Hospital based specialists’ perspectives of teleconsultation use during the COVID-19 pandemic
Eunice Chou, Andrew McCombie, Tim Eglinton

ABSTRACT
AIMS: Teleconsultation has been widely utilised during the COVID-19 pandemic. It allows clinicians to provide healthcare social distance restrictions. This study investigates its safety and limitations in different specialties and the possibility of incorporating telemedicine into future practice.
METHODS: This was a qualitative study of 151 hospital-based specialists in New Zealand. An electronic questionnaire was sent via email addresses. These included participants’ demography and their experience of using teleconsultation during the pandemic. The safety and suitability of teleconsultation were assessed with time efficiency, data security concerns, missed clinical information and specialist’s ability to examine patients.
RESULTS: This study found that 92.7% of hospital-based specialists used teleconsultation during the pandemic. More specialists reported the efficiency was similar or greater with teleconsultation and most patients could be seen via teleconsultation appointments. Limitations of these were due to poor physical examination and poor non-verbal cues sensing. There is a general preference for physical consultation.
CONCLUSION: Teleconsultation is used widely across many specialties during the pandemic. Despite limitations identified with teleconsultations and preference for physical consultation, doctors are prepared to provide teleconsultations in the future beyond the pandemic. In appropriately selected patients, especially in non-procedural specialties, teleconsultation will have an increasing role in healthcare.

During the COVID-19 pandemic, social distancing has been mandated to prevent and reduce the transmission of COVID-19. Thus, traditional person-to-person outpatient appointments were highly restricted to ensure patient and clinician safety. Consequently, the pandemic became a catalyst to the rapid expansion of telecommunication, including the use of teleconsultation in medicine. Teleconsultation is often known as telehealth, telemedicine or remote consultation. It involves the clinician using an electronic device to interact with patients. These include phone calls and video conferencing via various platforms like Zoom or Skype. Zoom statistics has demonstrated a 2900% increase in meeting participants daily since the start of the pandemic. This trend has been evident in the use of telemedicine with a journal article demonstrating that teleconsultation use has increased substantially during the pandemic in many countries. In Europe, the number of teleconsultations via phone call and video conferencing nearly tripled over three months during the pandemic.

There have been studies investigating the role of teleconsultation during the COVID-19 pandemic. Among strategies that reduce infection transmission including wearing face masks, sneezing/coughing into elbow and hand hygiene, researchers have reported teleconsultation to be an effective way of minimising virus transmission via avoiding person-to-person contact while still providing care to patients. Heavily burdened countries have used teleconsultations to diagnose and monitor COVID-19 infected patients. A systematic review suggests that teleconsultation was most useful in providing non-urgent care and follow-up appointments for patients with chronic conditions during the pandemic. These specialties include immunology and allergy, oncology, diabetes and mental health services. These reports suggested that these specialties were well suited for teleconsultation that could be integrated into future practice.

No studies have investigated doctor’s views of teleconsultation use during the COVID-19 pandemic in New Zealand. Most international studies have focused on the immediate benefits of remote consultations in reducing the morbidity and mortality of COVID-19 in this pandemic rather than the perceived safety and efficiency of this novel delivery of medical care and where its limitations may lie.
This study investigates the perspectives of Canterbury's hospital-based specialists on teleconsultation appointments during the COVID-19 pandemic. The aim of this study was to investigate the amount of teleconsultation used across specialties and to assess the acceptability and safety of these appointments. It also sought viewpoints concerning the possibility of continuing teleconsultations after the pandemic and incorporating these into normal practice. This study was approved by the University of Otago Human Ethics Committee, 20/057.

Material and methods
Participants
Participants were included in the study if they were hospital-based specialists working in the Canterbury District Health Board (CDHB). All specialists were invited via their email addresses to complete an electronic questionnaire on Research Electronic Data Capture (REDCap) electronic data capture tools hosted at University of Otago.10,11 Participants provided informed consent by agreeing to complete the survey. Surveys were distributed firstly on 10 August 2020 and then on 4 September 2020, to those who did not respond to the initial survey.

