen during lockdown(s). However, DHBs with much more technical and change support have also struggled to sustain the change. Most ascribe this to the initial change not being done in a way that embedded it into routine practice. One respondent suggested an interesting clinical analogy: we need providers to quit their old habit of only offering traditional healthcare and form a new habit of also routinely offering digital healthcare. We need to support them in the same we support people to kick habits like smoking and drinking through policy, education, motivation and supported/scaffolded changes which at a tipping point, become self-sustaining allowing us to remove the scaffold.

8   Vulnerable populations

Most respondents feel that vulnerable populations continue to be the ones with least access to digital infrastructure and/or most financial hardship which means they are also least able to opt for digital services to supplement the lack of physical access: hence digital exclusion. The nature of digital exclusion mentioned by many respondents included patients having:

- no smartphone or only being able to borrow one (leading to privacy and autonomy concerns)
- high turnover of mobile numbers making it difficult to stay in touch
- inability to pay for enough mobile data to use smartphone connections
- mobile data blackspots, even in cities
- no access to wifi and broadband to compensate for insufficient mobile data
- an inability to use a smartphone (especially elderly) even if the above factors are overcome

Many respondents felt strongly that this is the most important aspect because healthcare providers could do everything possible to offer high quality, safe, digitally enabled healthcare options to supplement in-person, but if the most vulnerable populations still cannot access it we will definitely widen inequity. This is especially important when we consider the significant savings to patients of avoiding unnecessary travel and associated costs. As mentioned in section 5.3, one submission in response to the draft of this report, showed that take-up of that providers digital solution is high by vulnerable populations, suggesting that these worries can be overcome.

An important factor is that the current definition of High Need population used by the digital enablement program is: Māori, Pacific, Deprivation Quintile 5 or Over 65 years. Many respondents argue that rural populations should be part of the definition. Indeed, many take it for granted, describing the bigger savings for rural populations through use of digital enabled healthcare. One respondent also raised that people with disabilities are also vulnerable and can benefit greatly from digital services so should be included.

9   Financial impact

Many respondents discussed the financial impact on healthcare providers of delivering digitally enabled healthcare. Some feel that there are definite efficiencies to be had. Some patients who might take up a double appointment in-person can be dealt with more efficiently remotely. Other patients want a shorter appointment and value the brevity potential compared to an in-person appointment. However, as it is difficult to predict which patients will take less time it can be difficult to turn the time saving into a financial or throughput efficiency. Indeed – some patients expect to pay GPs less for a remote consultation and many practices feel uncertain about charging, in addition to not charging Māori/Pacific patients or those with financial hardship. Similarly, core DHB funding models, both from MoH and by funding teams within DHBs still do not incentivise or reward telehealth enough. On the other hand, extra professional development, IT hardware, maintenance and licencing costs all create costs which are not factored into the current reimbursement models and need to be.

Finally, examples were given of the extra burden of digital consultations. For example, after an in-person consultation the patient pays a practice receptionist as they leave. There are many more steps required to bill a patient who is not in-person and track that the money has arrived. Individual practices feel that they have no clout when asking PMS providers to address these or other problems, and so ask for national leadership.

10   Competition

On the other hand, the largest primary care providers, especially the corporates, have not just sustained a digital offering, but have enhanced it, offering a "digital front door" which allows patients from anywhere in the country to access their digital services either through enrolment or for a casual fee. New providers have recognised this potential and are entering the market. Some respondents have many worries about this model. They feel it is often at a financial premium and taken up by those patients who are already digitally savvy and with enough disposable income to use it to supplement / avoid physical care. Hence, they argue that the net effect is actively inequitable, targeting the most flexible care away from the most deprived and distant, and towards the most affluent and digitally enabled. Additionally, they argue that this model also has the effect of taking much needed income away from local providers and worsening their already precarious sustainability. Finally, they worry that it does not provide continuity of care, but instead fragmentation. This is because they feel that a GP that knows a patient can absorb risk better, but a provider that does not know a patient will likely err on the side of caution and potentially over-treat, spending too many health dollars. If true, this is of course, the market at work rewarding these providers. However, strong counter arguments are made to all these issues. The provider mentioned in sections 5.3 and 8 argued that these worries lack insight and provided policy and data to counter. For example private providers offer low income access subsidies, increase total capacity and appear to have good take up with some more vulnerable populations.

11   Sustained changes

The above characterisations in sections 7 to 10 may be bleaker than is strictly the case to illustrate the points. For example, in some practices, some partners had been wanting to move towards a healthcare home model for some time, whereas other partners were resistant. The push to switch to telehealth delivery overnight allowed these changes to be made and this aspect in particular, of digital triage, may have been sustained while the rest of care delivery has reverted to in-person. Also, a great deal of remote care was by telephone, due to not having sufficient number of PCs with cameras to allow video initially. Telephone consultations are relatively easy to sustain and were used before COVID, especially in rural hospitals with a specific aim to decide whether an admission was necessary. In Auckland, Turuki Healthcare had 36,000 people joining their online meditation services during COVID and think they are still delivering 25% of care by telehealth. One practice in the West Coast is at 60% telehealth and two GPs based in Auckland provide services to patients in the West Coast, entirely by telehealth.

