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INQUIRY INTO HEALTH OUTCOMES AND ACCESS TO HEALTH AND HOSPITAL SERVICES IN RURAL, REGIONAL AND REMOTE NEW SOUTH WALES

HEARING – Wednesday 19 May 2021

EXCERPT – UNCORRECTED PROOF

Dr Justin Bowra, Founder & Medical Director, My Emergency Doctor

(page 40)
Dr BOWRA: That is right. And if they were, they had to travel four hours to get there and four hours back.

The Hon. NATASHA MACLAREN-JONES: In your submission you referred to a report that has been prepared, I think, by a department in Victoria in relation to their emergency care and you said it is going to be released at some stage this year. Do you know when that will be released, or if you could give a copy of that to the Committee to be looked at as well?

(page 41) Dr BOWRA: I will be very happy to.

Please find attached the Western Victoria Primary Health Network Afterhours Telehealth Evaluation Report from Deakin University

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Final Evaluation Report:

After Hours Telehealth Pilot for Western Victoria Primary Health Network - March 2021

Paul Crosland
Dieu Nguyen
Martin Hensher

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Executive Summary

Deakin Health Economics undertook an evaluation of the Western Victoria Primary Health Network (WVPHN) After Hours Telehealth Pilot Project, which ran from August 2019 to September 2020. The pilot sought to reduce the burden to rural GPs of providing on-call after hours medical support to UCCs, and to address workforce challenges commonly facing rural health services. This Evaluation Report describes the findings of the evaluation of this pilot, which focused on four main elements:

- The experiences of staff and providers
- The experiences of patients using the telehealth service
- An analysis of the utilisation of the telehealth service
- A cost analysis of telehealth and conventional after hours services

A majority of staff interviewed felt that the telehealth pilot and MED was an excellent service, which should be continued. The key advantage perceived by staff was – as planned – in reducing the burden of after hours care on local GPs. The results of the staff and stakeholder interviews suggest that telehealth works well in some instances and less well in others, depending upon the (1) organisational policy and (2) the likelihood of needing to call a medical professional for back up if telehealth was not available. Areas identified for improvement included better patient information sharing platforms between local sites and telehealth providers, and better approaches to engaging local stakeholders with the service. Based upon the thematic analysis of these interviews, respondents overwhelmingly feel that the MED telehealth model is a safe and suitable service to be offered in a rural area.

About four-fifths of respondents to the patient experience survey clearly had a positive experience of telehealth, were satisfied with it overall, and would use it again or recommend it to others. Seven out of 46 respondents did not enjoy using the service, rating their overall experience as "poor" and stated that they would not use it again or recommend it to others. Although the precise reasons for these poor experiences could not be conclusively ascertained due to the concise nature of the online survey, they were all reported by females less than 45 years of age, suggesting there are certain conditions experienced by this cohort that are less appropriate for assessment over videoconference. Comments on some postal surveys suggested that inherent difficulties in conducting adequate or sensitive physical examinations might explain some of this dissatisfaction. Therefore, telehealth is appropriate to use for most, but not all, conditions that present to UCCs and is unlikely to replace the need for at least some degree of GP on-call service provision.

The degree to which local health services accessed the service varied widely between sites. Total utilisation was less than half the total number of consultations originally allocated to sites during the pilot period. This lower than expected uptake most likely reflects the chosen service models of some UCCs, which used telehealth only sparingly and in quite specific circumstances. MED calls were utilised across a wide range of ages, with the most frequent patients being in their early 20s or infants. The telehealth service was used most often for Australian Triage Scale (ATS) categories 3 and 4 and rarely used for ATS category 2 and 1. However, there was variation between sites based on urgency categories. There does not appear to have been any impact on transfers or admissions, but data on the normal transfer and admission rates for GP callouts is required to make a true comparison here; unfortunately comprehensive and robust data on GP callouts were not available from most sites.

Based on the four sites included in this cost analysis, the availability of telehealth during the pilot period was cost saving in aggregate compared with the pre-pilot period overall. However, it was estimated to be cost increasing for two sites and cost decreasing for 2 sites. The overall cost saving may be influenced by the reduced activity experienced by all UCCs over the pilot period, which coincided with overall reductions in health care utilisation during the COVID pandemic and lockdown periods, but the findings remained the same when the time period was restricted to pre-COVID months only. The key driver of

whether the addition of telehealth services resulted in cost savings was the volume of MED calls and whether this increase in costs was outweighed by a reduction in the number of nights a GP was on call. If telehealth calls are used sparingly, and availability of the telehealth service allows a reduction in the number of nights for which a GP is rostered on call, then telehealth is likely to be cost saving. By contrast, if the availability of telehealth leads to more calls being made overall, and/or GPs remain rostered on call every night, the telehealth model is likely to be cost increasing. However, even if costs were increased, this may still be a desirable outcome, given the findings of the qualitative studies that the telehealth service reduced on-call burden on GPs and was valued by most patients.

Key Conclusions and Recommendations

The following key conclusions and recommendations apply to the context of after hours care provided in Urgent Care Centres in rural and remote areas, based on the data available for the qualitative and quantitative analyses conducted for this evaluation.

Staff experience

1. Implementing an after hours telehealth service is likely to reduce the number of after hours callouts performed by local, on-call GPs.
2. Whether an after hours telehealth service reduces the number of nights the local GP service is on call depends on the model of care in place at each health service and the level of experience of nursing staff working at the time.
3. A better system or platform for sharing patient-level information between the telehealth provider and local hospital system should be developed.
4. Future pilots can adopt greater engagement with GPs during the implementation of the project and ongoing governance to improve coordination and communication.

Patient experience

5. The patient experience and benefit of telehealth services is positively correlated with the level of skill and experience of the on-duty nursing staff (based on qualitative evidence collected during interviews).
6. Experience suggests that nursing staff should consider more carefully whether telehealth will be appropriate or useful in individual patients for whom adequate physical examination via telehealth will be i) difficult or impossible, and/or ii) intrusive and insensitive.
7. The quality of video calls depends on the stability and quality of the internet service the device has access to. Therefore, a high-speed, stable internet connect should be provided.
8. Limitations of the patient experience analysis were due to a small proportion of returned surveys and in future more support is needed to improve response rates.

Utilisation

9. Use of telehealth for ATS 1, ATS 2 and ATS 3 will depend on the model of care and nursing experience available at each health service, and appears to be most appropriate when nursing staff have high skill levels (e.g. RIPERN, nurse practitioner).
10. Consider using telehealth exclusively for lower urgency categories (ATS 4 and ATS 5) at sites or situations where nursing staff skill and experience levels are less extensive.
11. In the context of Western Victoria, routine participation in the RAHDAR database by all UCCs and their parent health services could assist in the systematic collection of consistent data across sites.

Cost

12. An after hours telehealth service has the potential to be cost saving for lower levels of utilisation and a commensurate reduction in the number of nights local GPs are on-call. High utilisation levels of telehealth and/or failure to reduce the number of nights that GPS are on-call are likely to be associated with increased overall costs.
13. Improved data collection in Urgent Care Centres would enable a more thorough investigation of whether there are any differences between GP and telehealth consultations in outcomes, such as admissions or transfers, and costs. The UCC Models of Care Toolkit prepared by the Victorian Department of Health and Human Services provides guidance on the type of measures that would be useful to collect: [1]
    a. How many patients are being treated (by triage category and diagnosis)
    b. How many of these patients were able to remain at the rural health service for treatment
    c. Outcome – admitted or discharged
    d. How many patients were transferred and by whom
    e. How many and length of telehealth consultations during the patient episode
    f. Length of stay and nursing hours
    g. Patient feedback and complaints
    h. Staff satisfaction

    In addition to the measures suggested in the UCC Models of Care Toolkit, collection of data on the number of GP call-outs and on the costs of both the telehealth service and the GP on-call arrangements would substantially assist robust cost-effectiveness analysis.
14. Limitations of the cost analysis due to data collection stemmed from limitations in data available from UCCs. One option for enhancing data collection efforts would be to detail clear expectations in contractual agreements so that all parties are aware of exactly what data will need to be provided.

Future implementation of after hours telehealth services

The most important factors to consider when implementing after hours telehealth services in local health services are:

- The ability to make financial savings depends entirely on the existing GP contractual model and/or whether it can be changed.
- Service models and protocols must depend on the available skills and experience of nursing staff at each site.
- The full features of the digital technology upon which telehealth relies requires a fast, stable internet connection.
- Telehealth consultations are not appropriate for all conditions which may present to an acute care setting.

Introduction

Urgent care centres (UCCs) are located in small rural communities as part of small rural health services where higher levels of trauma care are not available. UCCs provide initial resuscitation and a limited stabilisation capacity prior to early transfer to a Regional Trauma Service or Major Trauma Service.

The objectives of the after hours telehealth pilot were to:

- Trial an innovative after hours telehealth model connecting staff working within Health Service Urgent Care Centres across the Western Victoria PHN catchment to specialist emergency doctors as an alternative to the provision of GP dependent 24/7 after hours care.
- Reduce the significant after hours on call burden placed on some GPs and/or provide an alternative to costly locum coverage through the provision of access to specialist emergency doctors using telehealth.
- Address some of the workforce challenges that commonly impact small rural communities including difficulties in recruitment and retention of GPs when there is significant after hours commitments, increased number of GPs seeking a better work life balance, and an ageing GP workforce.
- Facilitate peer to peer support and skill development through informal communication with specialist emergency doctors.

