Waitemata District Health Board

Best Care for Everyone

Outpatient Telehealth Trial (OTT)

Prepared By:	Kelly Bohot, Care Redesign Programme Lead, i3 Ella Dixon, Summer student 2018/19
Input Provided By:	Dr Karen Wright, Public Health Registrar Charlie Aiken, Telehealth facilitator Shane Fullam, Information Systems Innovations David Grayson, Clinical Director, ORL
Approval required from:	Dr Robyn Whittaker, Assoc. Professor & Clinical Director Innovation i3
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Waitemata District Health Board
Best Care for Everyone

i3 institute for innovation + improvement

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1. Executive Summary

In 2018 health Alliance led a process with the four northern region district health boards to test, select and purchase a video conferencing platform. Telehealth was a key project focus for Waitematā District Health Board (DHB) as it has potential to:

- reduce demand on outpatients
- reduce DNAs
- expand follow up options available to patients and clinicians
- improve patient experience

Between 29th August and 19th December 2018 we completed a four month trial to test the feasibility of outpatient telehealth appointments using Zoom.

We collected and reviewed evaluation data including:

- telehealth accept and decline rates
- reasons for declining a telehealth appointment
- experience from telehealth users (patients/clients and clinicians)
- cost savings for patients
- cost savings for Waitematā DHB

Just under half of patients/clients offered (45.2% n = 98) chose a telehealth appointment over a traditional in person appointment at the hospital. The highest uptake was seen in physiotherapy (lymphedema) followed by otolaryngology and diabetes.

Approximately 50% of those who declined told us they would rather see someone in person. Smaller numbers of patients/clients told us they did not feel confident with computers or did not have internet access or a space suitable to take the call. Access to a suitable device, internet connectivity and a suitable space are all prerequisites for telehealth. Lack of access is a concern as they present inequities in the ability to access care via telehealth.

Patients/clients who used telehealth told us they chose telehealth for convenience. The most frequently selected reasons for choosing a telehealth appointment were to save time, travel and money. By eliminating travel we estimated our telehealth users saved $9,500. This is in addition to potential combined loss of earnings of $5,300 across the group.

As well as convenience most telehealth users were positive about their experience: more than 80% of patients/clients and over two thirds of clinicians described their experience as the same or better than a traditional in person visit to the hospital. The proportion of users who told us they would be likely or extremely likely to choose another telehealth appointment was even higher: 88% of patients/clients and 95% of clinicians said they would book more telehealth appointments in the future. There were no clear differences in experience by age, gender or ethnicity.

Despite the overall positive experience, the majority of patients/clients reported difficulties establishing a positive relationship with the person on the telehealth call and did not feel supported after their appointment. The finding requires more consideration. In contrast the majority of clinicians told us they felt able to establish rapport to achieve an effective consultation and their appointment goals.

Technology and connectivity issues were reported most frequently in the first half of the trial. Problems included not having enough information in the email to connect to the appointment and not being able to

complete a practice call to test the camera and sound. There are ongoing opportunities to improve the process including further developments to the email invite and text reminders.

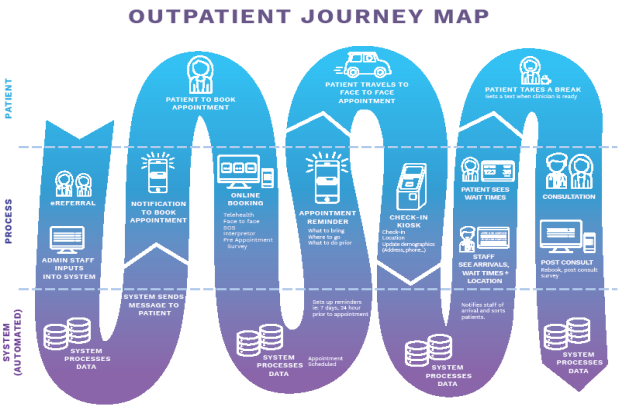
Telehealth can be a convenient and effective way to deliver outpatient appointments for some patients and clinicians. However telehealth may not be universally acceptable or accessible for all patients/clients. Approximately half of patients in this trial chose a traditional in person visit over a telehealth appointment. Patients/clients in older age groups may be less likely to accept because of limited access or confidence to use the internet and electronic devices. It is important we explore opportunities to support these groups and avoid creating further inequities in access and outcomes.

Whilst telehealth may not be universally accepted at present it has potential to become a valuable tool to deliver timelier, convenient care closer to home and can positively impact society by providing cost and time savings to individuals and their broader communities. Telehealth provides us with an opportunity to expand the tools we have to communicate with patients/clients and the Waitematā community.

2. Background and opportunity

During the last three years a small group of clinical champions have been driving the use of telehealth. During this time we have tested four video conferencing platforms with limited success. In 2018 health Alliance led a procurement process with the four northern region district health boards to test, select and purchase a video conferencing platform. Telehealth was a key project focus for Waitematā District Health Board (DHB).

The World Health Organisation defines telehealth as “the use of telecommunications and virtual technology to deliver healthcare outside of traditional health care facilities”. Telehealth presents an opportunity to provide more convenient, closer to home care for our patients compared to traditional hospital based outpatient appointments. It allows the patient to join their appointment from anywhere using a computer or mobile device with a camera, microphone and internet connection.



Telehealth also provides an opportunity to expand our outpatient models of care and is consistent with our broader vision to improve the outpatient experience as pictured above. Current models of care require patients to attend the hospital for an appointment with their health professional. There are now many other delivery models available including specialist to GP consultations, telehealth and remote monitoring. These models support care closer to and in some cases within the patient’s home and empower patients to take control of their health by placing them at the centre of their care.

This work complements other outpatient improvement initiatives such as email correspondence, online booking systems and electronic reminders.

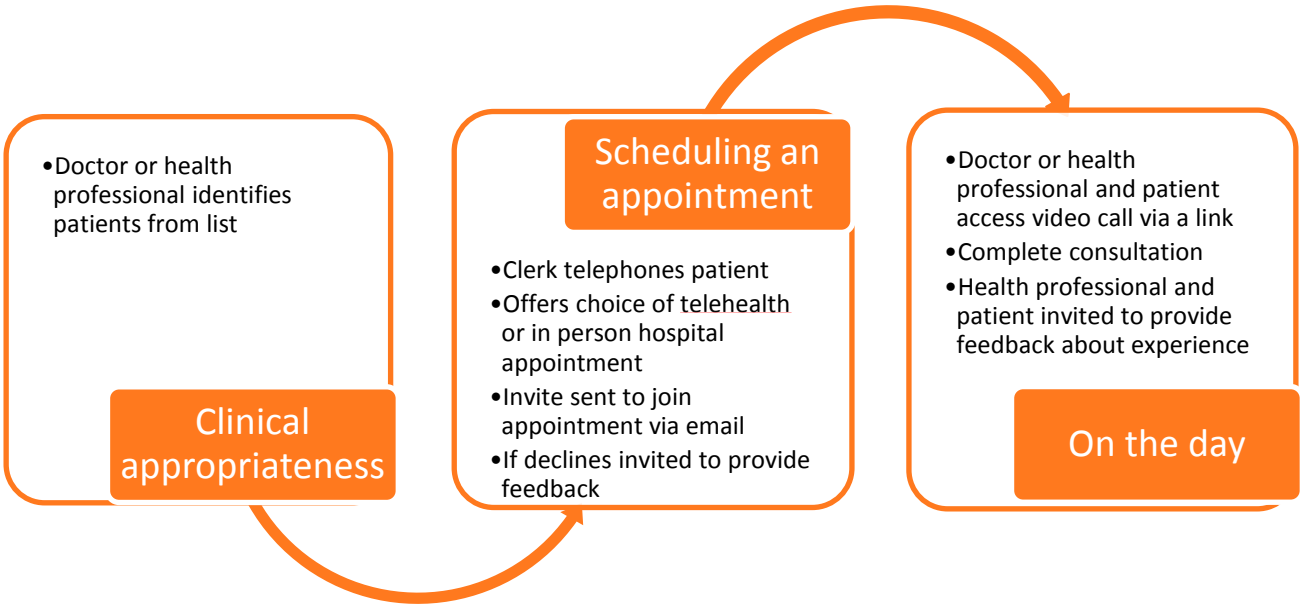
Outpatient clinics are dependent on both hospital and patient resources. From the hospitals perspective a typical outpatient appointment requires not only a clinician, but also physical space for the appointment, a clerk to meet and check in the patient, waiting room space and nursing resource. Patients incur travel costs to get to and from the appointment, parking fees and potentially time away from work or other responsibilities.

This report summarises the outcomes of a four month telehealth trial at Waitematā DHB. The report includes:

- a summary of telehealth uptake
- experience feedback from patients
- experience feedback from clinicians
- potential cost savings for patients (public transport, private vehicles, loss of earnings and carbon savings) and
- potential cost savings for Waitematā DHB (based on otolaryngology clinic costs).

Between 29th August and 19th December 2018, we completed 98 telehealth appointments across our diabetes, otolaryngology, physiotherapy (lymphedema) and altered high youth service (CADS). Patients newly referred to otolaryngology for possible tonsillectomy or grommets and follow up patients known to diabetes, physiotherapy (lymphedema) and altered high youth service were considered for suitability of a telehealth appointment by the clinician who would deliver the telehealth appointment. Patients were considered clinically suitable for telehealth if their clinical intervention did not require a physical examination or procedure. Once identified as clinically appropriate, the booking clerk would contact the patient by telephone to offer the choice of a telehealth or in-person outpatient appointment.

The graphic below describes the workflow of identifying patients who may benefit from telehealth and the scheduling process tested during the trial phase.



3. Drivers and objectives

We monitored several measures throughout the four month trial. These are outlined in the table below.