Of practices that use a portal, some routinely prompt or offer patients telephone consultation. Other aspects that have been sustained in some practices included the methodology of and openness to change: testing cycles of change, monitoring aspects that work, ironing out problems and adapting. Providers of GP patient management systems (PMSs) also made a lot of changes which have sustained: new fields showing the physical location of the patient (e.g. car park), accepting barcodes, etc. Digital delivery created a safe space for the workforce, e.g. those with health conditions or older age who can still be fully utilised from home without placing themselves at risk. Most had no practices or policies on home working but rapidly put them in place and can now sustain this practice post-COVID.

12   Sustained benefits

A key assertion is that sustained digital enablement should free up capacity both now and in the long term, by for example automating labour intensive processes. However, this is not the only mechanism by which telehealth and teleworking is thought to have increased staff productivity. Others include:

12.1   Increased focus

Some respondents say that telehealth needs just as long as in-person consultations, more if you include the extra steps mentioned above. Other respondents say that there is evidence that clinical consultations between clinicians and patients which already have a therapeutic relationship are often more focused on productive conversations rather than on prolonged niceties. Maintaining the relationship of trust and focusing on patient welfare is of course still important, but a better balance between the two may be possible.

12.2   Reduced travel

The biggest volume reduction in travel is for patients, especially rural patients. But clinicians too can now significantly reduce travel. This might include attending CPD events or managerial meetings remotely. An event that used to take a whole day and perhaps an evening by travelling to Wellington can now take a morning, leaving an afternoon for clinical work and evening for family. Travel to outreach clinics can also be reduced, especially if a clinic is under-booked. The combination of these can have significant effect on costs and carbon footprint as well as saving time and improving access.

12.3   Reduced DNAs

As mentioned in section 14.4, some services have noted significant reductions in DNA rates.

13   Barriers

Outside the broad inequities related to scale and sustainability, funding models, support and skill-mix discussed in section 6, respondents cite many other barriers worth briefly highlighting. All these barriers burn clinicians and support staff out, and/or disempower patients, also decreasing the sustainability of the changes.

13.1   Inertia/familiarity

Many patients and practitioners are simply used to always seeing each other in person. Now that the big risk of COVID has dissipated it is simply easier to revert to in-person and avoid the need for: switching IT systems; being in a specific room; overcoming connection problems; etc. Like all change management exercises, to overcome this, we need to make it easier to routinely conduct telehealth as in-person. Hence the power of the phrase digitally enabled healthcare.

13.2   Clinician confidence

Some clinicians have become quickly confident with phone, zoom, etc. and report that this was one of the hurdles that was overcome during the COVID transition. Some however are not, especially if English is a second language for the clinician or patient or both. The lack of body language and less audio clarity can make communication tricky. The MoH Digital and Data team have conducted a survey in 2019 of digital literacy in the workforce which could guide efforts to address this, telehealth was not a specific focus but "communication, collaboration and participation" was.

13.3   Power imbalance

A somewhat contrary view is that clinicians disempower patients when they: choose whether to offer telehealth appointments; select patients for telehealth (vs in-person); choose the mode (e.g. video vs telephone) and application (e.g. zoom vs whatsapp) of telehealth; etc. Conceptually, it could be said that this power imbalance is always present but may be exacerbated by these choices. Some conditions are patently not suitable for telehealth due for example to needing physical exams.

13.4   Practice consistency

Lack of scripting leads to inconsistent systems of work such as triage both within and between practices which creates risks. Ultimately this extrapolates to a digital divide across New Zealand where different areas (practices, PHOs, DHBs and regions) are making unjustifiable variations in progress.

13.5   Workforce development

Lack of workforce and system development, also leads to unwarranted variations such as inconsistent messaging.

13.6   Health literacy

There is a range of work on how organisations can enhance health literacy in patients, but it is not thought to be embedded, especially not broadly in primary care.

13.7   Patient costs

In the 2018 Census, 13.9% of New Zealand households reported that they didn't have internet access. A Citizens Advice Bureau report earlier this year that people across all age groups are digitally excluded, and the biggest barrier was poverty. Māori and Pasifika people were clearly over-represented in the figures, as were the disabled, people with English as a second language and who have literacy difficulties.

Some people cannot afford either general practice fees or phones with cameras of high enough quality combined with connection speeds to be useful for a high-quality healthcare consultation. Additionally, some are reportedly suspicious of technology e.g. the fear that 5G can transmit COVID. Although the zero-rating (or sponsored data) initiative allows consumers to access healthcare portals without a data cost, it does not include video consultations and this is requested. The list of included sites in the zero-rated plan is in the MoH [website](). Some respondents thought that individual telco's had trialled schemes which charge data usage for video calls to hospitals rather than users but this has not been confirmed. One stated that the current IP address mechanism behind this scheme is insufficient to cater for the complexities of modern portals and digital architecture.