The After Hours Telehealth Pilot involved trialling an innovative model for rural UCCs, which seeks to reduce the current on-call burden of local GPs supporting UCCs, through the delivery of telehealth advice from specialist emergency doctors. Western Victoria Primary Health Network's (WVPHN) After Hours Telehealth Pilot program began in August 2019, consisting of 9 UCCs with commencement staggered across three waves over 3 months up to October 2019. A private company, My Emergency Doctor (MED) was contracted to provide telehealth services to the UCCs. This report presents final findings based on data available during the project. The evaluation findings are presented across four main sections of the report:

1. Qualitative analysis of health professionals' experience based on interviews with care providers, such as UCC staff, GPs and MED staff
2. Analysis of user experience based on patient experience surveys
3. Quantitative analysis of utilisation of MED calls and how this compared to current practice
4. Cost analysis of after hours telehealth services

The after hours period is:

- Outside 8 am to 6 pm weekdays
- Outside 8 am to 12 noon on Saturdays
- All day on Sundays and public holidays

The 'sociable' after hours period is 6 pm to 11 pm on weeknights. The 'unsociable' after hours period is 11 pm through to 8 am on weekdays and outside 8am and 12 noon on Saturdays and all days Sundays and public holidays.

Evaluation Objectives and Approach

The purpose of the evaluation was to investigate the user experience of telehealth services, from a variety of perspectives including patients, UCC staff, GPs and MED staff, and establish whether telehealth

services represent value for money, specifically in the context of after hours health care provided by UCCs in rural and remote areas.

The evaluation used cluster randomisation of UCCs via a stepped wedge trial design to allow a robust "before and after" analysis of key data. A stepped wedge trial design means that the UCCs were grouped in three 'waves' and then started using telehealth services at different times. The evaluation aimed to deliver the following analytical outputs:

- Utilisation analysis of trends in key UCC and health system activity variables, before and after implementation of the intervention
- Cost analysis of relevant utilisation variables and of key elements of the intervention
- Cost-benefit analysis from the perspective of the public health care system, to identify the net monetary benefit of the intervention and hence its long-term financial sustainability
- Patient experience analysis to assess the acceptability of and satisfaction with the intervention
- UCC staff experience and perceptions of the intervention and its implementation and their views on barriers and enablers
- Partner/stakeholder (e.g. local GPs, pharmacists, My Emergency Doctor specialists) perceptions of the intervention and its implementation and their views on barriers and enablers

Ethics approval for this study was obtained from the Deakin University Human Research Ethics Committee (2019-198).

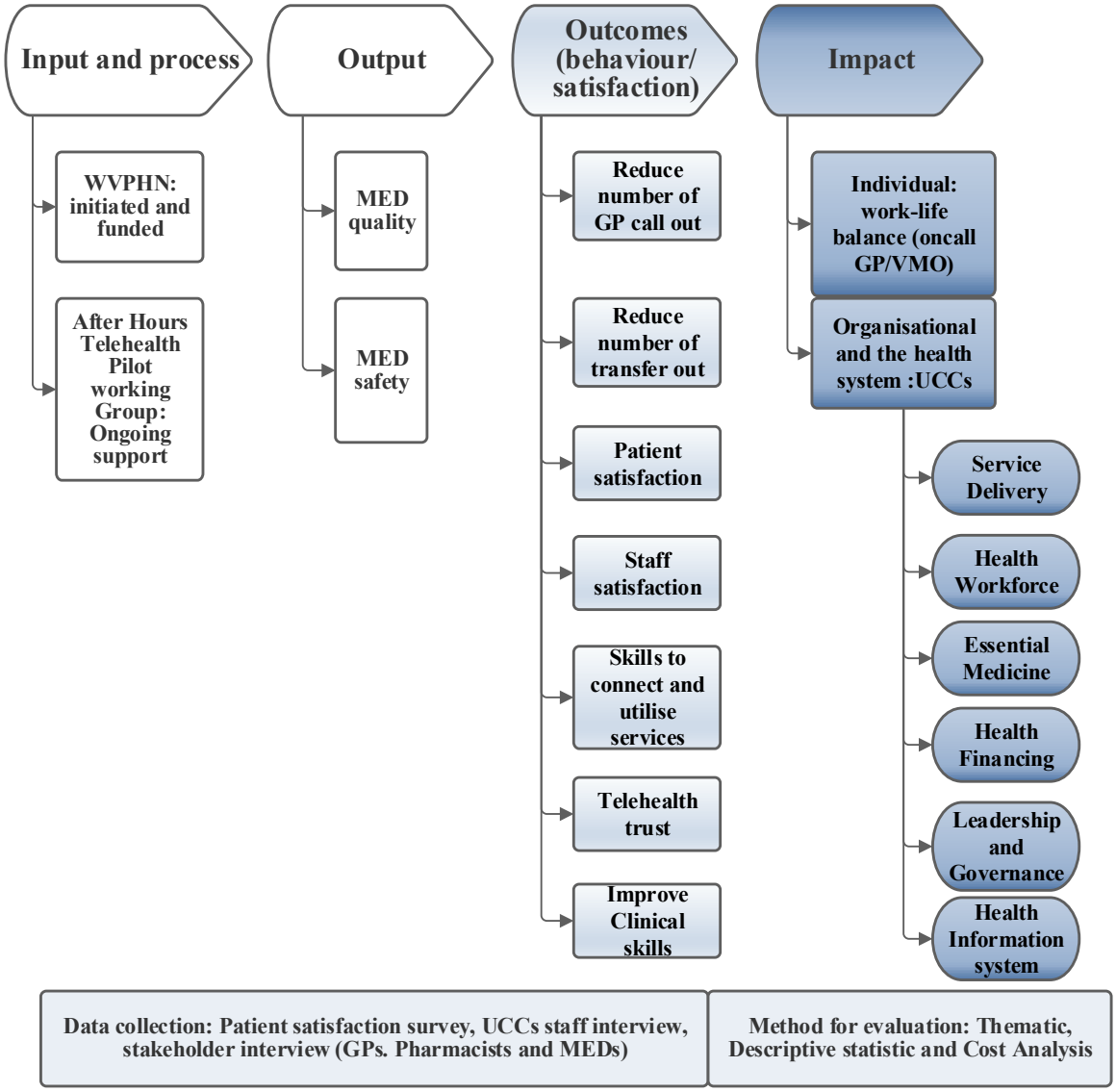
Implementation of the After Hours Telehealth Intervention

After a period of preparation and training, the nine participating UCCs went live with the intervention in three waves of three UCCs, beginning in August, September and October 2019. However, one health service never commenced utilisation of the telehealth service due to the closure of its UCC. WVPHN provided an allocation of 1,500 MED telehealth consultations across the program, with an initial allocation of 150 consultations per UCC (with the potential for an additional allocation if required). This was expanded by 500 to 2,000 telehealth consultations in total to be provided to patients presenting to UCCs during the pilot.

Evaluation Team

Associate Professor Martin Hensher led the Deakin evaluation team based at Deakin Health Economics. Dieu Nguyen conducted the analysis of qualitative aspects including interviews with key stakeholders and quantitative analysis of the patient experience survey. Paul Crosland led the quantitative analysis of utilisation data and the cost analysis. Professor Alison Hutchinson and Cherene Ockerby from the School of Nursing and Midwifery, Quality and Patient Safety from the Faculty of Health at Deakin University have advised on and designed the online patient experience survey. Kate Kloot from the Centre for Rural Emergency Medicine, Deakin University, led the collection and analysis of non-MED hospital data on after hours utilisation.

Figure 1: Logic model of WVPHN After Hours Telehealth Pilot



Randomisation of UCC Sites

Participating Urgent Care Centres were randomised into three waves for intervention commencement as follows:

- Wave 1 (August 2019 to July 2020) – UCC6, UCC8, UCC7
- Wave 2 (September 2019 to August 2020) – UCC9, UCC3, UCC4
- Wave 3 (October 2019 to September 2020) – UCC5, UCC2, UCC1

Health Care Provider Interviews

Introduction

In order to capture the UCC staff and key stakeholder experience and perceptions of the intervention and its implementation and their views on barriers and enablers, semi-structured interviews were conducted between May 2020 and September 2020. Interviews were undertaken via Zoom or phone in response to COVID-19 pandemic control measures. Interview time was selected based upon the availably of UCCs' staff and stakeholders to maximize the number of participants, thus enabling rich qualitative feedback on their experience with the telehealth service. This approach also facilitated the development of thematic analysis to synthesise the qualitative data to address common barriers and enablers.

Methods

Semi-structured interviews were conducted (by DN) with UCC staff, General Practitioners, MED specialist emergency physicians and pharmacists to collect qualitative evidence on their experiences of using the after hours telehealth service.

Interviews were conducted over phone or Zoom with staff from eight participating UCCs between May 2020 and September 2020. We interviewed 34 participants who were directly involved in the telehealth consultations (UCC nurses and MED physicians) (n=25/n=2) or who indirectly interacted with MED (GP and pharmacist; n= 5/n=2). The interview duration was typically lasted between 30 to 45 minutes, with occasional interviews that lasted 15 minutes or as long as an hour. The below table (Table 1) shows the total number of respondents for the phone interviews by site.