Driver	Measure	Objectives
Telehealth access	Telehealth acceptance rates Telehealth decline rates Telehealth decline reasons	• To explore demographic trends of patients who accept and decline telehealth • To explore reasons patients may decline telehealth
Patient experience	Patient experience survey via survey monkey	• To understand experiences of patients receiving telehealth appointments
Staff experience	Staff experience survey via survey monkey	• To understand experiences of clinicians delivering telehealth appointments
Appointment costs	Travel costs for private vehicle and public transport options from patient suburb to outpatient location	• To understand potential cost savings for patients as a result of not having to travel to outpatient appointment

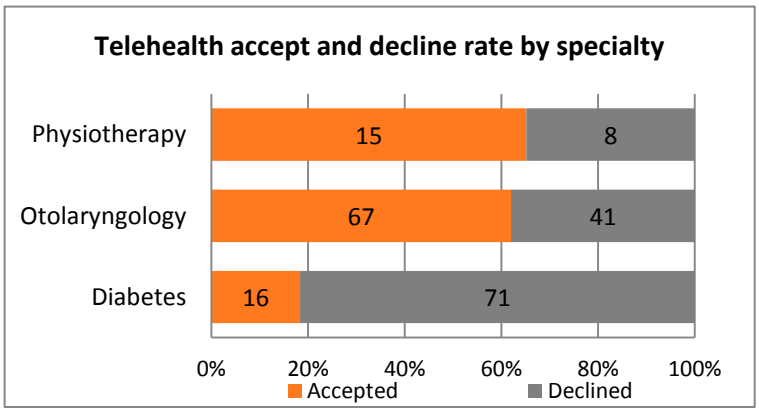
3. Summary of findings

3.1 Telehealth access

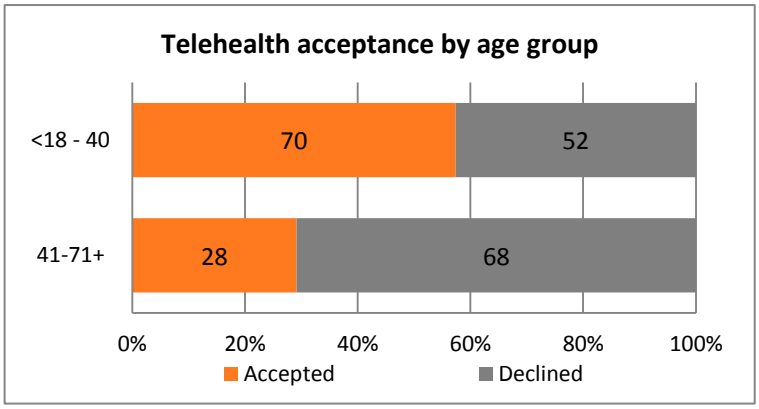
Accept and decline rates

Between 29th August and 19th December 2018 we offered telehealth outpatient appointments to 218 patients across our otolaryngology, diabetes and physiotherapy (lymphedema) services. Just under half (45.2%, n = 98) of patients chose a telehealth appointment over a traditional in person outpatient visit to the hospital. The decline reason was recorded for patients who chose an in person appointment rather than a telehealth appointment. We recorded reason for decline from 114 patients (95%). The accept/decline outcome was not recorded for Altered High Youth Service (CADS) and therefore has not been included in this analysis.

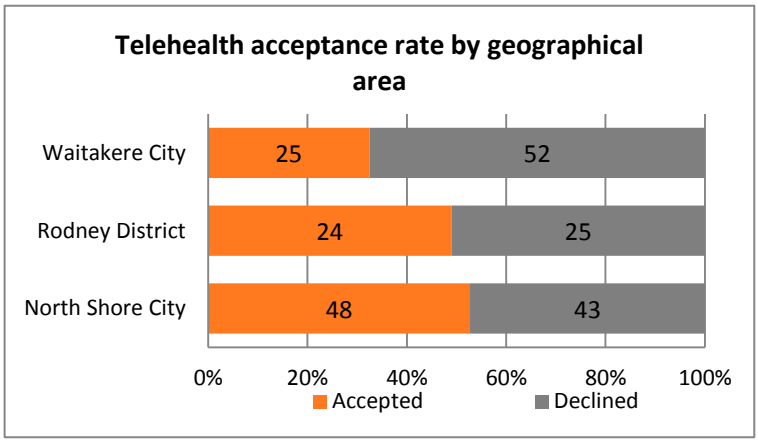
Physiotherapy (lymphedema) had the highest proportional update of telehealth appointments (65%), followed by otolaryngology (62%) and diabetes (18%). Otolaryngology offered the highest number of appointments (n = 108), followed by diabetes (n =87) and physiotherapy (lymphedema) (n = 23).



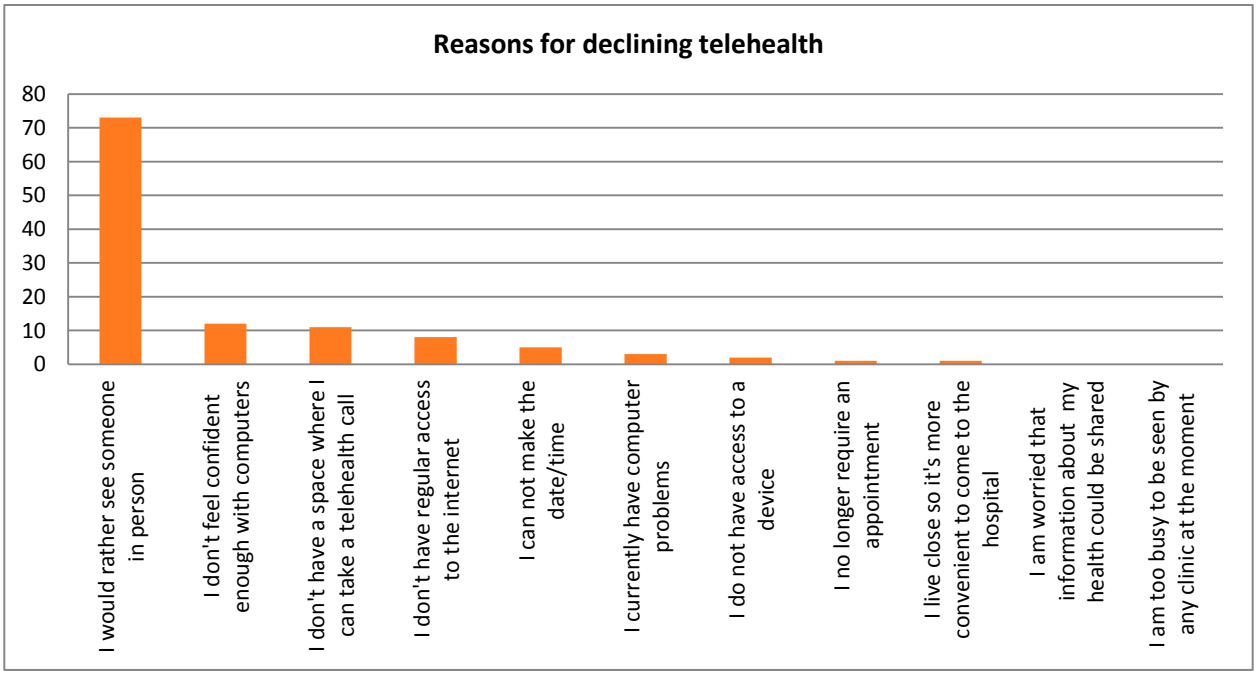
Patients under forty years of age (71%, n=70) accepted more telehealth appointments than any other age group. This is likely reflective of the clinics trialling telehealth. The highest number of telehealth clinics were offered to and accepted by paediatric otolaryngology patients ie parents of young children.



The highest uptake for telehealth was from patients living in the north shore catchment area (53%, n = 48), followed by Rodney (49%, n = 24) and Waitakere (32%, n = 25). The majority of patients offered telehealth appointments during the trial period lived in north shore suburbs.



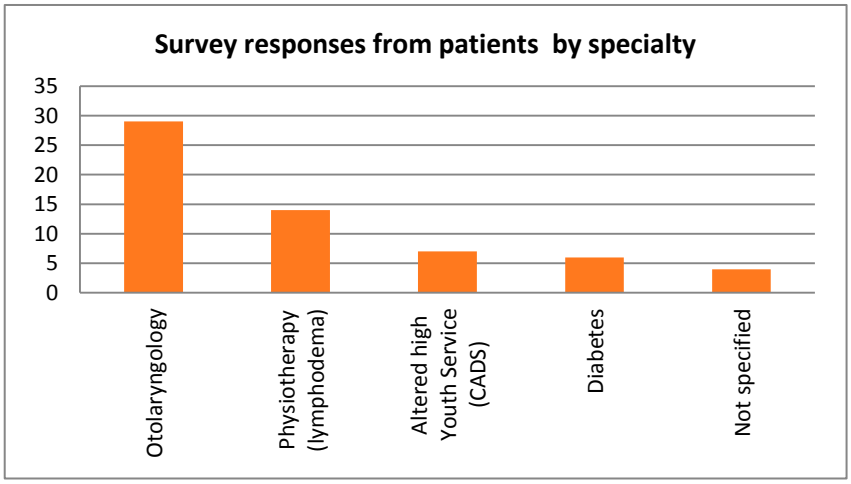
We gathered reasons for decline from 95% (n = 114) patients (refer to Appendix A). Just over half (54.8%, n = 120) of patients declined a telehealth outpatient appointment in favour of a traditional in person outpatient appointment at the hospital. The most frequent reason for declining a telehealth appointment was due to preferring to see someone in person. More than half of patients (64%, n = 73) who declined a telehealth appointment told us they would prefer a traditional in person outpatient appointment at the hospital. Data was not analysed by gender, ethnicity, age group or locality.