13.8 Inclusion

Our current systems do not promote inclusion: for example, three years is a long time to not be seen before falling off a practice register. On the other hand, if a patient travels abroad for more than 183 days, the Department of Internal Affairs matching process is said to disenroll them.

13.9 DHB services

- Some DHB outreach services are currently very siloed and disconnected from each other eg. track and trace, Kaiawhina, outpatients, mental health, etc.
- Some DHB services are still mainly analogue and paper based, with a lack of coding.
- There is very little interoperability between systems especially between DHB, primary and community care. This and the previous point are reinforced by independent research soon to be published.
- DHB letters are often not dictated weeks after a consultation compared to 15 minute consult and code same day in primary care.
- All hospitals have access to shared care records e,g medtech and indice but don't access them.
- Some hospitals not using National Enrolment Service (NES) to check whether a person is enrolled with a PHO, to so send information to the right clinician first time.

13.10 PHO structures

Primary care systems are digital but placement of patient records can inhibit progress. Patients enrol with a practice but the PHO controls data. Data should be visible or at least analysable at all levels of health system: practice, PHO, DHB, etc. Otherwise we cannot understand if changes we make actually benefit patients and outcomes. A number of respondents felt that many practices currently claim data sovereignty but that all providers should understand that they are contributing to a shared record.

13.11 Small provider structures and systems

Small community providers are even worse at lack of inter-operability, using excel sheets so the patient record becomes even more fragmented.

13.12 Axe the Fax

One DHB has conducted three stock takes and realised they cannot remove faxes yet as so many information flows (referrals, medication, results, etc.) are still by fax and do not have a good replacement. They feel that moving from fax to email is not good as they would be going from one blind system to another. This reliance on old technology is a significant barrier to shared care.

13.13 Admin support

Up and down and the country we know that booking solutions for telehealth require additional work. This includes reserving a slot in the relevant app as well as reserving the clinical time, generating the link to the slot, sending the link to the patient, sending reminders. Many also suspect that even with good systems to automate these steps, they require additional admin support. Some business cases avoid including resources due to perceiving that funders will view the additional costs as unpalatable.

13.14 Cybersecurity

Most small providers have little to no expertise in cybersecurity. When assessing new IT systems, most focus will be on cost benefit analysis, relying on self-certification by overseas vendors regarding privacy, data security etc. One respondent cited a cybersecurity checklist which had been offered to Primary Healthcare Organisations (PHOs) along with funding to promote take-up but less than half had followed through. This probably requires central support to reduce the burden on these and other organisations.

13.15 System monitoring

DHBs have an 3-15 month lag in Inter District Flows (IDFs) so don't know the impact of all digital offerings. Overall, we do not appear to be monitoring the impact in as robust or comprehensive way as we should.

13.16 Leadership

A number of respondents feel that much stronger national leadership to co-ordinate responses to all these challenges is required and would be welcomed, so long as it was within a framework of consultation and involvement across all interested parties.

13.17 Funding models

As mentioned, the current funding model which in primary care consists of a) capitation, b) co-payments and c) initiative funding does not create a sustainable model for primary care. Nor does the current funding model for DHBs incentivise secondary and tertiary care to digitally enable care.

14 Clinical topics

Respondents discussed a range of clinical topics or settings as being priorities or highly amenable to further digital enablement.

14.1 Long Term Conditions (LTCs)

Some respondents felt that we should target long term conditions because with an ageing population these will continue to have the largest burden on our population and health services. In particular, there is evidence that shared care can make the biggest impact in reducing the burden of long-term conditions. Digital enablement ought to bring many benefits to improving the collaboration between patients and their diverse range of carers, especially in a relatively controlled environment such as aged care homes.

Example i) a digital collaboration between aged care, primary care, St John and hospitals to support people to stay at home – these have been successfully piloted in the UK and Australia. Respondents in BOP were keen to pilot this in NZ.

Example ii) a rural COPD patient provided with a pulse oximeter can read their own saturation and report it as normal without necessarily needing a direct connection – see home monitoring in section 0 for more on this.

14.2 Mental health

One respondent asked us to consider that many young people are thought to be digitally connected but socially disconnected, impacting their mental health e.g. via negative aspects of social media. We must commit to keeping local services, not creating or perpetuating barriers or isolation. Digital enablement must run alongside a vision for connected communities. Similarly, the UoA survey recently commented that although there are long delays to access many services, the one with the biggest impact was access to mental health support, especially impacting equity.

14.3 Pharmacy

Many of the same issues as described in section 0 regarding potential distortions by private primary care providers, also apply to private pharmacy providers. Community pharmacies on the other hand are prime for greater digital integration with neighbouring providers.