Table 1: Number of interviews conducted by site

	Nurse	GP	Pharmacist	MED	Total
UCC1	-	-	-	-	-
UCC2	3	-	1	-	4
UCC3	2	1	-	-	3
UCC4	4	1	-	-	5
UCC5	4	-	-	-	4
UCC6	4	2	-	-	6
UCC7	4	-	-	-	4
UCC8	1	-	-	-	1
UCC9	3	1	1	-	5
Total	**25**	**5**	**2**	**2**	**34**

UCC1 withdrew from the pilot prior to commencement

The methodology of this analysis followed was based on Thematic Analysis. This is a well-known approach introduced by Braun and Clarke in psychological science.[2] It was used to investigate the views on, and experience of, telehealth services from staff and stakeholders in 8 UCCs. Thematic analysis has six phases: (1) data familiarisation, (2) independently generating initial codes, (3) searching for themes, (4) reviewing themes, (5) defining and naming themes, (6) producing the report, and is conducted against a 15-point checklist of criteria for good thematic analysis.[2] Data was transcribed to an appropriate level of detail and the transcripts were checked against the recording for accuracy.

Transcriptions were read for data extraction based on categories. The first category captured information that related to positive aspects of the service, including words such as 'good', 'pros' or 'advantages'. The second category captured information relevant to negative experiences of the service such as 'disadvantages', 'cons' or 'concerns'. Stories that could be described as 'challenges', 'improvements' or 'future suggestions' contributed towards a third and fourth category, respectively. The coding process was discussed and verified between researchers (DN & MH) to ensure its thoroughness, inclusiveness and comprehensiveness. We paid equal attention to all of the retrieved information from all sources.

Based on the common vivid categories, we formulated themes and theme names against the World Health Organization's 6 building block for health services delivery, a popular framework that was recommended by WHO in monitoring and evaluating the health system at country level.[3] We also used the name of each recommended block within the Framework to guide the theming/categorisation. These include (i) service delivery, (ii) health workforce, (iii) health information systems, (iv) access to essential medicines, (v) financing, and (vi) leadership/governance. All information was collated into six standardised themes. Four sub-themes were established. These were (1) Advantages, (2) Concerns, (3) Challenges and (4) Improvement areas. Themes and subthemes were checked against each other and back to the original data set to make sure it is coherent, consistent, and distinctive. Relevant transcripts were extracted for reporting.

Results

Theme 1: Service Delivery

The telehealth service was found to be an excellent resource to improve the responsiveness of the local health services, and to improve the accessibility to the benefits for local residents, but with some aspects identified as challenges and concerns.

Comprehensiveness

Telehealth enhances the comprehensive range of health services provided. The experiences of the nurses indicated that telehealth was beneficial as a backup for a local doctor to meet the needs of the rural population, and was appropriate to the needs of the target population in terms of curative care. Local GPs indicated positive views, for example, "the patient could be seen via screen and the assessment was thorough" to identify a critical condition (GP3), and provided "immediate support at the point of consultation" (GP2).

However, opinions were mixed on whether telehealth can replace conventional ways of managing the patient. Nurses expressed the view that MED could cover the less urgent Triage Categories (Australasian Triage Scale (ATS) 3-5) when "we know exactly what's wrong with the patient" or "we know that the condition can be managed locally" or "patients with a clear diagnosis". However, contacting MED was reported as "less likely" or "we need to speak to our GP first" in higher triage categories (ATS 1-2), "in the circumstance that patient condition can change rapidly", and in situations where "we know that the patients will need to transfer out." Some nurses indicated they were "more likely to call MED compared to local GP" because "we can see the doctor quite quickly via screen, the doctor can provide opinion and order additional assessment when we need it, or order additional test and check up" and "our GP can have a rest", "we take care of our GP". Furthermore, some of the nurses preferred "specialist advice", while some nurses prefer to call a local GP because "it's better to have a physical doctor". There was also

a debate over whether a MED or a local GP should be called was seen in ATS 3 in some UCCs due to the safety concerns for some patients in ATS 3 who had, for example, developed chest pain.

Accessibility

The pilot telehealth services provided free consultation for patients who attended participating UCCs that were located in the rural area of the WVPHN. Stakeholder interviews indicated that MED had helped to improve accessibility. For example, there was one comment that, "patients have an opportunity to get access to a high level of care that is provided by a specialist" (MED doctor). Several nurses mentioned “the need for a telehealth service” like MED “in rural areas” as a means of improving health care accessibility. Similarly, local GPs expressed “extremely”, “very” or “overwhelming” positive comments on the impact of MED on the accessibility of health care services needed during the night time in a rural area. One local GP (GP3) commented: “I think it is a positive experience in the sense that we have quite quick advice for the situation; … otherwise they might need to wait a while for the doctor on call to be called in."

Coverage

The purpose of implementing telehealth in the rural area is to ensure all people who need urgent care due to an acute condition can access the right level of care. For example, most of the nurses in UCCs indicated that telehealth (or MED) helps in expanding care coverage during night time for the lower triage categories, especially category five. Nurses mentioned that category five had a low coverage before the program because “the patients can wait longer”. Telehealth was seen as "needed for rural setting" to "improve night-time coverage" without the need to transfer out to a higher-level hospital (see below).

Person-centeredness

Interviewees felt that the Telehealth Pilot provided an excellent opportunity to improve services to be organised around the person, not the disease or the financing.

Some of the stakeholders (such as MED employees and pharmacists) saw telehealth as a way to reduce the number of patients transferred out of UCCs, so that they can be managed in the local area. Two MED doctors thought it was an excellent opportunity for "patients to be managed in their local area". Similarly, nurses' insights revealed that it helps in "reducing the number of people who will come and need to stay in hospital"; and it promotes holistic care in the rural area". A local pharmacist also saw it as "good support for a rural area like us, we are 100 km away from others, so it's great to have it. We don't need to transfer the patient by ambulance during the night when we don't have to."

However, challenges of care were observed in some sub-populations. Interview data revealed that staff felt "older people preferred to see a familiar doctor". The challenge to provide person-centred care was also observed in the ability of UCC staff in delivering some complex assessments. For example, in respect to patient privacy, "it is better to do a groin area assessment with a physical doctor", a nurse commented. A GP interviewee believed that on at least one occasion "patients were transferred out unnecessarily" by an MED order.

Continuity

Telehealth was seen as a way to provide an individual with continuity of care across the network of services for a particular health conditions.

Interviewees felt that Telehealth services may have contributed to the continuity of care due to the similarity and compatibility between the care options provided in the local health system and the MED

system. However, the impact of this aspect remains unclear. Stakeholder views indicated both neutral responses as well as a level of concern for the quality of patient care plans. One of the local GPs commented that it as “not significantly positive or negative” in advancing continuity of care: “when someone presents in UCC after-hours, the doctor on call is responsible for them, they are often seeing them, then making a referral to their GPs who have been treating them [on a regular basis for a particular condition/disease] already”- a GP commented; as well as: "The nurses who run the UCC are very aware that we [GPs] have the [on-going] care [responsibility] to our patients, so the patient has the autonomy to decide who and what they want" when it comes down to the type of consultation. Two GPs specifically indicated “a concern for the continuity of care for people with chronic conditions, as MED doesn’t have the full access to the patient’s file and care history” and “follow up care”. The same concern was also mentioned in two interviews with MED staff members.

Quality

Telehealth services were felt to be of high quality because “patients have better care from an awake doctor; thus, it is less anxious for local GP to be called out, the risk for the patients is reduced" and “it’s [telehealth] effective, safe, centred on the patient’s needs and given in a timely fashion” (GP). Most UCC staff were satisfied with the quality of MED. For example, “It was a good quality service for lower triage categories” was a frequent comment in most of the conversations with local UCC nurses.

Concerning the administrative quality that MED services offered, nurses from all UCCs had positive comments on the time they needed to wait in the lobby to see MED doctors. Nurses mentioned the "not long to wait at the lobby, and the MED receptionist was nice, we went through the admin process quite fast, and the doctors started to see the patient". The nurses also commented that the virtual assessment is fair. "We tell the MED what patients have and answer their question or conduct a different task when it's required.” The nurses and pharmacists are also happy for the time for waiting for MED response to patient prescription /management plan.

Although MED was regarded as offering good quality services as discussed above, there were some challenges concerning shared care, communication, privacy, accuracy of the management plan. From a local stakeholder perspective, a GP expressed concerns about “several near-miss cases or adverse events for both doctors and patients". The GP highlighted “We don’t have many patients complain, but more doctors complain because of near miss cases” in the context of ATS 3 cases. This comment was believed to be associated with a difference between perception of triage score between the local health care provider and the MED. One GP commented that “nurse deems triage category was lower than MED” and it was a concern because it was an incident when “I was not called in for a baby who was transferred out. The baby didn’t end up that sick, but was transferred to another bigger centre which is not legitimate for the child”. It highlighted the communication issues that might happen during the consultation, with a GP commenting that, “Medical work is a team-based approach that requires trust and effective communication.