3.2 Experience

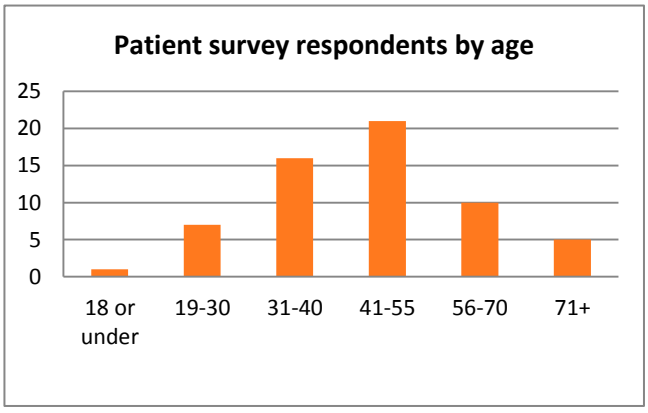
Patient Experience

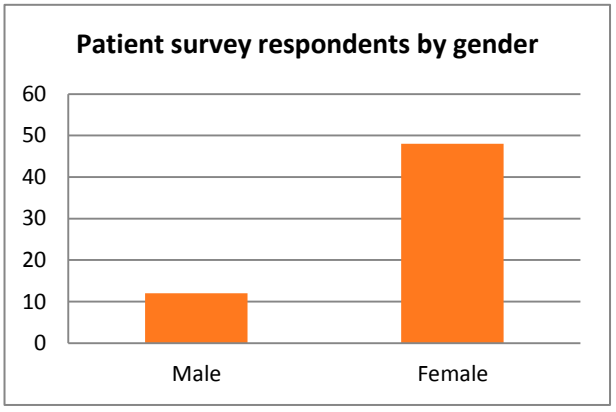
All ninety-nine patients who joined a telehealth outpatient appointment were sent a patient experience survey link (survey monkey) via email following their appointment (Appendix B). The response rate was 61% (n = 60).



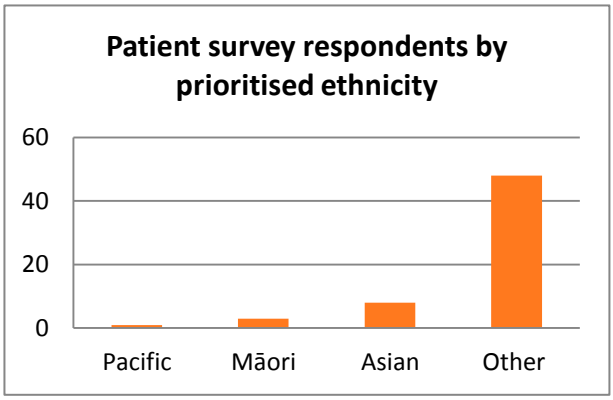
The majority of respondents to the patient experience survey attended an otolaryngology telehealth appointment (48%, n = 29). We also received feedback from people who attended physiotherapy (lymphedema) (23%, n = 14), altered high youth service (11%, n = 7) and diabetes appointments (10%, n = 6). A small number of people (6.6%, n = 4) did not tell us who their telehealth call was with.

Most survey responses were from females (80%, n=48). The is likely because most of our telehealth appointments were delivered to paediatric patients and their mothers. The highest response rate was from patients aged 41-55 (35%, n=21), followed by 31-40 (26%, n=16), 56-70 (16%, n=10), 71+ (8%, n=5) and 18 or under (1%, n=1).

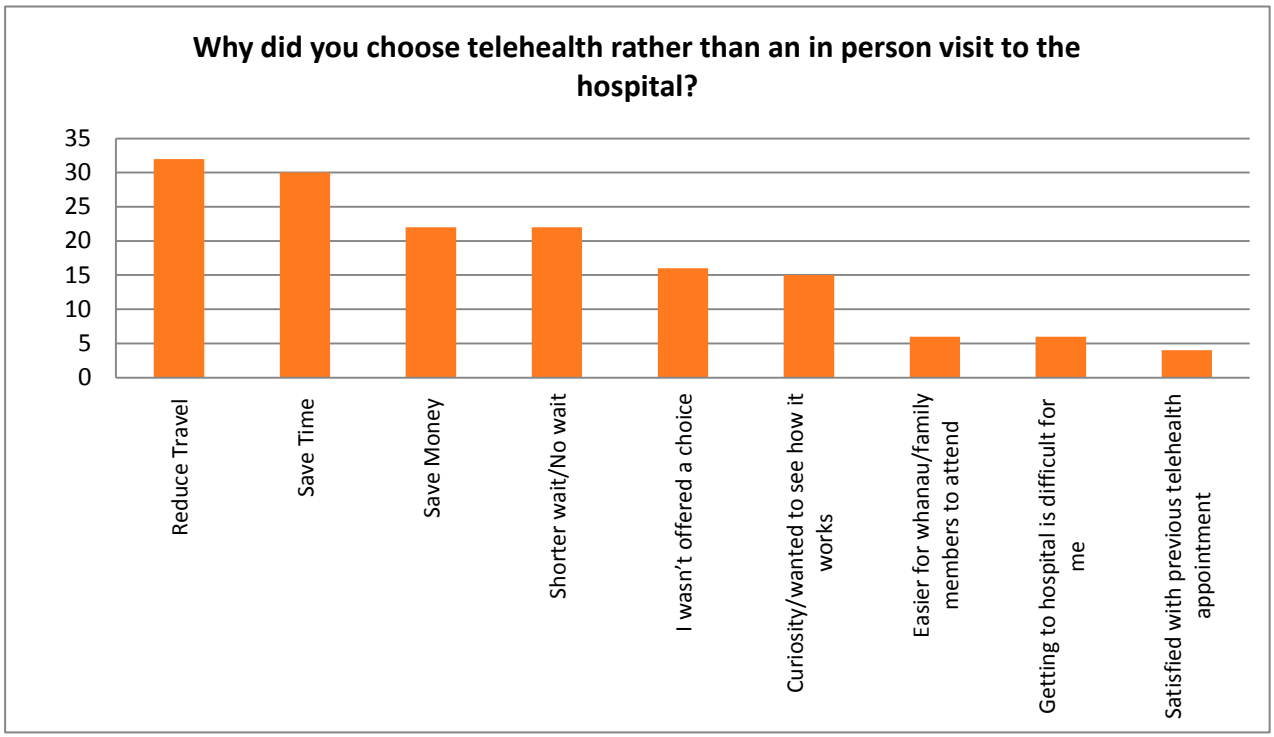




Patients who identified with Pacific, Māori and Asian ethnicities were underrepresented in the survey. The highest response rate was from patients who identified with ethnicities in the other category (80%, n = 48), followed by Asian (13%, n = 8), Māori (5%, n=3) and Pacific (1%, n = 1).

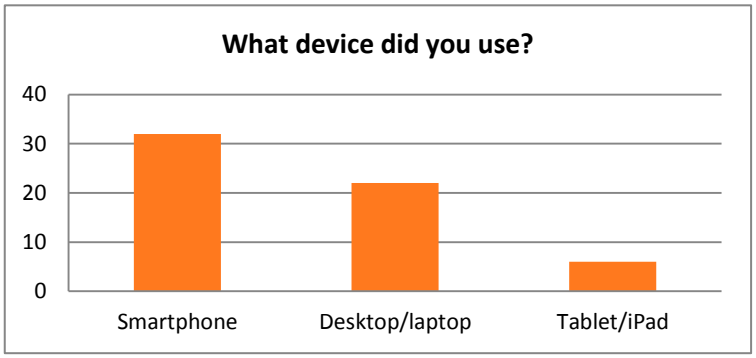


The most frequently selected reasons for choosing a telehealth appointment over a traditional in person visit to the hospital related to convenience. The top four reasons were to reduce travel (n = 32), save time (n = 30), save money (n=22) and a shorter wait (n = 22).

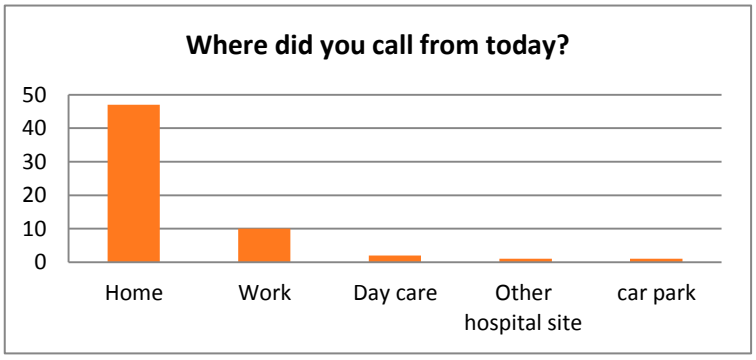


The majority of respondents told us this was their first telehealth call (91%, n = 55). Of the 9% (n=5) respondents who experienced telehealth before, one respondent had experienced one call, two respondents two calls and two respondents three calls.

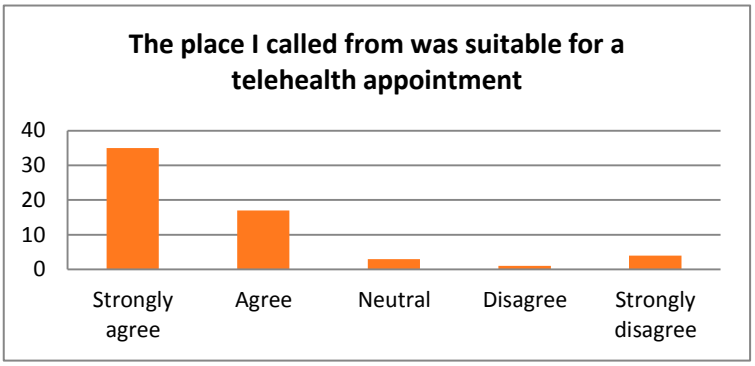
Half of respondents joined their telehealth appointment via a smartphone (53%, n=32). Just over a third joined by desktop/laptop (36%, n=22). A small number of patients (10%, n=6) used a tablet/iPad.