14.4 Outpatients

Along with primary care, DHB outpatient services had one of the highest volumes of patient interactions via telehealth during COVID. These consultations were more targeted towards follow-up than first specialist appointments which may explain why a number of specialities report having caught up with follow-up lists for the first time in years. However, like primary care, many outpatient consultations have now reverted to in-person. Of those that have sustained significant number of telehealth consultations, several report significant reductions in DNA rates. For example, dietetics in Nelson Marlborough have roughly halved their ongoing DNA rate from 15% in March 2020 to 8.3% in Sep 2020. Similarly significant changes have been documented in other DHBs but not in published reports. This is one of the strongest refutation of the assertion that the benefit of telehealth post COVID does not outweigh the reduced infection problems post COVID.

On Matakana and Motiti islands in BoP DHB, primary care and secondary care are collaborating to provide telehealth outpatient appointments. There is a strong sense that these need to supplement, not replace in-person care.

14.5 Intensive care

Some rural hospitals have dedicated video links to their nearest intensive care unit. This helps them to retain patients in their home hospital with distant support from an intensivist and/or paediatrician. This is valued by patients, their whānau and rural practitioners; and the avoided cost of an unnecessary inter-hospital transfer, especially by air, and unnecessary occupancy of an ICU bed is very high.

14.6 Community care

Some respondents note that community care teams such as district nurses are already mobile and practicing tele-working but often have very outdated systems supporting them. They can gain significant efficiencies from better devices, better coverage and better access to information.

Item 3.1 Digital Enablement gap analysis final

15 Possible solutions

15.1 National leadership

The Digital Enablement Oversight Group must take a strong lead, not just on setting the vision for a digitally enabled health service but on ensuring consistent progress towards it across all parts of New Zealand. This looks like for example:

- agreeing a roadmap of the key changes that will deliver digital enablement most effectively: those changes that will not just automate existing workflows but also transform the way healthcare is delivered
- carefully evaluating initiatives to select the changes that are most likely to, and do actually, deliver efficiencies in process which in turn release clinical time that can be re-deployed for improving equity and empowering self-care
- ensuring co-ordination across the different national initiatives: so that effort is aligned, not (at best) duplicated or (at worst) contradictory
- promoting changes to the wider levers of digital healthcare delivery such as broadband rollout, funding models and quality standards which incentivise and promote take-up of digitally enabled healthcare
- promoting changes that enable national flexibility of workforce to meet needs especially in rural communities
- avoiding duplication in funding and pilots: ensuring that more local initiatives are "national intentions" and, if successful, are taken up systematically across New Zealand
- promoting sharing of local solutions which may not warrant national intention but are still worthy of wider adoption
- insisting on interoperability between systems so as to create a cohesive whole system
- commenting on relevant procurement initiatives to ensure alignment with strategic intent
- working with bodies such as the colleges to agree standards, skills and frameworks on how digitally enabled healthcare is used safely and to high quality in clinical practice
- insisting that vendors meet the most important standards or risk being de-accredited for use in New Zealand
- monitoring the scale and speed of adoption across New Zealand and agreeing corrective actions where necessary.

The group must also consider how we progress these goals: that small amounts of innovation funding are unlikely to deliver system wide change unless those changes are both potentially scalable and co-ordinated carefully to actually scale up. This scaling up for systemic change is arguably a much bigger challenge in primary and community care which is so much more diffuse than across the 20 DHBs for say, planned care. We should consider a range of potential solutions at local, regional and national level which actively complement each other and especially target equity through sustainability and efficiency. We should also consider the amount of other organisational support: for example, the NZ TLG is a great resource but is almost exclusively voluntary. The recent additional funding to TLG is welcome and necessary but is probably not sufficient to underpin the scale of change now needed.

15.2 Patient surveys

Most agree that we still do not know enough about patient experience and views but we ought to as their experience and aspirations should drive our focus. A number of DHBs are known to have conducted patient surveys regarding telehealth but not made the results publicly available – the

results seen confirm many of the points throughout this paper – the exception being that patients tend to report that benefits of telehealth are felt to outweigh problems: this appears to contradict those practices that report their patients do not want to continue using telehealth but it may be that the benefits during the pandemic / lockdown were greater than other times which would reconcile the contradiction.

Mechanisms exist for further surveys that would be publicly shared; HQSC for example conduct patient surveys every three months. They are currently health system wide but could be focused on this topic say once a year. Questions could be designed to both elicit views and to help us drive in the right direction. If this was organised and designed by say HQSC, colleges, GPNZ, TLG and MoH collaboratively it could have very high buy-in to promote the survey and act on the results. If this was done annually, we could measure progress. Similarly, the University of Massey is collating existing surveys on telehealth and designing a new one to interrogate the gaps left by the existing ones.