Concerning patients' privacy about sharing sensitive information and pictures, a nurse mentioned, “It is an issue in assessing injury or problem at the groin area, for example: sexual health, pelvic examination”. The doctor [MED] cannot access it properly due to “privacy reasons because you cannot take a picture there”- the UCC’s staff continued. Time to respond to patients’ unique situation was a concern from all GPs. One GP stated that, “MED like others Telehealth- It is tedious”. This comment was related to the delay in provision of a patient management plan. Nurses also mentioned the time issue in the process of “getting scripts, printing scripts, sending referrals, order X-rays, medication”. It was seen as negative experience in some consultations when more than two nurses also commented on a "long treatment waiting time" or “treatment delay” or “It normally takes longer than seeing our usual doctors” and sometimes “we have

difficulty in organising things for example medication form to be sent/faxed to us as it takes time". These comments came from interviewees at various locations.

MED doctors indicated that communication was good during the consultation, as MED was able to "obtain information" and "clarify the information" when it was needed. Stories from UCC staff suggested that "three-way communication" between MED, nurse and patients is an essential aspect that needs to improve the overall quality of care. Communication needs to be "comprehensive", "accurate", and "consider nurse needs and nurse's situation, and the nurse's ability for multi-tasking. MED, as an organisation needs to establish a pathway of "communication with the nurse and local stakeholder". "Better documentation and management plan" was also mentioned as an area for improvement for better service quality. This includes a better "admin process throughout the consultation" for a better "logical flow and order". In some cases, clarification and follow up is needed to verify the accuracy of the "prescribed management plan". Concerning the accuracy of physical assessment, nurses have noted that in "Challenging circumstances, we would call the ambulance or local GP" or when it is a complex assessment such as "chest assessment and listening to heart sound. For example, to distinguish if the patient had non-life-threatening chest pain or cardiac arrest", or when it is "a need for an additional staff member to verify the decision or specialist examination", the in-person attendance of highly-skill medical personnel will be preferred so that " we would call the local GP or ambulance."

Interviewees also had concerns / challenges regarding the local infrastructure to support the delivery of telehealth services. Weak internet broadband and connectivity issues had a significant impact on the quality of calls leading to a suggestion for improving the infrastructure in the local areas and for each UCC. For example, one GP commented that, due to the poor internet connection, it took a long time to connect to the MED service, and 1 in every 5 calls converted to an audio-only phone call (rather than video). Several nurses reported similar issues.

Theme 2: Health Workforce

The classification of health workers used for the WHO Global Atlas of the health workforce is based on criteria for vocational education and training, regulation of health professions, and activities and tasks of jobs. In a rural area like the region where the 9 UCCs are located in Western Victoria, access to an adequate health workforce is a significant issue. However, most of the UCC staff we interviewed hold accreditation as a registered nurse and have experience in working in rural areas. Only a few reported that they have specialised training specifically offered for this type of geographic area (Rural and isolated practice endorsed registered nurse (RIPERN)). Interviews with the nurses and MED doctors as our key informants revealed some critical points to consider related to implications for the health workforce.

GPs reported that the telehealth service resulted in less callouts per night, although whether or not they actually had to be on call to the same degree depended on the model of care implemented in each local area. One GP stated that, "it improves the quality of health and life for the local doctor." "It means that doctor feels like they are protected, it will be better to retain doctors, fewer doctors leaving and easier recruitment."

Interview data revealed that the quality of interaction with MED relied heavily on the skills and experience of the nurses. A well-trained and experienced nurse will be able to derive more benefit from the MED consultation. A nurse stated, "Nurses' skills and experience matter", especially with physical assessment. One nurse was stated, "I am a RIPERN trained nurse, so I am confident with my assessment, that is why my MED utilisation was low". They further commented that, "I know when exactly we need to call MED and when we need to call a local GP". The decision was based on the combination of personal medical experience, the knowledge of local resources, and the specific task that was highlighted in the

local protocol on the medical management procedure for patients in UCCs. On the other hand, interviewers also revealed that in some situations, the nurse feels "pressure when performing a physical assessment for the higher category cases. For example: listening to the chest when people were having chest pain or feeling the abdomen". This pressure was reported more often in nurses who do not yet have RIPERN qualifications, but less frequently in more experienced nurses and those who have obtained RIPERN training qualification.

In reflecting on the above described classification of health workers, the MED service was seen as a "potential opportunity to upskill" the workforce by offering on-the-spot training in the daily regular basics by both MED and UCC staff. A synthesis of opinion from MED, GP and nurses indicated that MED is an excellent source of support for the local workforce, while MED interviewees told of the importance of spreading out the resource of well-trained and highly skilled specialists for the benefit for the patients.

Telehealth was also seen as an excellent opportunity for workforce backup when the local doctor is "unavailable", "having a holiday", "away", "having a heavy working schedule [theatre duty] in the next day" or there is no "registrar/resident" in the local area. For example: during the end of 2019 and the beginning of 2020 at, there was a shortage in health workforce in some localities including UCC2 and UCC4 - comments from pharmacists, nurse and local GPs has revealed.

"Telehealth certainly had significantly contributed to the current health workforce in a rural setting" was another frequent comment heard during the interviews, especially in providing "remote back up for local UCCs" when they need it most. It also provided a chance to review "what needs to be done and areas for improvement here", a local GP said.

On the other hand, the telehealth service was also seen as a barrier for training and upskilling for more junior practitioners. One local doctor said that, "it would be a concern for young practitioners" because the telehealth service will potentially reduce the proportion of income and opportunities for gaining experience in this cohort.

Theme 3: Health Information Systems

Some concerns were raised by GPs that there is no shared information system to support follow up and continuing care management. Three out of five GPs interviewed expressed a concern over poor hand-over systems or processes for continuing care while two out of two MED emergency physicians expressed a concern over sharing information, as MED does not know the patient, local resources, geography, traffic and changes or updates in local organisational infrastructure. There was lack of a standardised platform that offers information for MED in relation to services distribution and capacity in the local area, such as "the location of nearest hospital, available pathology services, X-ray facility", an MED interviewee commented. A similar concern was also raised by a GP who said, "I don't know what they [MED] know about our local system, the geography, ambulance time" and "we are here in … where the time to transport is totally different even if it's only 700 meters when the road condition is not good, covering in snow, bush fire issue so the risk of transport patients might be greater than the risk to keep the patient in [UCC]- I don't know if they [MED] know". An MED interviewee mentioned that a "Google search" or "nurse" are the two primary resources for "local information and resource available" to them; however, "some of the nurses are informative, and some aren't". There was also "no portal to check the patients' historical record including blood tests, scans and x-rays in Victoria" and "the patient's My Health Record is not that good". Local GPs also supported this point of view. One local GP expressed "they [MED] don't know the local doctor, the nearby town and the local doctor, the pattern of the regional hospital" and "My Health Record might/might not contain the information that they [MED] find useful". With great concern, this GP continued, "another thing is you need to consider the differences in mortality of each

region, local area. Differences in the health system across Victoria, fragmentation between health care systems will be an issue; we should have a better distribution of skills, logic, system, resource, sharing information, and hand over system between MED and local GP. We have differences in software compliance, so we need to have a bottom-up solution to systematically fix the above issue. Information sharing appropriately should be put in place".

One GP mentioned that they were not aware of the follow-up process carried out by MED and what the handover process was. A MED emergency physician suggested that a fact sheet could be provided to nurses and GPs with this information.

Theme 4: Essential Medicines

MED was seen as a way to improve physical access and system access to essential medicine. A Pharmacist commented that "MED is helpful to help to manage the chronic condition when the locum is absent and patients were out of scripts". A GP also said patients would have access to faster advanced pain medication in ATS 4 and 5 and "the patients were seen and given medication, [narcotic or antibiotic] when it's needed by an awake doctor" and "patient has accessed to the medication that they need during the night, no need to wait until the next day morning."

Interviewees also suggested that there were sometimes errors in the patients' management plan, medical chart and/or drug order that were issued from MED. Several nurses mentioned that they had needed to "ring back to confirm about the doses" and "patient's management" because "it was a time that the medication chart comes with a different name compared to the medication that was verbally ordered".

Theme 5: Health Financing

There were no obvious comments on the positive or negative impact of MED on health financing for the local health services provider, as WVPHN has funded access to the MED service during the pilot. However, concern was expressed about "how it would and could change in the future" when "the funding is stopped". The majority of staff reported that they used MED now for "lower triage categories" when, in the past, they would have been much more reluctant to call out a local GP, due to a perceived low priority and because "our GPs need a rest".

All GPs reported that their income was not substantively impacted by the implementation of telehealth during the pilot period. However, it was a concern of one GP that MED services might have a financial impact on "a junior doctor who relied on providing on-call services to self-fund their practice".
In some cases, staff reported that, "we, UCCs, need to call local GP at the request of MED due to the circumstance of the patients. It seems like a double-dipping situation is happening here". One GP expressed some concern that inappropriate callouts caused unnecessary cost to the UCC.

On the other hand, the efficiency of telehealth services was discussed in the qualitative aspect of the data. GPs reported a decline in the number of times they were called out each night. Most of the GPs said "the call out rate each night" is "extremely variable". One part-time GP estimated a typical 4-7 phone calls during the evening and 3-4 phone call outs during the night, while another GP estimated an average of approximately 10 call outs and 20 phone conversation during a week. Since the introduction of telehealth, "the call out rate during the night reduced, but it is unpredictable", GPs commented.