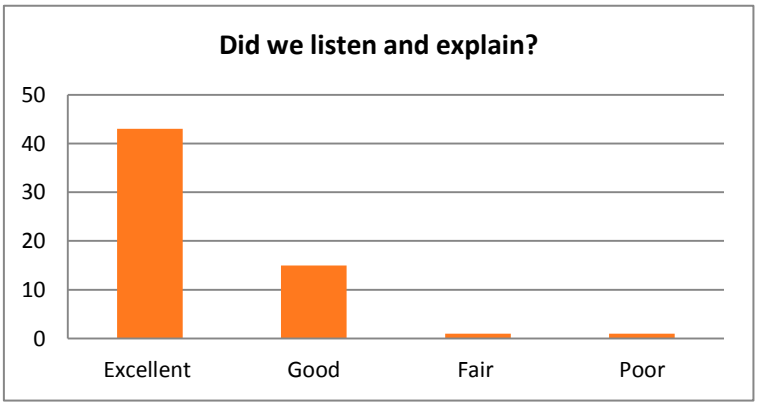
The majority of respondents (77%, n= 47) told us they connected to their appointment from home. A smaller number (16%, n=10) connected from work. Two connected with their children from daycare (3%, n=2), one (1.5%) from another hospital site and one (1.5%) from a car park.



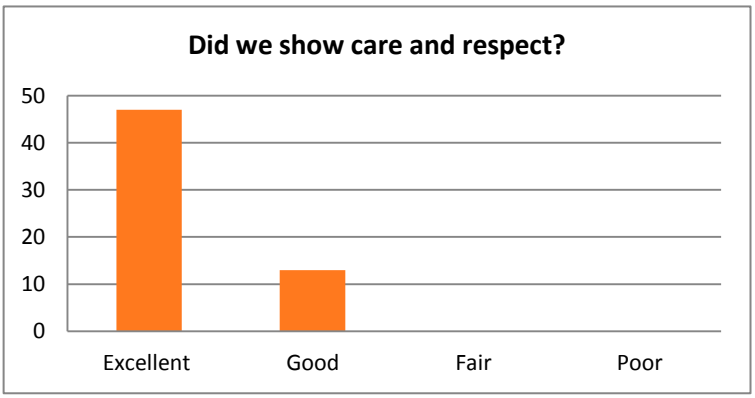
Most respondents 52 (85%) told us the place they called from was suitable for a telehealth appointment. Five (8%) respondents told us the place they called from was not suitable for a telehealth appointment. Three (5%) respondents were neutral.



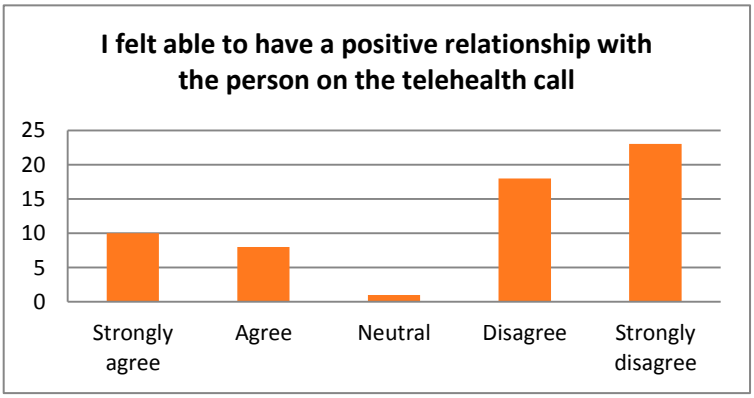
When asked whether we listened and explained during their telehealth consultation, most respondents rated their experience as excellent (72%, n=43) or good (25%, n=15). One (1.5%) rated their experience as fair and one (1.5%) as poor.



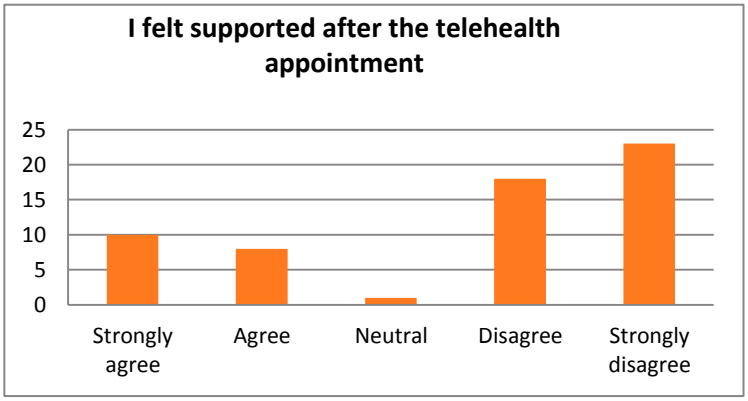
When asked whether we showed care and respect during their telehealth consultation, all respondents were positive. All rated their experience as excellent (78%, n=47) or good (22%, n=13). No respondents rated their experience as fair or poor.



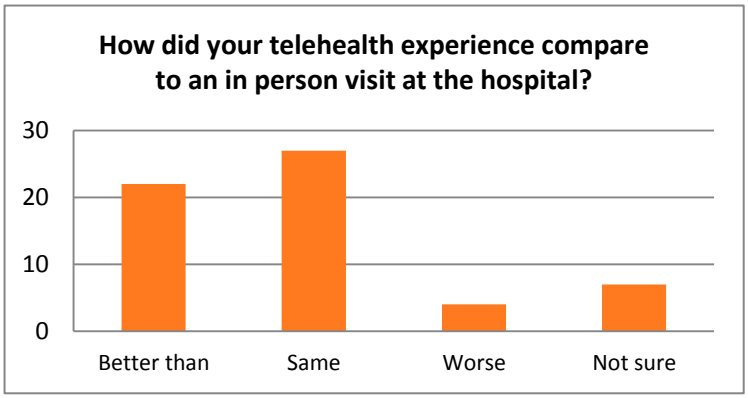
One third (29%, n=18) of respondents felt able to have a positive relationship with the person on the telephone call. Two thirds of respondents (67%, n=41) did not feel able to have a positive relationship with the person on the telehealth call and one respondent (1.6%) was neutral.



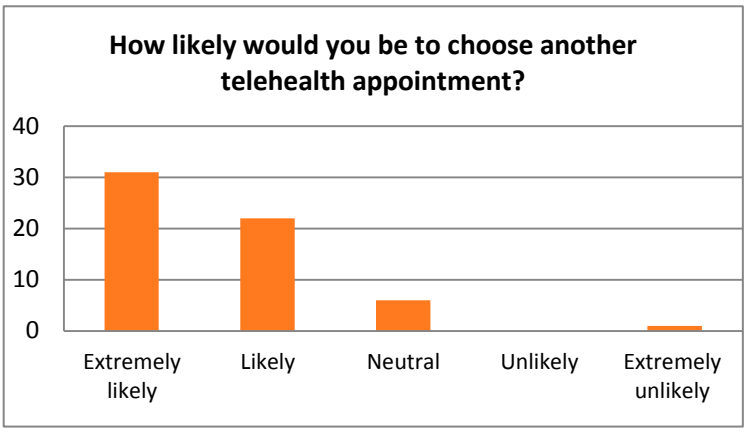
A third of respondents (29%, n=18) told us they felt supported after their telehealth appointment. The majority of respondents (67%, n=41) told us they did not feel supported after their appointment. There was one neutral response (1.6%, n = 1).



When asked how their telehealth experience compared to a traditional in person visit at the hospital, 82% (n = 49) described their experience as the same or better. A small number of people (7%, n=4) told us their experience was worse than an in person visit to the hospital. Reasons included technical issues and concerns the session did not require video and could have been delivered over the telephone. Ninety-one percent of male respondents described their experience as the same or better than an in person visit to the hospital compared to seventy-nine percent of female respondents. The sample sizes are too small to further explore patterns of experience by age.



When asked about the likelihood of choosing another telehealth appointment in the future, 88% (n=53) told us they would be likely or extremely likely to choose another telehealth appointment. A small number of respondents (10%, n=6) were undecided. One respondent (2%) told us they would be extremely unlikely to choose another telehealth appointment.



Patients were invited to provide comments about their telehealth experience. We received comments from 29 patients (48%). The comments were categorised in to three themes: additional positive feedback, connectivity issues and opportunities for improvement.

Additional positive feedback

This theme includes positive telehealth experiences. Respondents told us about the convenience of their telehealth appointments. They told us the appointments saved them travel time and costs and that the clinics ran to time. Some respondents also described the appointments as being easier to join than expected.

> This appointment was for my son. I had an appointment for me yesterday in hospital and I didn't go into my morning appointment until an hour after it should have started due to backlogs. Using telehealth was on time and smooth. Fantastic especially for kids who don't do well waiting at hospital or shutdown and don't cooperate well in a rushed hospital setting.

> Telehealth was a great experience. Reason being the appointment was exactly on time. I have found with my previous appointments at the hospital I have had to wait a while. You are given lots of time slots that you can choose from. You don't have to pay for parking at the hospital. It was easy and straight forward. Felt exactly like I was having an appointment in person with the doctor. Loved not having to wait too long. Would highly recommend this service.

> As a teacher who can't just pop out and leave 25 children behind for an hour or so this is a great service as I only needed cover for 10 minutes.

> It was simple and easy to join. Better than I expected.

> I am use to Skype for video conference calls in my business so this was easy to use.

Connectivity issues

This theme includes feedback about system connectivity issues that some of our respondents experienced. Respondents talked about occasions when the audio or video froze. One patient told us they were unable to resolve the audio difficulties they experienced.

> The screen 'froze' a few times which was unfortunate but the doctor dealt with it fine and re-explained information I may not have heard

> The line cut out after a while so we continued the discussion by phone.

> I could not hear the clinician on Zoom so she had to phone my smartphone so we could speak. We used Zoom but it was a little messy.

Opportunities for improvement

This theme summarises suggestions for ways to improve the telehealth experience. Suggestions included changing the content of the email invite to include better connection instructions, the opportunity to test audio and video before the appointment and text message reminders.

On our part we could have a better view of the legs and feet for xxxx to have more of an idea about the condition of the legs and feet. We will work on that for next time.

It would be good to have the sound worked out prior to the appointment.