15.3   Patient devices and literacy
There is much evidence that there is a significant number of people, especially in the most vulnerable populations without devices, data or digital literacy. The Digi-Fale program is one example of a program addressing this in South Auckland among a cohort of Niue elderly (60+) with funding received from the Ministry Social Development COVID-19 Community Response Fund. With the assistance of Moana Research and the small amount of community funding received, mobile phones were purchased and provided to Niue elderly who did not own a smartphone. Digi-Fale provides culturally contextualised workshops and ongoing support to help individuals become familiar with smartphones (due to its diverse functionality) which can be used to access online health resources and services such as telehealth and patient portals. Support is from young people, using intergenerational links and communication, within a church setting which many Māori and Pacific communities value. The number of people supported is very small (n=55) and although ethnic specific, there are requests to extend Digi-Fale into Pacific ethnic specific communities such as Samoa, Tonga and Cook Island, acknowledging this program may need much more support or to be replicated.

15.4   Portal usage
Many respondents believe that the single most important change that primary care practice can make is to a) offer a patient portal and b) increase the number of patients using it regularly. The rationale is that once the percentage of patients using a portal to access services rises above a critical mass of roughly 50 per cent, the nature and model of doing business fundamentally changes. At this point so many patients are using the portal to:
- book digital or in-person appointments
- request repeat prescriptions
- receive their lab results
- contribute to their shared care plan
- etc.

that up to 7 of 10 calls are removed. This means the everyday mix of work for receptionists, practice nurses, GPs' etc. changes to become far more productive, allowing them to focus on work that adds most value such as: the most complex patients, becoming pro-active and supporting the most vulnerable, thus promoting equity. Like the assumptions about practice size, this assumption has limited hard evidence and should be evaluated along with patient views before being adopted. Some portals are thought to be better than others, for example more user friendly, more functions, access to open notes and easier links to other systems. Analysis of the main portals may also be worth doing before supporting such a push.

15.5   Billing modules

One respondent was very clear that every PMS provider ought to be required to provide an easy to use billing and payments module. This needs to be simple so that once a digital patient has been "arrived" and the practice has decided what level to charge, the system automatically bills the patient, shows them their current and outstanding bill, offers them options on how to pay (e.g. credit card, PayPal, bank transfer) and tracks whether the money has arrived.

15.6   Primary secondary collaboration

Similarly, a number of respondents feel that a platform and process for collaboration between practices and specialists would make the next biggest difference. Many GP's say that the biggest frustration is the inability to get advice from a specialist about complex patients quickly. They basically have the option to either refer or ask a question. The questions they have are often too detailed/nuanced and they perceive that without interaction, the answer will not be clear enough. It is often simpler and easier to just refer the patient. A number have, or are setting up, regular sessions where GPs can discuss such patients with a specialist via telehealth.

Example 1

In Northland a one hour session rotates amongst different specialists. The schedule of which specialist will be available is published and practices can book a 12-minute slot (six patients per hour). They submit the patient's details ahead and then have the discussion about how to manage the patient in primary care. The patient may also be present at the discussion depending on their preference. The pilot had been running for seven months and repeated audits have shown that 75% of patients are not referred. Whilst it is successful, it is relatively laborious to organise, and a more efficient process and system is desired.

15.7   Shared care records

The next obvious step after high portal usage and a platform for primary-secondary collaboration for specific patients, is a shared care record, sharing specific information, usually about patient conditions, goals and preferences. This should be available to the full range of providers, for example community providers managed by DHB such as district nurses and public health unit as well as Allied Health practitioners whether they are in state organizations or NGOs. These are already in varying stages of development across collectives of DHB but have different scope and functionality. Again, an assessment of the different offering and aspirations may be worth considering before adopting a policy.

15.8   System wide ePrescribing

ePrescribing has been adopted in a number of areas, and in both primary and secondary care but there are so far no known examples of integrated ePrescribing across the entire sector including community pharmacies, dispensing and adherence rates. This is an example where as well as automating many more steps, there is the potential to transform practice through insights gained about the relationship between medication prescribing, errors and adherence. Such an approach could improve safety, quality, experience and equity as well as efficiency.

15.9   Paperless clinics

healthAlliance report that during COVID they implemented entire systems for switching to paperless clinics, allowing clinicians to conduct all clinic process from home: consultations, ordering lab tests, writing clinic notes, etc. This is available to be rolled out nationally.

15.10 Enabling skill-mix and upskilling

All of the above suggestions are essential stepping-stones in the path towards a more sustainable business model of care delivery across the entire health sector not just primary care. Predictions of the number of healthcare workers consistently show widening gaps in the coming years due to reducing workforce numbers and increasing demand due to population expansion and ageing. In this context, we must use technology to:

- improve the efficiency of interactions with patients
- ensure that everything that can be automated has been
- use collaboration to upskill generalists and avoid unnecessary referrals
- delegate care from doctors to other clinicians
- utilise the full multidisciplinary teams' skills
- promote more accurate and comprehensive handover.