Questionnaire
The questionnaire consisted of multiple-choice questions and options for qualitative comments. The first set of three questions asked of the demographics of participants; age, gender and specialty. The next set of questions asked about specialists’ teleconsultation experience prior to and during COVID-19. The last set of questions asked to describe the suitability of telephone and video consultation for follow-up appointments within the specialty. These asked the ability of patients to be seen, time efficiency, concerns around data security and if any clinical information was missed due to the use of teleconsultation. Questions were also included about specialists’ preferences for teleconsultation compared with person-to-person consultations and their willingness to continue with teleconsultation after the pandemic. Respondents were given the option to write comments around why they did not perform teleconsultation during COVID-19, examples of clinical information missed in patients due to teleconsultation and suggestions to improve teleconsultation.

Statistics
Microsoft Excel 2013 was used for data analysis, including calculations of frequencies and percentages and the subsequent pie and bar charts that were produced.

Results
Demographics
The demographics of the respondents are shown in Table 1. Fifty-one percent of hospital-based specialists who responded were female. There were 588 invitations sent out, and 151 responses were received (25.7% response rate). The highest response rate was from medicine without procedure (29.7%) and the lowest was from Anaesthetics (12.5%). Specialties that did not need to consult patients in high volumes were excluded in this study as teleconsultation was not applicable to their services.

Percentages for all variables are column percentages except for “Specialty summarised” which contains response rates within each specialty.

Specialties included under Surgery are Cardiothoracic, ENT, General Surgery, Orthopaedics, Obstetrics and Gynaecology, Paediatric surgery, Plastics, Urology and Vascular.

Specialties included under medicine with procedures are: Cardiology, Dermatology, Emergency medicine, Gastroenterology, Ophthalmology, Pain medicine, Respiratory.

Specialties included under medicine without procedures are: Endocrinology, General medicine, Haematology, Infectious Disease, Immunology, Nephrology, Neurology, Olders Persons Health, Oncology, Paediatrics, Paediatric oncology, Paediatric endocrinologist, Palliative care, Rehab medicine and Rheumatology.

Prior experience with teleconsultation
Overall, 20.5% of hospital-based specialists had no prior experience with teleconsultation, in the form of either telephone call or video call consultation. More than half (61.6%) had not had any experience with video call consultations prior to COVID-19 pandemic.

Teleconsultation use during COVID-19 pandemic
During the COVID-19 pandemic, 11 (7.3% of respondents) specialists did not use either form of teleconsultation. Of these, five (45.5%) stated they did not use teleconsultation as it was not suitable for their specialty. The top three specialties that utilised teleconsultation were surgery, psychiatry and medicine without procedures. Anaesthetics did not use video call consultations at all during this time. Figure 1 demonstrates teleconsultation use by specialty during the pandemic.

Safety, efficacy and efficiency
Figure 2 and Figure 3 demonstrates that all hospital-based specialists thought that most patients could be seen with either form of teleconsultation. This was
Table 1: Demographics of respondents.

<table>
<thead>
<tr>
<th>Variable</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
</tr>
<tr>
<td>30–35</td>
<td>4 (2.6%)</td>
</tr>
<tr>
<td>36–40</td>
<td>20 (13.2%)</td>
</tr>
<tr>
<td>41–45</td>
<td>21 (13.9%)</td>
</tr>
<tr>
<td>46–50</td>
<td>36 (23.8%)</td>
</tr>
<tr>
<td>51–55</td>
<td>22 (14.6%)</td>
</tr>
<tr>
<td>56–60</td>
<td>17 (11.3%)</td>
</tr>
<tr>
<td>61–65</td>
<td>13 (8.6%)</td>
</tr>
<tr>
<td>66–70</td>
<td>6 (4.0%)</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>76 (50.7%)</td>
</tr>
<tr>
<td>Male</td>
<td>74 (49.3%)</td>
</tr>
<tr>
<td><strong>Specialty summarised</strong></td>
<td></td>
</tr>
<tr>
<td>Anaesthetics</td>
<td>10 (12.5%)</td>
</tr>
<tr>
<td>Surgery2</td>
<td>36 (26.3%)</td>
</tr>
<tr>
<td>Medicine with procedures3</td>
<td>29 (27.1%)</td>
</tr>
<tr>
<td>Medicine without procedures4</td>
<td>49 (29.7%)</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>27 (27.3%)</td>
</tr>
<tr>
<td>Total response rate</td>
<td>151 (25.7%)</td>
</tr>
<tr>
<td><strong>Amount of teleconsultation experience prior to COVID-19 pandemic</strong></td>
<td></td>
</tr>
<tr>
<td>No experience</td>
<td>31 (20.5%)</td>
</tr>
<tr>
<td>Telephone consultation only</td>
<td>63 (41.7%)</td>
</tr>
<tr>
<td>Video consultation only</td>
<td>4 (2.7%)</td>
</tr>
<tr>
<td>Both telephone and video consultation</td>
<td>53 (35.1%)</td>
</tr>
</tbody>
</table>
**Figure 1:** Teleconsulting use during the COVID-19 pandemic, categorised by specialty.