You need to recommend that it is easier to use a laptop rather than a phone to connect.

When I was first trying to connect I didn't realise there was a delay and nothing on my screen showed me that so I nearly gave up as I thought I'd got it wrong.

The person who normally calls the patients to make appointments should advise people how simple it is rather than

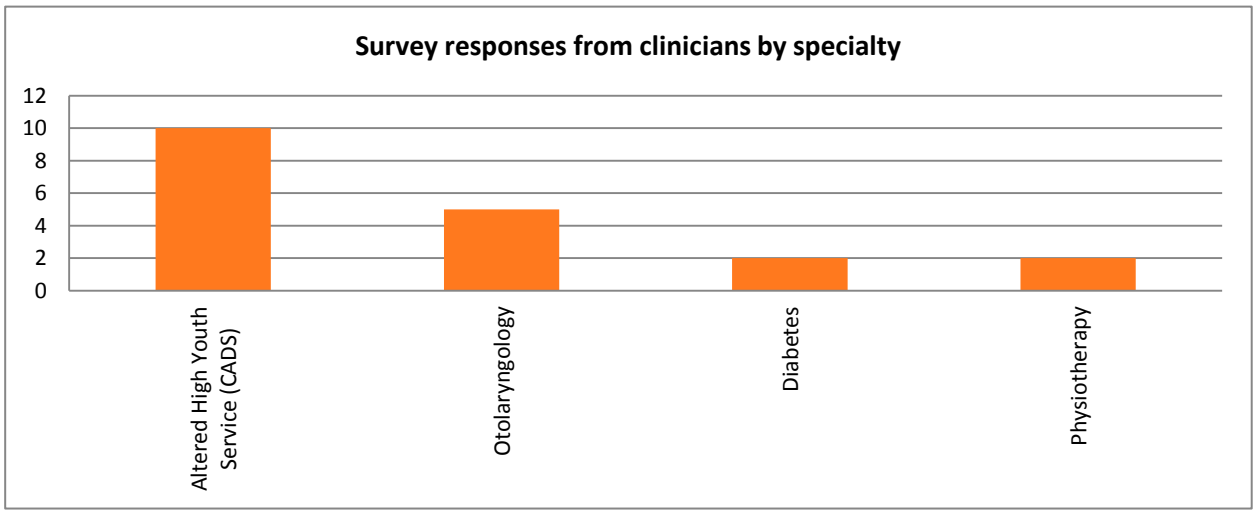
An email sent for each appointment, clearly stating that it's a telehealth appointment. If there's a text message it should mention it's a telehealth appointment

Refine the email message with better instructions.

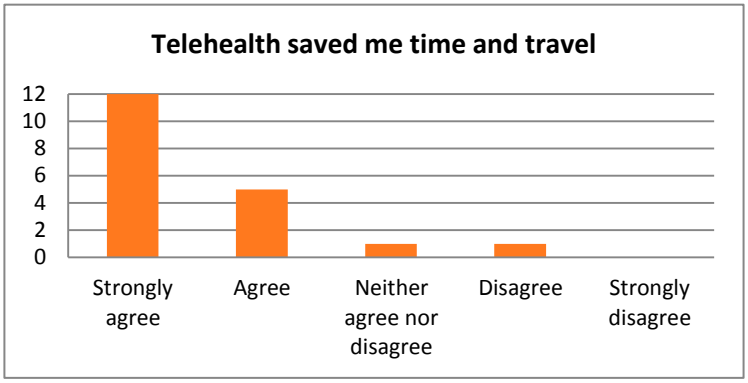
Clinician Experience

Clinicians who delivered telehealth appointments (n = 11) were invited to complete a clinician experience survey via email after each clinic session (Appendix C). We received 19 completed surveys.

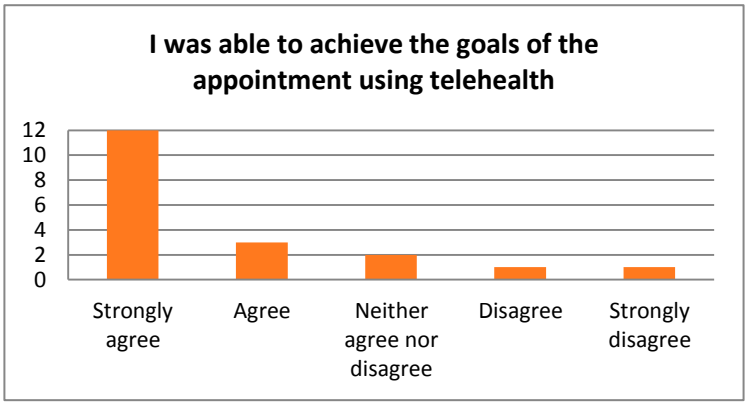
The majority of clinicians who responded to the clinician experience survey were from the altered high youth service (54%, n = 10), followed by otolaryngology (26%, n=5), diabetes (10%, n=2) and physiotherapy (10%, n=2).



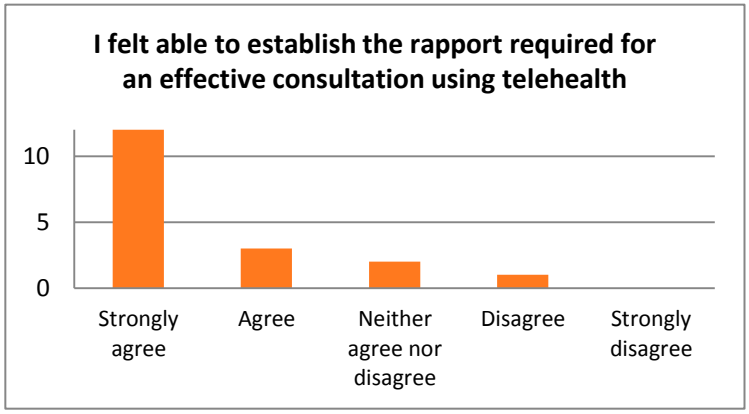
Most clinician respondents (89%, n=17) told us telehealth had saved them time and travel. This included travel to patients in the community and travel to outpatient sites. One clinician (5%) told us telehealth had not saved them any time or travel and one (5%) was neutral.



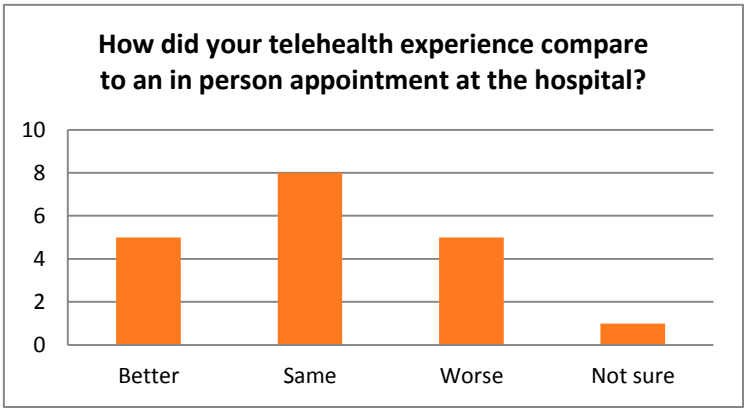
The majority of clinicians (79%, n=15) told us they were able to achieve the goals of their appointment using telehealth. The clinicians who disagreed with the statements (10%, n=2) also reported technical difficulties during their telehealth call. Two respondents (10%) were neutral.



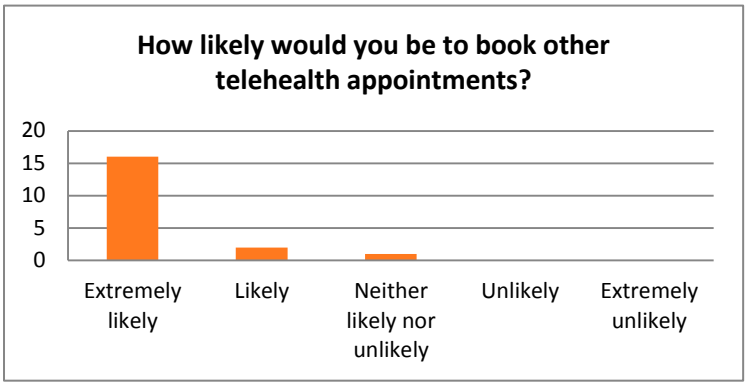
Most respondents (79%, n=16) told us they felt able to establish rapport during their telehealth consultation. The three clinicians (16%) who told us they were unable to establish effective rapport also told us they experienced technical difficulties during their telehealth call.



When asked how their telehealth experience compared to a traditional in person visit at the hospital, just over two thirds described their experience as the same or better (68%, n=13). A quarter of clinician respondents (26%, n=5) told us their experience was worse than an in person visit to the hospital. Reasons included connection/freezing difficulties due to poor wifi connection and one patient coming to the hospital for their appointment due to confusion with the telehealth instructions.



Almost all clinicians (95%, n=18) felt likely or extremely likely to book other telehealth appointments. There was one neutral response (5%). None of our clinician respondents told us they would be unlikely or extremely unlikely to book other telehealth appointments.



Clinicians were invited to provide comments about their telehealth experiences. We received comments from 10 clinicians. The comments were categorised in to three themes: Equipment, connectivity issues and opportunities for improvement.

Equipment

This theme includes feedback about equipment required for telehealth appointments. Clinicians that did not have a second screen told us they would like one and those that had two screens described them as beneficial. Our otolaryngology clinicians also proposed providing parents with tools to facilitate remote examination.

> Equipping parents with tools for examination eg a throatscope for oral examination

> Only one screen at Waitakere diabetes clinic therefore can not review notes whilst discussion with patients.

> Using the double screen in the doctor's office was great.

Connectivity issues

This theme includes feedback about system connectivity issues that some of our clinicians experienced. Respondents talked about some difficulties with wifi when away from the hospital base. Another talked about difficulties with the scheduling tool.

> Wifi issues at our end, therefore unable to proceed with Zoom apt.