15.11 Full electronic records : big data

Similarly all of the above suggestions are prerequisites to having a full record of everything we know about every patient. This is required to give better care to individual patients. It allows EDs or urgent care providers better access to data to make better decisions out of hours. As a contingency it allows patients to move practices if their practice is unavailable due to COVID. Ultimately, it is also required for big data analyses of patient population needs. Northland and Nelson Marlborough are both moving towards a cross sector PMS which may be the closest to this model but this is still some way off.

15.12 Network of digital supplement services

If we think about the fact that some practices do not offer some services, we could provide nationally coordinated digital services, specifically targeting digitally excluded groups of the population. This would need to be done in a way that does not undermine local, physical providers. We could also provide support to the smaller providers in the form of:

- A digital front door for smaller practices who do not have the capacity to create and sustain them themselves
- A national referral mechanism, integrated into PMSs, that any tier 1 service can access, rather than each one having to trawl to find the services. This would include information about the services available, similar to health pathways – indeed it could use Health Pathways or Healthpoint. It should create a single point of truth on all providers.
- These nationally co-ordinated services should not be delivered nationally, e.g. from affluent city providers as these are already the most sustainable. Instead they should be provided from a network approach incorporating services which are remote/rural but which are willing to be part of such an innovation. This could improve sustainability of primary care, maintaining and creating job opportunities in areas which need them most, thus ensuring continuity of access to physical care.

15.13 National services

A number of services are currently delivered locally and inconsistently, and are thought to be highly amenable to national, digital services.

Example 1 - national telestroke service

Patients have strokes across the country, including in areas which do not have the capacity to run a specialist stroke CT diagnostic service. In such areas, patients' CTs are read by non-specialists creating an unnecessarily onerous roster and delivering a sub-optimal diagnostic service. The outcome of the

CT diagnosis helps clinicians to decide whether a patient is a candidate for thrombolysis. However thrombolysis is just one aspect in determining a patient's outcome. The biggest determinant is whether the patient has access to an acute stroke unit. Many hospitals lack the scale to provide such units. One suggestion is that a single acute stroke unit could provide digital outreach support and advice to staff in such hospitals. Although this is neither planned care, nor primary care, it is included here due to being a well-recognised gap which is not surfaced through the current bid approach.

Example 2 - National scheduling and booking service
As mentioned in section 0, many providers are considering booking tools oriented to integrating telehealth with existing workflow. This could be delivered nationally and could encompass many aspects including:
- allowing patients to choose times convenient to them
- confirming the booking with the service
- confirming that the patient prefers telehealth, has equipment and testing it works with the relevant application
- patient and clinician helpdesk
- patient and clinician education

Ideally clinical services would redesign the way they plan and deliver services to maximise the efficiencies possible.

Example 3 - National telehealth service
[NHS Scotland](#) and [Australia](#) have invested in single national telehealth solutions. These are browser based so do not require an additional app/software. This approach would reduce the problems associated with multiple systems but would of course face the alternative challenge of convincing organisations to switch from the plethora of existing solutions. Scotland overcame this challenge in part by adding value through ensuring their system links to patient booking systems and simulates a physical outpatient workflow via digital waiting and consult rooms: a simulation which is much more difficult to achieve in NZ's existing systems. The 1st October 2020 NZ TLG [webinar](#) covers this in detail.

15.14 Digital access
- The most ambitious respondents say we need to treat high speed data provision as an essential utility just like water and electricity. Although these utilities are still not universally provided, especially in rural areas, an all of government commitment to full high speed broadband access for every household in NZ by a specific date is still a worthy idea. The Scottish Government has had a similar policy, called [R100](#), in place for five years.
- In the interim, access hubs could be in the most deprived and rural areas and could provide community access to all public services, not just healthcare. If these have already been funded for other purposes there is a piece of work required around current capacity and on-going co-ordination.
- Rural hospitals may be worth considering as good locations for digital hubs. Most small and rural providers are short of space and having additional digital access hubs can release space for in-person consultations Rural hospitals providing integrated primary and secondary services with digital enablement should increase sustainability and viability of rural services. Other potential locations include community centres, marae and schools.
- In the meantime, a range of "workarounds" are in use but with very varied availability and compliance with privacy and security including:

- o practices using Facebook messenger, whatsapp, Manage My Health and SMS to communicate with patients
- o seeing refugee and migrant families in-person with phone interpreters
- o nurse-led home visits targeting LTC's for blood pressure, labs, swabs, etc.
- o patients having blood pressure checks at their local pharmacy

15.15 Standards

Arguably the best thing we can do is create standards and give providers and patients genuine support to reach these standards. The NZ TLG is planning to recommend standards for data gathering and sharing. Some respondents have also suggested standards for other aspects in the report, e.g.:

- minimum timeframe to deliver info to practices
- minimum range of services for practices to deliver, e.g. if a practice does not provide a service such as Long Acting Reversible Contraception (LARCs), it should refer
- use of patient portal in 1y and 2y
- minimum fields for details recorded in GP practice systems
  - o Does each patient have internet?
  - o Do they have adequate devices?
  - o What are their contact preferences?
  - o Do they live with someone that can help?