![Teleconsulting use during the COVID-19 pandemic, categorised by specialty.](image1)

**Figure 2:** Pie chart demonstrating aspects of consultation missed due to not seeing patients in person.

![Pie chart demonstrating aspects of consultation missed due to not seeing patients in person.](image2)

**Figure 3:** Providing teleconsultation in the future.

![Providing teleconsultation in the future.](image3)
most applicable to specialties without procedures. Specialties that did not involve procedures, for example, psychiatry, thought that more patients could be seen through video consultations (88.5%) compared to specialties with procedures like surgery (63.5%) and medicine with procedures (39.1%) during the pandemic.

Appendices 1 and 2 demonstrate the number of patients seen with telephone and video consultation. Overall, more hospital-based specialists (57.6%) believed the time efficiency was similar or greater with teleconsultation use compared with person-to-person consultations. Medicine without procedures and psychiatry were the specialties that reported the highest rates of reduced efficiency, up to 40%. Appendix 3 shows hospital-based specialists’ perspectives of the time efficiency with teleconsultation use.

Despite general perceived time efficiency in this form of communication, most specialties had at least some concerns regarding internet security with video call consultations. Around 3% of surgeons and psychiatrists had great concerns.

Fifty-two-point-five percent of specialists believed they missed some aspect or information while using teleconsultation and not seeing patients physically. Out of these, 62.2% of specialists working in medicine without procedures had missed some aspect. Not having the ability for physical examination and assessment of non-verbal cues were the main restrictions from using teleconsultation as opposed to seeing patients in person-to-person consultations as demonstrated in Figure 2.

Traditional person-to-person consultation was preferred over telephone consultations in all specialties. There was slightly more support for video consultations, but still the majority preferred physical consultation over this modality if possible. Appendices 4 and 5 show hospital-based specialists’ preferences for physical or telephone and video consultations overall.

Future use of teleconsultation

Figure 3 shows that after the COVID-19 pandemic is over, almost all hospital-based specialists would be happy to provide teleconsultations to patients in routine clinical practice.

Discussion

This study found that the majority of hospital-based specialists had used teleconsultations during the pandemic fitting with international literature. Despite some minor disadvantages identified with teleconsultations and a general preference for physical consultations, the majority were also prepared to continue to use teleconsultations going forward in regular clinical practice. This is relevant in a New Zealand context with many patients living rurally and so not always having local access to specialist care.

Uptake of teleconsultations was high across all clinical specialties and highest in non-procedural specialties. There are existing individual case studies that look at how teleconsultations suit their service and specialty of interest. They have shown that telemedicine is becoming increasingly popular in psychiatry, immunology and allergy, oncology, and diabetic patients. Non-procedural specialists in these areas can look to replicate similar benefits in New Zealand.

There were no previous studies that used standardised measurements to compare all specialties’ perspectives of providing teleconsultation during the pandemic. One study looked at personality types and their associations to provider’s satisfaction rates.