> I received multiple notifications that my meeting attendee was waiting – not sure why that happened

Opportunities for improvement

This theme summarises suggestions for ways to improve the telehealth experience. Suggestions included providing patients with additional instructions to access Zoom and opportunities to utilise sessions in the event of patients not connecting to the call.

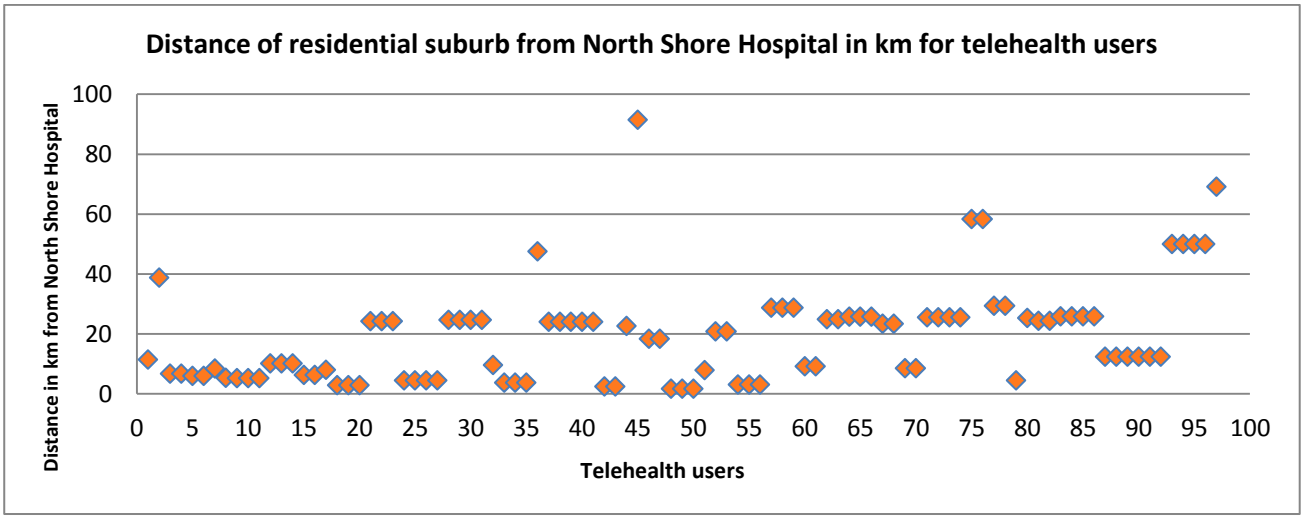
> A set of instructions we can send the client beforehand.

> Maybe consider an 'on-demand' capability if there is a DNA.

3.3 Appointment costs

Distance and travel costs

Our telehealth patients/clients saved a total of 1,858km of travel by connecting to their appointments remotely rather than travelling to North Shore Hospital (mean 18.9km, median 18.3km, range 89.7km). The distances saved per patient/client are summarised in the scatterplot below.



We calculated the travel distance between residential suburb and North Shore Hospital (outpatient location) for all 98 patients who accepted a telehealth appointment. Refer to appendix D for methodology and assumptions.

We considered the cost of two transport options used by patients attending outpatient appointments: private vehicle and public transport. We prioritised private vehicle and public transport as these were identified as the most frequently used in an outpatient survey of 257 patients between March-August 2018. In the Waitematā DHB survey the majority of patients (85%, n=221) told us they travelled by private vehicle

and 2% (n=5) told us they used public transport. The remaining 10% (n=31) of patients told us they used 'other' forms of transport including walking and bicycle.

The minimum distance that our telehealth cohort would have travelled from their residential suburb to an outpatient appointment at the hospital was 3.80km, and the maximum 193.20km (range 189.4km). The cost of travelling these distances to an appointment by private vehicle ranged from $11.09 to $272.87, with an average cost of $106.30.

Value	Distance (km)	Cost for private vehicle	Cost for public transport
Minimum	3.80	$11.09	$0.00
Maximum	193.20	$272.87	$171.96
Range	189.4	$261.78	$171.96
Average	37.62	$106.30	$68.00

Due to large variations between minimum and maximum travel distance and associated costs, we split the data into two groups: patients living within a 10km radius of North Shore Hospital and patients living further than a 10km radius from North Shore Hospital. The 10km radius was chosen as it best allowed for an even distribution of patients in each group (refer to distance of residential suburb graph above). The table below summarises distance and cost for both groups.

Group	Value	Distance (km)	Cost for private vehicle	Cost for public transport
Patients living within 10km radius of North Shore Hospital	Minimum	3.80	$11.09	$0.00
	Maximum	25.60	$112.67	$79.32
	Range	21.80	$101.58	$79.32
	Average	**13.34**	**$82.62**	**$59.68**
Patients living more than a 10km radius from North Shore Hospital	Minimum	39.60	$39.97	$0.00
	Maximum	193.20	$272.87	$171.96
	Range	153.60	$232.90	$171.96
	Average	**61.42**	**$129.98**	**$76.31**

If eighty five percent of our telehealth cohort had travelled to a traditional in person outpatient appointment in a private vehicle it would have cost approximately $8,171.24. This calculation assumes half of our patients lived within a 10km radius of North Shore Hospital and half lived further from North Shore Hospital. If five percent had travelled by public transport it would have cost approximately $301.82. This calculation assumes half of our patients lived within a 10km radius of North Shore Hospital and 50% lived further from North Shore Hospital. We assumed patients who travelled by other means including walking and bicycle did not incur any travel costs.

Travel method	Average cost per patient		Number of patients based on assumptions	Total
Private vehicle	≤ 10km radius from North Shore Hospital	$82.62	38.5	$3,180.87
	≥10km radius from North Shore	$129.62	38.5	$4,990.37

	Hospital			
	Parking costs	$8.20	38.5	$315.70
		$20.40	38.5	$785.40
Public transport	≤ 10km radius from North Shore Hospital	$59.68	2.5	$149.20
	≥10km radius from North Shore Hospital	$76.31	2.5	$152.62
			Grand total	**$9,574.16**

By eliminating travel to an outpatient clinic we saved our telehealth cohort in the region of $9,574.16 in travel costs.

Leave and potential loss of income

The majority of people who attended telehealth appointments are of working age and therefore would have required time away from work or other commitments to attend an outpatient appointment.

Our telehealth appointments are the same duration as a traditional in person visit to the hospital, however they do not require patients to travel to the hospital. A traditional in person visit to the hospital may require up to four hours including travel, parking and wait times. We considered the amount of leave and potential loss of income for our telehealth cohort had they needed to travel to a traditional in person appointment at the hospital. The total cost incurred from loss of earnings for our telehealth cohort is estimated to be $5,299.20. Refer to appendix D for methodology and assumptions.

Income category	Number/% assumed in telehealth cohort	Cost incurred per patient	Cost incurred by cohort
Living Wage: Patients living in Rodney area	24 (25%)	$18.40 per hour x 8 hours = $147.20	$1,177.60
Living Wage: Patients living in North Shore or Waitakere area	53 (54%)	$18.40 per hour x 4 hours = $73.60	$3,900.80
Tertiary rate	7 (7%)	$0.00	$0.00
Unemployment rate	7 (7%)	$0.00	$0.00
Retired: 65-75 years (self drive)	4 (4%)	$0.00	$0.00
Retired: >75 driven by supporter	3 (3%)	$18.40 per hour x 4 hours = $73.60	$220.80
Total cost incurred from loss of earnings for telehealth cohort			**$5,299.20**

3.4 Carbon savings

In addition to costs saved through the private vehicle model, we also considered the amount of carbon emissions saved by not travelling to North Shore Hospital. We used the values published by The Society of

Motor Manufacturers and Traders (SMMT)[1] for new cars in 2017. As older cars produce more carbon per kilometre this calculation likely understates the potential carbon savings associated with reduced need to travel to outpatient appointments.

A vehicle manufactured in 2017 produces 125 CO2g/km. We multiplied this measure by the total number of kilometres for a round trip. We estimate our patient cohort saved approximately 323,926g carbon by accepting a telehealth appointment and eliminating the need to travel to an outpatient appointment.

Value	Approximate Carbon emissions saved (grams)
Minimum	700
Maximum	18575
Average	4627.5
Total	**323,926**

2.1 Waitematā DHB savings

Waitematā DHB can benefit from cost savings when the clinician holds their clinic 'offsite'. This is because telehealth clinics completed outside of the outpatient buildings do not require a clinic room or nurse. In otolaryngology (ORL) the clinicians use their office or other private space for the video appointments. We therefore used otolaryngology figures to understand the potential savings of this model.
We reviewed CS2 standard national costing data to define the cost of attended consultant led otolaryngology outpatient appointments between January and June 2018. The table below summarises the average cost for traditional in person appointments compared to telehealth appointments. The average cost saving per telehealth appointment is estimated to be $151.00.

Average cost of traditional in person ORL appointment delivered in outpatient clinic	Average cost of ORL telehealth appointment delivered outside of outpatient clinic (SMO, RMO and management/professional labour only)	Average saving for ORL appointment delivered via telehealth
$282.95	$131.95	$151.00
	$11,229.87	

4. Opportunities for improvement and changes to date

2.2 Changes to date

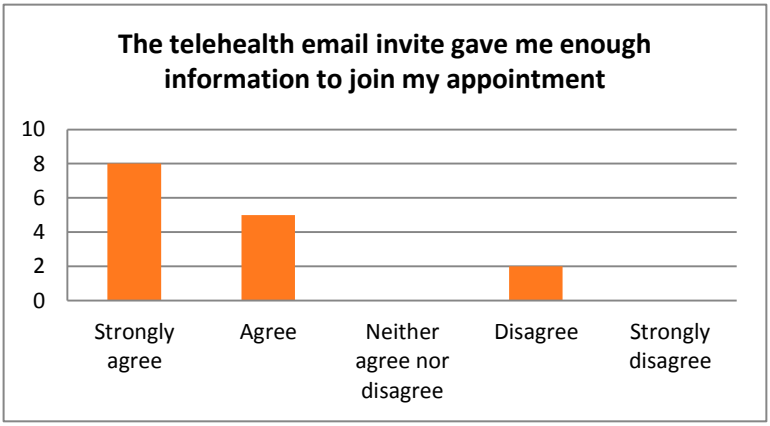
We monitored patient and clinician feedback throughout the trial and have started to respond by exploring options to change our processes.