15.16 Home monitoring

Home monitoring is another area which appears to have high potential to transform the way we deliver healthcare as well as automating it, empowering both patients and their whānau to set their own goals and to measure progress towards them. Some NZ research exists which is already guiding development in this field for example on reporting by exception and integration with existing electronic records.

Although there are many ideas about sophisticated wearables and monitoring, these should also include more basic alternatives for the most digitally excluded, e.g. parents having a thermometer at home to measure a child's fever. Again, NHS Scotland has a national remote monitoring platform which is also covered in the TLG webinar.

15.17 Contracting and funding arrangements

PHO agreement and integrated pharmacy agreements assume DHB boundaries, but that is not how digital services operate. If we create new agreements for digital services there must be transparency and efficiency to reduce unnecessary administrative time and inconsistency of contract procurement/management approaches.

We should consider testing new funding arrangements that incentivise digital delivery where clinically appropriate, taking account of the issues mentioned.

15.18 Evaluation

There is a perception that most bids are funded with insufficient attention to evaluation. Does a new system simply provide a platform and new maintenance costs, or does it really drive efficiencies, reduce DNAs, improve patient experience, etc?

Most knowledge about efficacy of care (at least in New Zealand) is built on continuity of in-person care. We should work with research and education organisations to study how we can improve continuity of care via digital and multiple providers.

A key point is therefore evaluating parallel (in-person and digital) systems. MoH should invest in, or commission, evaluation frameworks that can handle this environment.

The paper "Telemedicine – is the cart being put before the horse?" is well worth reviewing. As is the EY review of Waikato DHBs HealthTap, especially its conclusion of "a strong sense that the virtual care tool was being imposed on a sector that didn't recognise the need for it". The recommendations could be adapted to apply to this program as follows:
- any strategy should be coordinated and mutually agreed by all relevant bodies covering both service and information system planning
- collaboration between DHBs, primary care, community NGOs and kaupapa Māori providers is required to deliver a virtual care service that fully realises the MoH aspirations
- clinician engagement and clinical leadership are crucial success factors for virtual care strategy development and implementation

15.19 Change management
Overall this is a significant change management program and we should use the best methods such as co-designed, patient centred solutions when designing and implementing solutions. Similarly we should ensure consistent take-up or roll out. A few respondents commented that we use pilots and proofs of concept too much and should instead use continuous service improvement, foundation projects or similar which set out with the intention of wide rollout.

15.20 Performance Monitoring
We should consider including more digital measures (patient portal take-up is already in patient experience) in the MoH System Level Measures (SLMs) if they remain. Ideally, all existing SLMs should include a digital enablement/efficiency contributory measure as opposed to separate digital measures.

15.21 Towards AI
Many of the solutions mentioned above are aimed at increasing confidence and interaction with technology. The next step is of course when technology in the form of Artificial Intelligence (AI) takes over or at least triages aspects and therefore transforms care. This has been discussed for years but is now present. One respondent has evidence that having certain images (e.g. chest images) read by AI at a fraction of the cost and time to be read by a doctor is now commercially available. If the quality of such offerings is confirmed, New Zealand needs to be planning how and when it should adopt them. This is just one example where we should take an active role in ensuring AI is adopted in the best way possible for New Zealand. This is a significant enough topic to warrant a dedicated workstream and team.

15.22 Strategy and plan
A strategy which acknowledges the underlying problems, clearly articulates the barriers, takes into account patients views, promotes equity through improving efficiency and education would be welcomed by many within the sector. If accompanied by a plan with timescales, priorities and actions it could be a powerful step, perhaps more powerful than handing out small pieces of money to practices for specific initiatives. This would include a co-ordinated approach to change management

that could scale sufficiently: for example, Healthcare Homes and TLG are already supporting practices to improve, should these and similar organisations be scaled up to provide a more ambitious, co-ordinated change?

15.23 Equity

A big question is whether and how all these solutions affect equity. One suggestion is that we should for example support Māori, Pacific and deprived patients using portals ahead of other patients. This may be useful if it is done with informed patient choice and support. Another suggestion is more efficient care, even through just the least complex patients using portals, may achieve significant efficiencies. If these efficiencies achieve a tipping point to create economies of scale, they allow practitioners to target their freed up a time on patients who need it the most, e.g. patients who suffer from deprivation, exclusion, comorbidities, etc. should be the patients who would benefit most from joint conferences between primary and secondary care, allowing them to avoid unnecessary referrals which include travel and time they cannot afford. This is a big assumption needing careful and critical evaluation.