Interviews revealed that the accountability and efficiency of the services were linked to the WVPHN initiative and funding. The question about the future of the services and its efficiency post-pilot was also

raised. Concerns were expressed regarding the ability of health services to continue to fund the MED service once pilot funding ceased.

It is notable that all UCCs that participated in the pilot have entered into ongoing agreements with MED to continue providing after hours telehealth services.

Theme 6: Leadership and governance

Leadership and accountability

The coordination of telehealth services was initiated via the WVPHN and was implemented in nine UCCs. Under the leadership of WVPHN and the telehealth pilot working group, telehealth services were seen as an accountable service for rural areas. In this project, accountability was assessed by the change of local practice in responding to the telehealth pilot project available for them. Telehealth services were given the authority to operate by the local provider and PHN to consult with patients who attend UCCs to improve service delivery outcomes in the target population.

Two UCCs reported that telehealth services are accountable because patients were being seen within organisational policy on service response times. A nurse commented that, "patients were seen promptly, and can be reviewed within 10 hours which aligns with our organisational policy". The authority was also given to telehealth to provide "phone order" for medication and management plans; thus, it also contributed significantly to the efficiency of the service. However, there was some concern about the accuracy of phone order medication which was reported at the quality of service. Therefore, the accountability of these services did not reach its full potential. However, with the relevant authority in patient management, including virtual assessment, the patients transfer-out rate was reported as "reduced" or "we don't need to transfer the patients out" in nurses interview.

Governance

Although information about the pilot project was delivered to relevant stakeholders such as GPs and Pharmacists, some stakeholders were not fully familiar with all aspects of the project. One GP questioned the "purpose of the system" and "its reason". One GP was not clear what was the rationale and the consequences "if the system is available at a different time at 10 pm, 8 pm, and 9 pm?" Two GPs questioned the time they needed to be available because "the local doctor would work a 16 hours shift and still need to be available until 11 pm and occasionally 11-7 am "although they have "less frequency of calls during the night". Both nurses and MED interviewees highlighted the need for "supervision" and "communication" to "local stakeholders" to ensure the "quality of care". This suggests that improvements in coordination, communication and engagement with local stakeholders may be necessary if the service were to continue beyond the pilot.

MED also commented on the importance of having "stakeholder involvement and monitoring". This is useful in the higher level of governance where the decision to improve local infrastructure is made. An MED interviewee recommended considering the "quality of the equipment that is used to facilitate the telehealth consultation" as well as "using standardised equipment with the ability to enhance image quality."

Concerns were also raised about the gap of authority and advanced technology between local GP and MED. A GP has mentioned that "I am also wondering if they have rolled out the permission (for using) a system with advanced technology, communication, advance dispensing rule to the rural doctor the same as MED" because "this permission is still not available for the local GP". Therefore, the local GP was

"satisfied with the initiative" but not satisfied with the governance because the technology available to support the on-call GPs was very poor. The GP commented that, "from time to time in the modern era, nurses say that they will take a photo of an ECG from their personal phone and send to your personal phone [GP phone] - so that is not satisfactory". The experience highlighted a concern in relation to technology gap and software available between a local services and MED service.

It was the view of some of the interviewees that Occupational Health and Safety (OH&S) was an aspect that has not been covered well in the pilot telehealth project. Comments from local GPs and nurses indicated the importance in "making awareness about OH&S issues for physical health among professionals". Nurse interviews revealed a concern about not having "a stand to wheel the iPad around to support physical movement" during the consultation that might impact nurse health. Similarly, given the impact of COVID-19, it was a concern for "physical health for health care professionals" from a GP that directly related to the risk of communicable disease transmission within services as observed recently due to physical contact including touching or sharing common objects. One GP commented that "COVID has shown how beneficial telehealth can be" but "we need to understand the risk and benefit a bit better" before "rolling these services out".

Discussion

Advantages

A majority of participants thought MED was an excellent service. A quote from a local GP, representing the gratitude of the local health workforce for the introduction of telehealth in rural care, "it's an… amazing service that patient has scripts and being admitted, having the doctor seeing them and have contacted with their GP next day". Another local GP has also commented: "it improves the quality of care for the patient after hours, it improves the quality of health and life for the local doctor. It means that doctor feels like they are protected, it will be better to retain doctors, fewer doctors leaving and easier recruitment. Good contribution in all aspects, all positive."

Telehealth was reported as working well with lower triage urgency categories (ATS 4 and ATS 5) such as abdominal pain, tooth ache, a non-acute mental health issue and chronic disease management. For higher urgency triage categories, the frequency of telehealth consultation was reduced due to (1) organisational policy and (2) the likelihood of calling a local medical professional for back up.

The expected advantage of telehealth identified in most of the nurse interviews was the perceived value of improving health and well-being of local GPs and doctors (through reduced after hours call-outs); having a good back up for UCCs; improved patient access to care; improved appropriateness and responsiveness of the health care professional to patients who are seeking health care in the rural setting. Thus, most felt it was an area to expand in the future.

The potential benefit of after hours telehealth care is correlated with the level of skills, experience or training of the UCC's nursing staff. A RIPERN trained nurse or senior nurse who has extensive experience seems to be able to utilise the telehealth services in the most useful way.

Challenges

Thematic analysis from interviews with staff and stakeholders revealed valuable information on the areas where the telehealth pilot project did well and where it did not do so well. A key desire for having a good quality and safe service was mentioned in various interviews. The concepts that came up regarding this were communication, level of trust, teamwork, time to respond on the patients' management plans, and

the accuracy of patients' management plans. For example, interviewees said that “MED often order more pain relief than the patients actual need” without considering the nurse’s opinion, contrasting with the local doctor who “listened” and “discussed”. Comments from a GP also highlighted the importance of teamwork in medical care because “small rural area where nurse and doctor was working very closely as a team, it's always a challenge to get used to a new personality” although most of the experience was “positive”. Time to response for patient management plans was seen as “tedious” by one and as “not efficient” because of “admin issues” requiring the “need to call back to follow up” or “confirm the plan/order” or “long waiting time” of “fifteen to twenty minutes delayed” or “time fracture in management for cat. 1 [ATS1] and cat. 2 [ATS2]”, commented nurses and other stakeholders.

Another critical area is nurse skill, experience and level of competency. These are the areas that concerned both MED and nurses due to directly impacting the quality of the consultation and a patient’s outcome. Some nurses panicked when dealing with a “rapidly developing situation” or listening to “chest and heart sounds, for example: to distinguish a general chest pain due to less acute condition or due to a cardiac arrest”. In these cases, a preference was for calling a local GP because of the “additional advice, assessment and option to verify their condition”.

“Dislocation, stiches and other situations that cannot be managed locally” in some local UCCs were also seen as a challenge to call MED. MED was less likely to be used in a situation that required hands-on assessment or management, involve a level of privacy, when the patient condition could develop rapidly, or when the patient will clearly need to be transferred out due to the lack of equipment.

Some concerns were also expressed regarding potential impacts on the training and development of registrars and GP trainees, who are actively involved in the model of care in some rural UCCs in an on call capacity.[4] These trainee doctors are the doctors can treat many problem independently under distance supervision of experienced GP/specialist. Having MED on call might potentially further limit the opportunity for junior doctors to be exposed to patient care and management in a rural context, which would be a negative outcome (see for example the 2019 AMA Rural health Issues Survey).[5]

Patient age is often raised a key-driver of the decision on whether telehealth is the right choice or not. Telehealth was seen by UCCs’ staff having less acceptance in the older age group from a qualitative aspect. It should be noted that this view appeared to be contradicted by the findings of the patient satisfaction survey (see next section).

Suggestions for Improvement

The need for a platform to enable better and more rapid exchange of information about patients and service capabilities between UCCs and MED emerged from the thematic analysis as an important area for future improvement. It was also reported as an area for improvement in an Australian study for the future of telehealth services.[6] Communication during the consultation and post-consultation is the main area that interviewees felt needs to improve to ensure the quality of care for patients who attend UCCs in the rural setting. Despite the great initiative and leadership from the WVPHN, local provider and stakeholders, governance was the aspect that requires the most attention in the future. Further involvement of local stakeholders in the development of the telehealth services was suggested in the thematic analysis in several ways. Firstly, community participation and engagement is required to develop a clear aim, rationale and objective for the future project. A well designed process of community participation and engagement would be an effective method for communities to have better services provided and better outcomes because it meets the needs of the local community.[7] Second, stakeholder involvement in the higher level of governance where the decision to improve local infrastructure is made will be useful to ensure consistency in quality of care and level of authority for MED and local GP across locations. Thirdly, a clear protocol in relation to OH&S for device use and the way devices are shared is

needed for communicable disease infection and control as well as to protect the physical health of the health care professional. Overall, the opinion of interviewees was generally that the benefit of telehealth services was clear; however, it was suggested that "we need to understand the risk and benefit a bit better" before "rolling the services out".