Since starting our telehealth trial we have tested the following changes:

- added a test call option to the email invitation
- text reminder for telehealth appointments
- made changes to the email invite to

[1] https://www.smmt.co.uk/wp-content/uploads/sites/2/SMMT-New-Car-Co2-Report-2018-artwork.pdfd

- include more information
- include a link to the Zoom site for frequently asked questions
- added Waitematā DHB branding



In November 2018 we added a question to our patient survey to gather feedback about changes to the telehealth email invite. Since adding the question we have received responses from sixteen patients. The majority of patients (81%, n=13) who provided feedback within the four month evaluation period either agree or strongly agree that the telehealth email invite provides enough information to join the appointment. Twelve percent (n=2) of patients felt the telehealth email did not include enough information to join successfully. We have also received anecdotal feedback that some patients continue to have difficulties accessing their telehealth call via the URL link provided in the email. We will continue to explore options to simplify both the connection process and the information we provide. We are currently testing a different connection process with our diabetes team and plan to review our email and instructions with Waitematā DHB's consumer advisory group at the end of March.

2.3 Further opportunities for improvement

2.4 Barriers to scalability

4. Discussion

Just over half of patients/clients chose a traditional in person appointment at the hospital over a telehealth appointment. Approximately 50% of those who declined told us they would rather see someone in person. The reasons for preferring to see someone in person are likely varied and would benefit from further exploration. Smaller numbers or patients/clients told us they did not feel confident with computers or did not have internet access or a space suitable to take the call. Access to a suitable device, internet connectivity and a suitable space are all prerequisites for telehealth. Lack of access is a concern as they present inequities in the ability to access care via telehealth.

There did appear to be an age effect. Proportionally more patients aged 55-71+ declined a telehealth appointment than those aged 18-54. This may reflect device ownership, access and exposure to technology in the workplace.

Just under half of patients chose a telehealth appointment over a traditional in person appointment at the hospital during our trial. Physiotherapy had the highest proportional uptake (65%) followed by

otolaryngology (62%) and then diabetes (18%). Otolaryngology had the highest number of telehealth appointments (n = 67).

There are three differences in telehealth delivery models across physiotherapy, otolaryngology and diabetes which may have impacted update and volumes. Firstly, otolaryngology added two additional consultant led clinics to their outpatient roster totalling an additional 16 appointments each month. Each clinician had a designated booking clerk who was able to dedicate their time to scheduling the additional clinics. Physiotherapy and diabetes were less structured with their telehealth appointments. They incorporated telehealth appointments into existing clinics which did not have allocated telehealth times nor designated booking resource. Secondly, otolaryngology clinics were run by doctors. Physiotherapy and diabetes clinics during this trial were predominantly allied health led. It is possible that patients were more likely to accept doctor's appointments than allied health appointments. Thirdly, otolaryngology targeted paediatric patients and not adult patients like physiotherapy and diabetes. Parents represent a demographic that may prioritise convenience more than other patient groups and therefore may be more likely to accept a telehealth appointment.

The most frequently selected reasons for choosing a telehealth appointment were to save time, travel and money. Patients/clients also talked about convenience in their qualitative feedback. People told us they did not have to take as much time off from work, that the appointments ran to time and they liked not having to manage parking. A traditional in person visit to the hospital may require up to four hours including travel, parking and wait times. Telehealth eliminates the need to travel, park and wait at the hospital. As a result patients/clients can allow thirty minutes for an appointment rather than the four hours required for a visit to the hospital. This means telehealth users can reduce time away from work and other commitments. These findings are consistent with reports in the telehealth literature.

The majority of telehealth users were working age and would have required time away from work to attend an appointment at the hospital. Time away from work can result in loss of earnings. By eliminating the need for time away from work we estimated the telehealth patient/client cohort in the trial saved a combined $5,300. This is in addition to travel savings. By eliminating travel to and from their appointments we estimated the telehealth patient/client cohort in this trial saved a combined $9,500. This is an overall potential saving of $14,800 or an average of $151.00 which patients can put back into their local economy and community.

Patients/clients who live furthest away from the hospital have the most to gain in terms of time, travel and money. The furthest distance saved in our cohort was for a patient who lives 96.6km away from North Shore Hospital in Mangawhai Heads. As well as saving time and money, reduced travel also has potential to contribute toward reductions in hospital presentations associated with respiratory illness. A recent paper by Mark Jacobson[2] professor of civil and environmental engineering at Stanford shows a link between increased carbon pollution and increased cases of respiratory illness due to temperature changes. Therefore, telehealth could help to reduce the amount of vehicles on the road and as a result contribute to a reduced rate of hospitalisation for respiratory illnesses.

Clinicians described time and travel savings too. Savings were greatest for clinicians who would have usually completed their visits in the community, and for those who would have traditionally held their clinics at the hospital but were now able to run them off site. 'Off site' clinics require less resources than traditional outpatient clinics as they do not need a clinic room, receptionist or nurse. We estimate cost savings of $167.61 per appointment for telehealth clinics held off site.

[2] https://web.stanford.edu/group/efmh/jacobson/Articles/V/2007GL031101.pdf

As well as convenience, most telehealth users were positive about the quality of their telehealth experience: more than 80% of patients/clients and over two thirds of clinicians described their experience as the same or better than an in person appointment at the hospital. A higher proportion of patients/clients and clinicians told us they would choose another telehealth appointment. When asked how likely they would be to choose another telehealth appointment in the future, 88% of patients/clients and 95% of clinicians told us they would be likely or extremely likely. There were no clear differences in experience by ethnicity, gender or age.

Nearly all telehealth users provided positive feedback about the clinician's ability to listen, explain and demonstrate respect. Almost all patients/clients rated listening and explanation as good or excellent and care and respect as good or excellent. The net promoter score for our telehealth cohort in both of these areas was slightly higher than the net promoter scores in our outpatient department in the same time period. The telehealth respondents provided a net promoter score of 70 compared to an outpatient score of 65 when asked about listening and explaining. The telehealth respondents provided a net promoter score of 78 compared to an outpatient score of 75 when asked about showing care and respect.

Despite the overall positive experience ratings, two thirds of patients/clients told us they did not feel able to have a positive relationship with the person on the telehealth call and that they did not feel supported after the appointment. This finding requires more consideration. We do not have comparison data for patients/clients who attend in person appointments so it is unclear whether this finding is specific to telehealth or our broader outpatient system. Clinicians can develop specific communication skills and 'webside manner' to facilitate more effective telehealth appointments. There are a number of online courses available that focus on effective telehealth facilitation to optimise clinical outcomes. We have not systematically addressed webside manner or facilitation skills, but there are a number of materials available which could help our clinicians to develop the skills required to manage rapport and relationships via telehealth.

In contrast 79% of clinicians agreed or strongly agreed they were able to establish rapport to achieve an effective telehealth consultation. The majority also felt able to achieve the goals of their appointment via telehealth. Clinicians who had concerns about rapport and achieving the goals of their session also told us they experienced some technology or connectivity issues during their appointments.

Technology and connectivity issues were reported most frequently in the first half of the trial. Problems included not having enough information in the email to connect to the appointment and not being able to complete a practice call to test the camera and sound. There are ongoing opportunities to improve the process including further developments to the email invite and text reminders. As we scale the use of telehealth we will also need to expand our support tools to ensure patients/clients and clinicians are equipped with the tools they need to trouble shoot.

6. Conclusion and next steps

Telehealth can be a convenient and effective way to deliver outpatient appointments for some patients and clinicians. Telehealth can provide time, travel and financial savings for patients/clients, clinicians and organisations at a time when demand on these resources is high. It may also help to increase accessibility to outpatient services for people who live long distances from hospital sites and those with busy schedules. The findings from our trial suggest it is possible to achieve these benefits whilst maintaining quality and a

positive patient/client and clinician experience. Furthermore patients who have had a positive experience are highly likely to access more telehealth appointments in the future.

However telehealth may not be universally acceptable or accessible for all patients/clients. Approximately half of patients would choose a traditional in person visit over a telehealth appointment. Patients/clients in older age groups may be less likely to accept because of limited access or confidence to use the internet and electronic devices. It is important we explore opportunities to support these groups and avoid creating further inequities in access and outcomes.

Whilst telehealth may not be universally accepted at present it has potential to become a valuable tool to deliver timelier, convenient care closer to home and can positively impact society by providing cost and time savings to individuals and their broader communities.

The next steps are to continue to refine the patient experience by:

- inviting patients and clients to provide feedback about their experience
- improving the email invite
- automating text message reminders.

Improve the clinician and booking clerk experience by:

- implementing mode of delivery 'video conferencing' in iPM
- integrating telehealth room bookings into our booking and scheduling tool iPM with support from the regional telehealth project phase 2
- encouraging our clinicians to network with their telehealth peers to share ideas and opportunities for further development.

In addition to refining we plan to scope what is required to scale this work so that other patients/clients and clinicians can develop telehealth models of care in their specialties.