In this study, more than half of hospital-based specialists reported potentially missing clinical information due to not seeing patients in person physically. Forty-five percent reported this was contributed by poor physical examination ability and difficulty interpreting non-verbal cues. Two specialists have reported missed physical exam findings. They also missed relationship and building rapport with patients. The obvious limitation of teleconsultation in specialties involving procedures requires them to be performed in person. This reflects the lower uptake of teleconsultation in surgery and medicine with procedures. While these shortcomings were identified, qualitative reports from this study suggest that they were not major safety issues. Almost all hospital-based specialists were happy to provide teleconsultation to patients after the end of this pandemic.

These shortcomings could be mitigated with the addition of tools to use alongside teleconsultation. For example, some devices to aid examination (oximeters and blood pressure cuffs) could be used with teleconsultation. China has diagnosed and triaged patients with respiratory symptoms with the measures above during the pandemic with proven success.

Literature suggests that initial consultations for patients with complex medical and social backgrounds should be in person to build rapport and trust. This will facilitate a smoother transition to subsequent follow-up appointments via teleconsultation as a pre-existing doctor–patient relationship has been established. Relatedly, a study reported that patients in surgical specialties preferred teleconsultation for follow-up appointments relative to first consultations.

This is likely explained by high patient satisfaction rates reported with teleconsultations which had shorter appointment times. In this study, more than
Half of hospital-based specialists found that teleconsultation was at least just as efficient as physical consultation. Patients that were determined to be suitable for teleconsultation appointments were based on SMO’s discretions.

It is also important to also consider equitable access to teleconsultation given the need of internet access and suitable devices. In the future, appropriate patient selection for teleconsultation will be important, utilising it in situations where physical examination is not mandatory or able to be replaced with video-based inspection or adjuncts mentioned above.

Teleconsulting could be particularly attractive to improve access to healthcare for patients who struggle to attend physical appointments due to poor mobility, poor access to transport, or loss of time at work. Teleconsultation also benefits medical staff in rural hospitals as they are able to access specialists’ opinions through this platform without travelling the physical distance. There are several documented cases in New Zealand where unwell patients averted tertiary hospital admissions as the management plan was made in conjunction with specialists’ advice through teleconsultation.

Limitations

A limitation of this study is the response rate from hospital-based specialists. This sample population number is made up of the total number of CDHB hospital-based specialists that provided a response to the survey. As some specialists are dual-trained or are assigned under more than one specialty, the response rate may be underestimated due to some invitations being duplicated (we did not access the email addresses). In addition, it was not studied what percentage of consultations were face-to-face or via teleconsulting nor whether implementing teleconsultation increased the number of consultations overall.

Due to the nature of the study being a questionnaire, there is a lack of depth in these questions and the ability to investigate answers deeper is restricted. This study, in particular, did not investigate whether teleconsultation appointments were first specialist assessments or follow up consults. It also did not look at patients’ perspectives of teleconsultation during the COVID-19 pandemic. Studies show that teleconsultation is well received by the public. This holds true, especially during the pandemic. A cohort study of orthopaedic and spinal patients in Christchurch concluded that there is a high patient satisfaction rate with teleconsultations in selected surgical specialties. Most public concerns were around technical challenges and poor examination.

Conclusion

The COVID-19 pandemic has been a catalyst for change in many areas of healthcare. This study confirms that teleconsulting has been widely used in multiple specialties in this region during the pandemic and was generally acceptable to the hospital-based specialists, especially in non-procedural specialties. In appropriately selected patients, teleconsultation will have an increasing role in healthcare systems. With increasing specialisation and centralisation of health services, teleconsultation provides a vehicle for improved access to tertiary and quaternary specialist services whilst saving costs to patients and healthcare systems.
COMPETING INTERESTS
Nil.

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URL

REFERENCES
Appendices

Appendix 1: The proportion of patients seen with telephone consultation if that needed to happen.

Appendix 2: The proportion of patients that were able to be seen with video consultation.

Appendix 3: Hospital based specialists’ perspective of time efficiency with teleconsultation use.
Appendix 4: Hospital based specialists' preference for physical and telephone consultations.

Appendix 5: Hospital based specialists' preference for physical and video consultations.