Overall, the experiences reported by interviewees are consistent with those reported in a systematic review in which telehealth was seen as a tool to increase the accessibility to health care for patients, particularly for patients with mental health issues or chronic disease.[8] In the relation to barriers at the individual level, confidentiality and privacy issues, and age were seen as barriers for promoting the use of telehealth services.[8] The efficiency and work flow associated with telehealth were also seen as barriers in organisational context due to issues in teamwork and hand over that were reported in this qualitative analysis.[8]

Conclusion

Thirty-four participants reported different experiences and opinions in all themes. Within each theme, telehealth was seen as beneficial in improving service delivery and providing support for current health workforce shortages, although practical concerns and challenges were raised. Future improvement is needed in these areas, along with the improvement in the other areas such as health information systems, leadership and governance aspects.

Based on an overall synthesis of participant opinions, telehealth should be continued with modifications for a better service to the UCCs in rural and remote areas. A small proportion (n=5/34) of participants also suggested that telehealth service should be expanded to even wider settings (beyond UCCs).

The results of the staff and stakeholder interviews suggest that telehealth works well in some instances and less well in others, depending upon the (1) organisational policy (2) the likelihood of needing to call a medical professional for back up if telehealth was not available. Based upon the thematic analysis of these interviews, respondents overwhelmingly feel that the MED telehealth model is a safe and suitable service to be offered in a rural area.

Recommendations

1. Implementing an after hours telehealth service is likely to reduce the number of after hours callouts performed by local, on-call GPs.
2. Whether an after hours telehealth service reduces the number of nights the local GP service is on call depends on the model of care in place at each health service and the level of experience of nursing staff working at the time.
3. A better system or platform for sharing patient-level information between the telehealth provider and local hospital system should be developed.
4. Future pilots can adopt greater engagement with GPs during the implementation of the project and ongoing governance to improve coordination and communication.

Patient Experience

Introduction

In order to capture the patient experience of the MED telehealth service, a telehealth satisfaction survey was provided to patients at the end of their consultation. This method was adopted to minimise the time burden on the patients and a variety of survey formats were provided to make it as convenient as possible for the patients to complete. Although the survey was quite short, taking only five minutes or less to complete, questions related to a range of domains related to the service including professionalism of the MED emergency physician and ease of use of the technology. This approach also facilitated the development of a range of descriptive statistics for a potentially large number of returned surveys, enabling the identification of key trends in the responses.

Methods

A patient experience survey was available for patients at all sites to complete and return to the evaluation team. Patients had the option of completing a hard copy for return by pre-paid envelope; completing an online version via a link emailed to them by MED following their consultation; and the subsequent addition of a third option, to complete the survey by online link on an iPad or device immediately following the conclusion of their MED consultation.

Online surveys were collated using the Redcap platform. The data was exported to SPSS for statistical analysis. Postal surveys were scanned and manually entered into SPSS data fields. Simple descriptive analysis was employed for statistical analysis. The survey was designed and validated by School of Nursing and Midwifery, Quality and Patient Safety from the Faculty of Health at Deakin University.

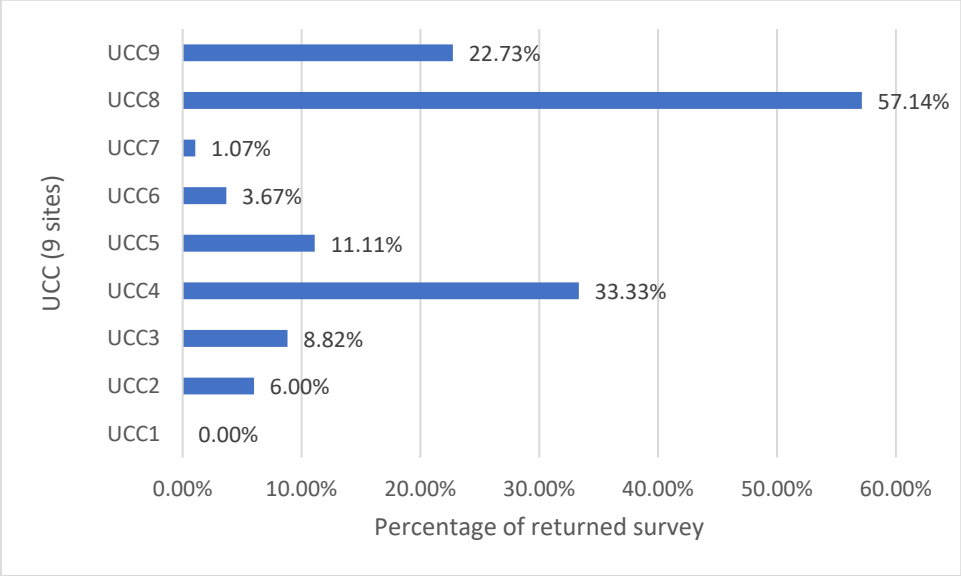
Ethics approval for this study was obtained from the Deakin University Human Research Ethics Committee (2019-198).

Results

As of end of the pilot project, 46 completed patient experience surveys had been returned (a combination of both online (n=23) and by post (n=23)) out of 719 MED consultations completed by the end of September 2020. This gives an overall response rate of 6.4% of total consultations. This is, in fact, quite reasonable response rate for this type of evaluation and non- reminder survey.[9]

There was a significant difference between the numbers of responses in each service ranging from 1.07% to 57.14%. Figure 2 shows the number of surveys received by site as a proportion of the MED calls for that site over the pilot period. UCC1 never commenced utilisation of the telehealth service due to closure of its UCC.

Figure 2: Survey responses received by site as a proportion of MED calls



UCC1 never commended utilisation of the telehealth service due to the closure of its UCC

Table 2 shows the absolute number of responses from each UCC. Please note that five surveys were returned with no data to identify the UCC to which it referred. Even though the percentage response rate were low in some UCCs, it is not surprising to see that the largest absolute number of responses came from UCC6 reflecting its high utilisation of the intervention. A summary of the distribution of responses for each question in the survey itself is provided below. 17.4% of respondents (n=8) did not answer one or more question, so that totals will not always sum to 46.

Table 2: Total surveys received by site

Site	Frequency	Percent
UCC2	3	6.5
UCC3	6	13.0
UCC4	2	4.3
UCC5	2	4.3
UCC6	13	28.3
UCC7	2	4.3
UCC8	8	17.4
UCC9	5	10.9
Missing	5	10.9
Total	**46**	**100**

Respondent demographics

Table 3 indicates that most returns are from younger or middle-aged adults, with only a small number of responses from elderly patients. As indicated in Table 5, 69% of respondents to the patient experience

survey were female while less than one third of the eligible responded survey was from male or other participants.

Table 3: Total surveys received by age

Age	Frequency	Percent
18-29	6	13.0
30-44	12	26.1
45-64	12	26.1
65-74	7	15.2
75-84	2	4.3
85+	2	4.3
Missing	5	10.9
Total	**46**	**100**

Table 4: Age distribution of respondents by site

Site	18 - 29	30 - 44	45 - 64	65 - 74	75 - 84	85+	Total
UCC2	1	1	1	0	0	0	3
UCC3	0	2	3	1	0	0	6
UCC4	0	0	2	0	0	0	2
UCC5	1	0	1	0	0	0	2
UCC6	3	5	2	2	0	1	13
UCC7	0	1	0	0	0	0	1
UCC8	0	1	2	2	2	1	8
UCC9	1	2	1	1	0	0	5
Total	**6**	**12**	**12**	**6**	**2**	**2**	**40**

Table 5: Gender distribution of survey respondents

Gender	Frequency	Percent
Female	29	63.0
Male	12	26.1
Other	1	2.2
Missing	4	8.7
Total	**46**	**100**

Voice Quality of the Equipment

Most participants are happy with the voice quality with 17.1% giving fair rating, 51.2% for good rating and 26.8% for excellent rating, and only 4.9% rating voice quality as poor. Data indicated f poor voice quality was observed once each in UCC4 and UCC6.

Table 6: Survey responses for voice quality of the equipment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	2	4.3	4.9	4.9
	Fair	7	15.2	17.1	22.0
	Good	21	45.7	51.2	73.2
	Excellent	11	23.9	26.8	100.0
	Total	41	89.1	100.0	
Missing		5	10.9		
Total		46	100.0		

Table 7: Survey responses for voice quality of the equipment by site

Site	Poor	Fair	Good	Excellent	Total
UCC2	0	0	3	0	3
UCC3	0	1	2	2	5
UCC4	1	1	0	0	2
UCC5	0	0	2	0	2
UCC6	1	3	5	4	13
UCC7	0	0	2	0	2
UCC8	0	0	5	3	8
UCC9	0	2	1	2	5
Total	2	7	20	11	40

Visual Quality of the Equipment

Most participants are happy with the visual quality with 12.8% giving a fair rating, 56.4% for good rating and 28.2% for excellent rating; only 2.6% rated visual quality as poor. Poor visual quality was only reported in one case, at UCC6.

Table 8: Survey responses for voice quality

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	2	4.3	4.9	4.9
	Fair	7	15.2	17.1	22.0
	Good	21	45.7	51.2	73.2
	Excellent	11	23.9	26.8	100.0
	Total	41	89.1	100.0	
Missing		5	10.9		
Total		46	100.0		

Table 9: Survey responses for visual quality by site

Site	Poor	Fair	Good	Excellent	Total
UCC2	0	0	3	0	3
UCC3	0	1	3	1	5
UCC4	0	0	2	0	2
UCC5	0	0	2	0	2
UCC6	1	3	3	6	13
UCC7	0	0	2	0	2
UCC8	0	0	4	2	6
UCC9	0	1	2	2	5
Total	**1**	**5**	**21**	**11**	**38**

Length of Time to get an Appointment

Most participants are happy with the length of time to get an appointment, with 17.4% giving a fair rating, 37.0% for good rating and 31.7% for excellent rating. Only 7.3% rated the wait time as poor.