7. Appendices

7.1 Appendix A: Patient survey for patients who declined a telehealth appointment

Question	Response options
Waitematā DHB is collecting information about telehealth to help make it better. We would like to know why people don't want to make telehealth appointments. Do you agree to telling me the reasons you don't want to make a telehealth appointment today? What you say won't be included in medical notes and won't change the care you receive.	I don't have regular access to the internet
	I don't feel confident enough with computers
	I don't have space where I can take a telehealth call
	I would rather see someone in person
	I am worried that information about me and my health could be shared
	I am too busy to be seen in any clinic at the moment
	I no longer require an appointment
	Other (please specify)

7.2 Appendix B: Patient experience survey for patients who accepted a telehealth appointment

	Question	Response options
1.	Please select your gender	Male Female Gender diverse
2.	Please select your age	18 or under 19-30 31-40 41-55 56-70 71+
3.	Please select your ethnicity. Choose all that apply.	New Zealand European Māori Cook Island Māori Samoan Tongan Niuean Chinese Indian Other (please specify)

4.	What suburb do you live in?	Comments box
5.	Who did you see today?	Altered High Youth Service Diabetes Otolaryngology Renal Physiotherapy
6.	Is this your first telehealth appointment?	Yes No I'm not sure
7.	If no, how many telehealth appointments have you had?	Comments box
8.	Why did you choose telehealth rather than an in person hospital visit? Choose all that apply.	Shorter wait/no wait Satisfied with previous telehealth appointment Curiosity/wanted to see how it works Reduce travel Save time Save money eg parking, fuel, travel costs Easier for whānau/family members to attend Getting to the hospital is difficult for me I wasn't offered a choice Other (please specify)
9.	What device did you use?	Smartphone Tablet Desktop/laptop
10.	Where did you call from today?	Home Work School/college/university Other (please specify)
11.	The place I called from was suitable for a telehealth appointment	Strongly agree Agree Neutral Disagree Strongly disagree
12.	The telehealth email invite gave me enough information to join my appointment	Strongly agree Agree Neutral Disagree Strongly disagree
13.	I felt able to have a positive relationship with the person on the telehealth call	Strongly agree Agree Neutral Disagree Strongly disagree
14.	I felt supported after the telehealth appointment	Strongly agree Agree Neutral Disagree Strongly disagree

15.	How easy was it to join your telehealth appointment?	Excellent Good Fair Poor
16.	How easy was it to see the person on the telehealth call?	Excellent Good Fair Poor
17.	How easy was it to hear the person on the telehealth call?	Excellent Good Fair Poor
18.	Did we listen and explain?	Excellent Good Fair Poor
19.	Did we show care and respect?	Excellent Good Fair Poor
20.	Did we meet your expectations?	Excellent Good Fair Poor
21.	How did your telehealth experience compare to an in person visit at the hospital?	Better than Same Worse Not sure
22.	How likely would you be to choose another telehealth appointment?	Extremely likely Likely Neutral Unlikely Extremely unlikely
23.	How likely are you to recommend a telehealth appointment to friends or family?	Extremely likely Likely Neutral Unlikely Extremely unlikely
24.	Is there anything that would improve your telehealth experience?	Comments box
25.	Any comments	Comments box

7.3 Appendix C: Survey for clinicians delivering telehealth sessions

	Question	Response options
1.	Please select your profession	AOD clinician Dietitian Doctor Nurse Physiotherapist Other
2.	Please select the specialty area you work in	Altered High Youth Service Diabetes Otolaryngology Physiotherapy Other
3.	What device did you use?	Smartphone Tablet/iPad Desktop/laptop
4.	How easy was it to join your telehealth appointments?	Excellent Good Fair Poor
5.	How easy was it to see the person on the telehealth call?	Excellent Good Fair Poor
6.	How easy was it to hear the person on the telehealth call?	Excellent Good Fair Poor
7.	Telehealth saved me time and travel	Strongly agree Agree Neutral Disagree Strongly disagree
8.	I was able to achieve the goals of the appointment using telehealth	Strongly agree Agree Neutral Disagree Strongly disagree
9.	I felt able to establish the rapport required for an effective consultation using telehealth	Strongly agree Agree Neutral Disagree Strongly disagree
10.	How did your telehealth experience compare to an in person appointment at the hospital?	Better Same Worse

		Not sure
11.	How likely would you be to book other telehealth appointments?	Extremely likely Likely Neutral Unlikely Extremely unlikely
12.	Is there anything that would improve your telehealth experience?	Comments box
13.	Any other comments	Comments box

7.4 Appendix D: Assumptions and methodology for distance and travel costs

Distance

We reviewed the residential suburb and postcode for all 98 patients who accepted a telehealth appointment. We used google maps to calculate distance in kilometres between the patients' address and North Shore Hospital. We decided to use the suburb rather than the exact residential address in order to group patients for easier analysis. Therefore, a centre address was assumed for each suburb and postcode and entered as the start position heading towards North Shore Hospital. Google Maps could output the driving distance in kilometres for this trip, which has been doubled in order to account for the travel home as well.

For particular cases, there were postcodes that contained multiple suburbs, causing the centre point not to fall within the specific suburb of choice. Therefore, only the suburb was used to find an estimated centre address. These included Red Beach, Silverdale, Stanmore Bay, Birkenhead, Chatswood, Massey, Te Atatu Peninsula, Glen Eden and Henderson.

Transport Costs

We considered the cost of two transport options used by patients attending outpatient appointments: private vehicle and public transport. We prioritised private vehicle and public transport as these were identified as the most frequently used in an outpatient survey of 257 patients between March-August 2018: 85% of respondents (n = 214) travelled by private vehicle and 5% by public transport.

Private Vehicle

This particular model is based on the patients driving a car with a petrol engine - the most common type of private vehicle used in Auckland. As there is no data available to tell the year, make and model of each car that would have been driven, we have used the Inland Revenue Department (IRD) value of 0.76 dollars per km (2018)[3]. This is calculated by analysing the current petrol costs and fixed vehicle costs annually. Each previously calculated distance has been multiplied by 0.76 dollars per km to gain the driving cost saved.

For private vehicles, parking at North Shore Hospital also needs to be considered, which is dependent upon the length of stay. The values for each hour spent in the car park are shown on Waitematā DHB's website,

[3] https://www.ird.govt.nz/business-income-tax/expenses/mileage-rates/emp-deductions-allowances-mileage.html

so have been used to estimate the cost. It has been assumed that half of the patients will have stayed for one to two hours, giving a cost of $8.20, while the other half of patients are likely to have stayed for a minimum of four hours equating to $20.40. This gives a general estimation for parking times/costs.
Lastly, the patients who live further north than Orewa will have been required to pay a toll. This route is the quickest option to North Shore Hospital, so it has been assumed that this route will be chosen and therefore, the toll will be required. It is $2.30 for cars to drive on the toll road one way, meaning for a round trip this value has been doubled and recorded.

Public transport
The second model looks at public transport as a way of getting to and from North Shore Hospital. Assuming that all patients use a Hop Card, the cost of all trips has been calculated where in this case, all are by bus. This was completed through the Auckland Transport Journey Planner by inserting the residential address used in the distance calculation, and the address of North Shore Hospital. This could then output the bus routes and the price of each one, where the cheapest route has been chosen to get a minimum cost and doubled to incorporate the cost home.

Each bus fare is dependent upon the day of travel and age of the passenger, so have been calculated accordingly for each patient. For all of these calculations, it has been assumed that trips are not taken on the weekend as currently there are no available clinics on these days. Looking at age, it is free for those 65 years and over, as well as children under the age of 5 who are accompanied by a fare-paying passenger. A child fare is considered to be those between 5 and 15 years old and has been accounted for. Additionally, there are student concessions for those at high school who do not qualify for a child fare, which we have assumed to be between ages 16 and 18. As well as tertiary concessions for those completing tertiary education which is assumed to be between ages 19 and 21. Due to secondary concession prices not being displayed, it is assumed that the cost to be the same as for a tertiary student.

This model also needs to consider whether the patient would require someone to accompany them to the appointment to be analysed. For those 17 years and under, it has been assumed that they require a parent or someone to also attend, meaning that an additional bus fare for this adult would be required.
In some cases, the residential address was not close to a potential station as the suburb does not have available public transport supported by Auckland Transport. This means that the patient is required to use their car up to this point and then catch a bus. This additional cost has been accounted for by using the same method for the private vehicle model.

Loss of income

The majority of telehealth patients in our trial were children accompanied by parents or supporters. For a traditional in person outpatient appointment patients, parents or supporters may need to take a half day leave (four hours) to attend North Shore Hospital. Assuming whether the patient, parent or supporter may have needed to take at least half a day (four hours) of leave to attend the appointment at North Shore Hospital. For this purpose, it is assumed that these people are on the living wage of $20.55, which equates to a tax rate of 10.5% by working 8 hours a day (take home $18.40 per hour). This is because it will give an approximate minimum model for these patients.

Within New Zealand, the unemployment rate is 3.9% and this has been taken into consideration for our population. This equates to approximately 4 people out of the 98), meaning that these four will not lose any income by attending the appointment. This has been recorded as zero dollars.

A tertiary education rate of 7% has been assumed, which of the 98 telehealth patients, gives approximately 7 people. These people will not lose any income by travelling to North Shore Hospital as they do not receive any income.

Patients 65 years and over are assumed to be retired as this is the average retirement age in New Zealand. This means no income will be lost through the hospital appointment themselves. Between 65 and 75 years, it's assumed they can drive themselves, and above 75 the cost for someone else to drive them has been incorporated, where this additional person takes four hours of leave on the living wage. However, in the public transport model, it was assumed that they can catch public transport alone.
For those 18 and under, it is assumed that they are at school meaning that no income is lost on this day. However, those 17 years and under are assumed to require someone to accompany them to the appointment, usually a parent, and this person's half a day of leave on the living wage has been accounted for.

Patients between 19 and 21 are assumed to be undertaking tertiary study and therefore, will not be losing any income by attending the appointment. This is the most common age range for tertiary students due to the high number of 3-year degrees and majority of students beginning straight after completion of secondary school.

Patients who live around Warkworth and further are assumed to require a full day (eight hours) off work, due to the amount of time it takes to drive to North Shore Hospital. This equates to a loss of $147.138 by attending this appointment.

The remaining patients are assumed to take half a day of leave (four hours) to attend the appointment at North Shore Hospital. By using the living wage, this equates to a loss of $73.569. All of these particular costs have been added to the money saved for both transport models.