16   Conclusion

Despite the acknowledged limitations in the method of compiling this report, and the small number of contentious aspects, there is sufficient positive feedback to conclude that it has been a worthwhile exercise. Respondents broadly agree that:

- the phenomenal rates of telehealth during COVID have not been sustained
- some notable exceptions are well worth understanding and emulating
- barriers to sustained progress are multiple and complex
- we need co-ordinated, carefully orchestrated interventions across all or most topics for New Zealand's healthcare system to deliver sustained improvements in digital enablement
- the changes described have the potential to do far more than just increase rates of telehealth and teleworking
- if co-ordinated well, through a framework-based roadmap, digital enablement can make significant improvements to efficiency, patient experience, access and ultimately to equity and patient empowerment.

The Digital Enablement Oversight Group has an exciting opportunity to harness and direct effort towards these goals and should ensure it has the support and resources to do so effectively.

Appendix 1: Questions in semi-structured interview

1. What digital enablement changes have already happened locally in primary/community/rural care?

2. What impact (other than enabling remote access in face of lockdown) did they achieve?

3. Have they been sustained?

4. What were the pitfalls?

5. What gaps remain and which are most important to address?

6. What are the barriers that perpetuate those gaps?

7. What is already being done to address them?

8. How could additional digital enablement funding make the most significant difference?

9. Is this something a pilot or proof of concept would add value to being rolled out nationally or should it just be done locally?

10. How would we evaluate success?

11. Of the example criteria: efficiency, sustainability, skill mix utilisation, equity, outcomes, etc. which (or others) are most important to change?

12. Which are most amenable to change?

13. Any dependencies such as existing IT, national or local programmes to manage?

Appendix 2: Respondents

Name	Main Role	Lead Role (if any)
Chloe Mercer	Portfolio Manager, Primary care, health and wellbeing, Taranaki DHB	
Philippa Jones	Primary Care Nurse Leader, Western Bay of Plenty PHO	
Grant Ardern	Digital Architect, Western Bay of Plenty PHO	
Paul Roseman	Senior Manager Strategic Development, ProCare Health	
Melissa Gilbert-Smith	GP Whangarei	Clinical Director Acute Demand, Northland DHB
Jeff Lowe	GP Karori	Chair, General Practice New Zealand
Jagpal Benipal	Senior Program Manager, Primary Care Services Development, Waikato DHB	
Matt Hanant	GM Primary & Community Planning & Funding, Counties Manukau DHB	
Deb Davies	Primary & Community Operations Executive, Mid Central DHB	
David Murray	Primary Care Manager, Southern DHB	
Ruth Large	CD Information Services & Virtual Healthcare, Waikato DHB	Chair, NZ Telehealth Leadership Group
Bev Nicolls	CD Information Systems, Nelson Marlborough Health	Email discussion, not interview
Lisa Brennan	Operations Manager, Pegasus	
Sam Murton	GP Wellington	President, Royal New Zealand College of General Practitioners
Stuart Barson	Healthcare Homes Well South PHO	
Sarah Clarke	GP Gisborne	Rural Hospital Specialist, Northland DHB
Lily Fraser	Clinical Director, Turuki Healthcare	
Inga Hunter	Senior Lecturer Massey University	Chair – Research Audit and Evaluation Working Group, NZ Telehealth Leadership Group
Hilary Exton	Director of Allied Health	Nelson Marlborough DHB
John Manderson	Senior Project Manager	Te Aho o Te Kahu, Cancer Control Agency
Sasha Webb	Senior Project Manager	Te Aho o Te Kahu, Cancer Control Agency
Yariv Doron	Child & Adolescent Psychiatrist, Taranaki DHB	Chair, Mental Health & Addictions Working Group, NZ Telehealth Leadership Group
Richard Li	Chief Information Officer	
Amio Ikehele	Innovations Lead, Moana Research	Chair – Digital Equity Working Group, NZ Telehealth Leadership Group
PHO CEOs	Group discussion facilitated by Liz Stockley, Chief Executive, GPNZ.	

Peter Huskinson	Chief Executive, Northern Regional Alliance	Email discussion, not interview
Roy Davidson	Telehealth Program Manager, Northland DHB	Chair – Telehealth Program Managers Working Group, NZ Telehealth Leadership Group
Lucy Westbrooke	Telehealth Program Manager, Auckland DHB	
Jane George	Director of Allied Health, West Coast DHB	
Matt Hector-Taylor	Director, Northern Region Health IS Strategy, healthAlliance	
Samuel Wong	Vice President, Product Innovations Vensa	Chair of Virtual Health Industry Group (VHIG) of New Zealand Health IT (NZHiT) and industry member of NZ TLG.
Respondents who only commented on the draft report (not interviewed)		
Tim Wood	Deputy Director Funding, Waitemata and Auckland DHBs	
Mark Vella	CEO, Total Healthcare PHO	
Josh Stent	COO, Tamaki Health	
Liz Stockley	CEO, GPNZ	
Bill Eschenbach	CEO, Waitaha Primary Health	
Gareth Hudson	General Manager, Corporate Services, Western Bay of Plenty PHO	