Table 10: Survey responses for length of time to get an appointment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	3	6.5	7.3	7.3
	Fair	8	17.4	19.5	26.8
	Good	17	37.0	41.5	68.3
	Excellent	13	28.3	31.7	100.0
	Total	41	89.1	100.0	
Missing		5	10.9		
Total		46	100.0		

Length of Time with the Specialist

40% of respondents gave a good rating and 32.5 % an excellent rating for this item. However, 17.5% of participant reported the length of time spent with the specialist as “poor”.

Table 11: Survey responses for length of time with the specialist

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	7	15.2	17.5	17.5
	Fair	4	8.7	10.0	27.5
	Good	16	34.8	40.0	67.5
	Excellent	13	28.3	32.5	100.0
	Total	40	87.0	100.0	
Missing		6	13.0		
Total		46	100.0		

Personal Comfort Using the Telehealth System

Most participants were comfortable using telehealth, with 48.8% providing a good rating and 22.0 % an excellent rating. For this item, 14.6% of participants reported either “poor” or “fair” quality, respectively.

The lower number of respondents rating their comfort using telehealth as "excellent" does stand out as different from the pattern of responses to other questions. Incidence of personal poor comfort with telehealth was observed in UCC3 and UCC6. Poor levels of comfort using telehealth was reported by 33.3% (6/18) of users aged below 45 years, while no patients aged over 45 reported this discomfort. Older patients were more likely to report a higher level of comfort than were younger patients. No male respondents reported a poor level of comfort using telehealth, while 21.4% (6/28) female respondents reported poor comfort levels.

Table 12: Survey responses for personal comfort using the telehealth system

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	6	13.0	14.6	14.6
	Fair	6	13.0	14.6	29.3
	Good	20	43.5	48.8	78.0
	Excellent	9	19.6	22.0	100.0
	Total	41	89.1	100.0	
Missing		5	10.9		
Total		46	100.0		

Table 13: Distribution of survey responses for personal comfort using the telehealth system by site

Site	Poor	Fair	Good	Excellent	Total
UCC2	0	0	3	0	3
UCC3	2	0	1	2	5
UCC4	0	0	2	0	2
UCC5	0	0	2	0	2
UCC6	3	3	5	2	13
UCC7	1	0	1	0	2
UCC8	0	2	3	3	8
UCC9	0	1	2	2	5
Total	6	6	19	9	40

Table 14: Distribution of personal comfort using telehealth by age

Age	Poor	Fair	Good	Excellent	Total
18-29	1	0	4	1	6
30-44	5	2	2	3	12
45-64	0	3	6	3	12
65-74	0	1	4	1	6
75-84	0	0	1	1	2
85+	0	0	2	0	2
Total	6	6	19	9	40

Table 15: Distribution of survey responses of personal comfort using telehealth by gender

Gender	Poor	Fair	Good	Excellent	Total
Female	6	4	13	5	28
Male	0	1	7	4	12
Other	0	1	0	0	1
Total	6	6	20	9	41

Thoroughness, Carefulness and Skilfulness of the Specialist

Most participants are happy with the thoroughness, carefulness and skilfulness of the specialist, with 42.5% providing a good rating and 35.0% an excellent rating. For this item, 10 % of participants reported a poor rating of the thoroughness, carefulness and skilfulness of the specialist. Female participants reported a lower level of satisfaction with their experience of the MED specialist than male participants. All males rated their experience as either good or excellent, but 14% (4/28) of women reported a poor rating, and 18% (5/28) a "fair" rating only. There were clear differences in the experience of specialists' thoroughness, carefulness and skilfulness by age – 50% (9/18) of respondents aged below 45 reported this item as "poor" or "fair", while all of those aged 45 or over reported it as "good" or "excellent".

Table 16: Survey responses for thoroughness, carefulness and skilfulness of the specialist

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	4	8.7	10.0	10.0
	Fair	5	10.9	12.5	22.5
	Good	17	37.0	42.5	65.0
	Excellent	14	30.4	35.0	100.0
	Total	40	87.0	100.0	
Missing		6	13.0		
Total		46	100.0		

Table 17: Distribution of survey responses for thoroughness, carefulness and skilfulness of specialist by gender

Gender	Poor	Fair	Good	Excellent	Total
Female	4	5	10	9	28
Male	0	0	7	4	11
Other	0	0	0	1	1
Total	4	5	17	14	40

Table 18: Distribution of survey responses for thoroughness, carefulness and skilfulness of specialist by age

Age	Poor	Fair	Good	Excellent	Total
18-29	1	1	2	2	6
30-44	3	4	2	3	12
45-64	0	0	7	5	12
65-74	0	0	3	2	5
75-84	0	0	1	1	2
85+	0	0	1	1	2
Total	4	5	16	14	39

Privacy

Most participants are happy with the respect for privacy shown, with 51.2% giving a good rating and 34.1% excellent. Only 2.2 % (one respondent) rated privacy as poor. Overall, a somewhat poorer experience in privacy matters was observable in younger age groups compared to older respondents.

Table 19: Survey responses for respect of privacy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	1	2.2	2.4	2.4
	Fair	5	10.9	12.2	14.6
	Good	21	45.7	51.2	65.9
	Excellent	14	30.4	34.1	100.0
	Total	41	89.1	100.0	
Missing		5	10.9		
Total		46	100.0		

Table 20: Distribution of survey responses for respect of privacy by age

Age	Poor	Fair	Good	Excellent	Total
18-29	1	0	3	2	6
30-44	0	4	4	4	12
45-64	0	1	6	5	12
65-74	0	0	4	2	6
75-84	0	0	1	1	2
85+	0	0	2	0	2
Total	1	5	20	14	40

Courtesy, Respect, Sensitivity and Friendliness of the Specialist

Most participants are happy with the courtesy, respect, sensitivity and friendliness of the specialist with 43.9 % providing a good rating and 41.5% an excellent rating. 14.6% of respondents rated this item as poor. A poorer experience in this aspect was observed in younger age groups who are under 45 years old (4/18).

Table 21: Survey responses for courtesy, respect, sensitivity and friendliness

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	4	8.7	9.8	9.8
	Fair	2	4.3	4.9	14.6
	Good	18	39.1	43.9	58.5
	Excellent	17	37.0	41.5	100.0
	Total	41	89.1	100.0	
Missing		5	10.9		
Total		46	100.0		

Table 22: Distribution of survey responses for courtesy, respect, sensitivity and friendliness by age

Age	Poor	Fair	Good	Excellent	Total
18-29	1	0	3	2	6
30-44	3	2	2	5	12
45-64	0	0	6	6	12
65-74	0	0	4	2	6
75-84	0	0	1	1	2
85+	0	0	2	0	2
Total	4	2	18	16	40

Explanation of Treatment by the Specialist

Most participants are happy with the explanation of their treatment by the specialist, with 51.2% opting for good rating and 31.7 % for excellent rating. 9.8% rated the explanation as "poor". Observation indicated that younger age groups (< 45 years old) had poorer experience in this aspect. Interestingly, four younger people (stand 22.2% in this cohort) were from the same UCCs as indicated in the table below. Further observation indicated that UCC3, UCC6 and UCC8 have poorer experience in this aspect. Most participants are happy with the explanation of their treatment by the specialist, with 51.2% opting for good rating and 31.7 % for excellent rating. 9.8% rated the explanation as poor.

Table 23: Survey responses for explanation of treatment by the specialist

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	4	8.7	9.8	9.8
	Fair	3	6.5	7.3	17.1
	Good	21	45.7	51.2	68.3
	Excellent	13	28.3	31.7	100.0
	Total	41	89.1	100.0	
Missing		5	10.9		
Total		46	100.0		

Table 24: Distribution of survey responses for explanation of treatment by the specialist by age

Age	Poor	Fair	Good	Excellent	Total
18-29	1	0	4	1	6
30-44	3	3	3	3	12
45-64	0	0	6	6	12
65-74	0	0	5	1	6
75-84	0	0	1	1	2
85+	0	0	1	1	2
Total	4	3	20	13	40

Table 25: Distribution of survey responses for explanation of treatment by the specialist by site

Site	Poor	Fair	Good	Excellent	Total
UCC2	0	0	3	0	3
UCC3	0	2	1	2	5
UCC4	0	0	1	1	2
UCC5	0	0	1	1	2
UCC6	4	0	5	4	13
UCC7	0	1	1	0	2
UCC8	0	0	6	2	8
UCC9	0	0	2	3	5
Total	4	3	20	13	40

How Well the Staff Answered Your Questions About the Equipment

Most participants are happy with the answers from staff in relation to their questions about the equipment with 42.5 % providing a good rating and 45% an excellent rating. Only one respondent said this item was poor.

Table 26: Survey responses for how well the staff answered questions about equipment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	1	2.2	2.5	2.5
	Fair	4	8.7	10.0	12.5
	Good	17	37.0	42.5	55.0
	Excellent	18	39.1	45.0	100.0
	Total	40	87.0	100.0	
Missing		6	13.0		
Total		46	100.0		

Overall treatment experience of telehealth

37.5% of respondents rated their overall experience of telehealth as good, and 42.5% rated it as excellent, although 17.5% rated their overall experience as poor. Further observation that considered demographic factors indicated that 25.0% of females (or 7/28) rated the overall experience as poor compared to 0% in males and other gender. Similarly, respondents who were older than 45 years old (32/39) reported a better experience with telehealth overall while a poor experience was reported by younger than 45 years old patients only (7/39). "Poor" overall experiences were only reported at UCC3, UCC6 and UCC7. Females has poorer overall experience compared to males in all UCCs (25% vs 0% respectively) as indicated in the below table. Females has poorer overall experience compared to males in all UCCs (25% vs 0% respectively).

Table 27: Survey responses for overall treatment experience of telehealth

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	7	15.2	17.5	17.5
	Fair	1	2.2	2.5	20.0
	Good	15	32.6	37.5	57.5
	Excellent	17	37.0	42.5	100.0
	Total	40	87.0	100.0	
Missing		6	13.0		
Total		46	100.0		

Table 28: Distribution of survey responses for overall treatment experience by age

Age	Poor	Fair	Good	Excellent	Total
18 - 29	1	0	2	3	6
30 - 44	6	1	1	4	12
45 - 64	0	0	9	3	12
65 - 74	0	0	2	3	5
75 - 84	0	0	0	2	2
85+	0	0	1	1	2
Total	7	1	15	16	39

Table 29: Distribution of survey responses for overall treatment experience by site

Site	Poor	Fair	Good	Excellent	Total
UCC2	0	1	1	1	3
UCC3	2	0	1	2	5
UCC4	0	0	2	0	2
UCC5	0	0	1	1	2
UCC6	4	0	5	4	13
UCC7	1	0	0	1	2
UCC8	0	0	3	4	7
UCC9	0	0	2	3	5
Total	**7**	**1**	**15**	**16**	**39**

Table 30: Distribution of survey responses for overall treatment experience by gender

Gender	Poor	Fair	Good	Excellent	Total
Female	7	1	10	10	28
Male	0	0	4	7	11
Other	0	0	1	0	1
Total	**7**	**1**	**15**	**17**	**40**

Desire to use telehealth again

Overall, 77.5% of respondents said they would use telehealth again, while 22.5% said they would not. Observation indicated that 9/39 participants would not want to use telehealth again, the highest proportion of participants were at UCC6. Approximately 22.5% females indicated that they would not use the telehealth services again, compared to no males and other gender. There were seven people under the age of 45 who indicated they were reluctant to use telehealth services again compared with 2 people aged 45-64 who indicated they were reluctant. No respondents aged over 65 said they would be reluctant to use telehealth again.

Table 31: Survey responses for whether patients would use telehealth again

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	9	19.6	22.5	22.5
	Yes	31	67.4	77.5	100.0
	Total	40	87.0	100.0	
Missing		6	13.0		
Total		46	100.0		

Table 32: Distribution of survey responses for whether patients would use telehealth again by site

Site	No	Yes	Total
UCC2	1	2	3
UCC3	1	4	5
UCC4	0	2	2
UCC5	0	2	2
UCC6	5	8	13
UCC7	1	1	2
UCC8	1	6	7
UCC9	0	5	5
Total	9	30	39

Table 33: Distribution of survey responses for whether patients would use telehealth again by gender

Gender	No	Yes	Total
Female	9	19	28
Male	0	11	11
Other	0	1	1
Total	**9**	**31**	**40**

Table 34: Distribution of survey responses for whether patients would use telehealth again by age

Age	No	Yes	Total
18-29	1	5	6
30-44	6	6	12
45-64	2	10	12
65-74	0	5	5
75-84	0	2	2
85+	0	2	2
Total	9	30	39

Recommending telehealth to another person

Similarly, 78% of respondents would recommend telehealth to someone else, while 22% would not recommend it. Observation in this aspect indicated that a similar proportion of 9/40 participants who would not recommend telehealth, the highest proportion of participants were at UCC6. Approximately 22% females indicated that they would not recommend telehealth services, compared to 0% in males and

other gender. Younger respondents under 45 years old are also more reluctant to recommend telehealth services to other people than are older respondents.

Table 35: Survey responses for whether telehealth would be recommended to another person

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	9	19.6	22.0	22.0
	Yes	32	69.6	78.0	100.0
	Total	41	89.1	100.0	
Missing		5	10.9		
Total		46	100.0		

Table 36: Distribution of survey responses for whether telehealth would be recommended to another person by site

Site	No	Yes	Total
UCC2	0	3	3
UCC3	2	3	5
UCC4	0	2	2
UCC5	0	2	2
UCC6	5	8	13
UCC7	1	1	2
UCC8	1	7	8
UCC9	0	5	5
Total	9	31	40

Table 37: Distribution of survey responses for whether telehealth would be recommended to another person by gender

Gender	No	Yes	Total
Female	9	19	28
Male	0	12	12
Other	0	1	1
Total	9	32	41

Table 38: Distribution of survey responses for whether telehealth would be recommended to another person by age

Age	No	Yes	Total
18-29	1	5	6
30-44	6	6	12
45-64	2	10	12
65-74	0	6	6
75-84	0	2	2
85+	0	2	2
Total	9	31	40

Discussion

Number of surveys returned

There was a response rate of 6.4% and 89% completion rate. Observations from a range of international literature show a trend of survey (with reminder) return proportions between 25% to 87%, which is higher than the response rate observed in this project.[10] However, a much lower response rate is reported with non-reminder web-based survey methodologies.[9] Response rates have decreased in the last decade.[9] An experimental cross-sectional study conducted in 2016 indicated a yield response rate of 6.2% for the non-reminder survey that is similar to the response rate of this patient satisfaction survey.[11] A higher percentage of 11.4% was observed in the interim report, which was consistent with the 13.4% rate observed in another Telehealth Survey that focused on tele-psychiatry.[9] The telepsychiatry study had a 93.9% completion rate at the end of the study, which is similar to the 89% completion rate in this patients' satisfaction survey.[9] It is clear that staff and patients were much less likely to offer or complete the patient satisfaction survey in the later months of the study period. The number of surveys returned fell off after February 2020, possibly reflecting the impact of COVID-19 at sites. There were more responses received from females than males.

Overall satisfaction

Satisfaction rates appear similar between this report and those reported in other studies of the effectiveness of telehealth in general. Synthesising evidence from 16 studies in a recently conducted systematic review to examine whether patients and their caregivers living in rural and remote areas are satisfied with telehealth videoconferencing as a mode of service delivery in managing their health indicated that just over 80% of patients expressed overall satisfaction with a rate of 81% in a semi-structured interview.[10] This compares with an 82.5% patients satisfied with the services offered by MED in this patients' satisfaction survey. Therefore, the overall ratings received for this pilot were broadly consistent with international reported literature.

Patient Experience Findings

Keeping in mind that the number of responses remains relatively small, the initial results of the Telehealth Satisfaction Survey reported above are suggestive of certain findings. While responses on the individual items typically showed low levels of "poor" ratings, with a high proportions (70%-80%) of participants who rate their experience in most aspect as “good” or “excellent”, the overall measures suggest a split perception. About four-fifths of respondents clearly had a positive experience of telehealth, were satisfied with it overall, and would use it again or recommend it to others. Yet around one-fifth of respondents did not enjoy using the service, rating their overall experience as "poor" and stating that they would not use it again or recommend it to others.

Further demographic analysis indicated that where a poorer experience occurred, it tended to be reported by females. Four females aged under 45 had “poor” or “fair” experience in all aspects (visual quality of the equipment, personal comfort in using telehealth system, time to appointment, time with a specialist, explanation of treatment by specialist, thoroughness carefulness and skilfulness of specialist, the courtesy respect, sensitivity and friendliness of the specialist, privacy, staff explanation about the equipment and overall experience of participants). However, this could be associated with the fact that the survey was completed more often by female participants (69%) and female patients make up a larger portion of MED calls (regardless of survey response; see the next section on utilisation). However, handwritten comments on some postal surveys suggested that difficulties in conducting adequate or sensitive physical examinations might explain some of this dissatisfaction. One comment referred to

discomfort with undergoing more intimate examinations via telehealth. Another was concerned that the MED specialist had chosen not to examine a patients' throat (see Box 1). These problems may represent inherent limitations to the utility of telehealth in some circumstances where physical examination is essential.

Box 1: Patient comment

"Because the person on the other end chose not to look at my son's throat because 'he wouldn't have been able to see properly anyway' the following night we ended up in Emergency at [a hospital]. A very poor service with connection problems, they didn't bother to talk to my son as the patient and gave a diagnosis without any sight or consultation."

Older participants tended to report better experiences. No "poor" experience was observed in any aspect for the 45+ group. "Fair" experience was observed in two aspects only, namely personal comfort in 45-64 and 65-74 year old groups) and Privacy (45-64 year old group).

Several UCCs reported a poorer visual/voice quality in this analysis. Most of these UCCs are located at the Northern/Western bound of the Western Victoria region. The finding of this patient satisfaction survey was consistent with UCCs' staff experience that was UCC3, UCC4, UCC5, UCC6. This might be attributed to the poor network coverage in the rural and remote area which is an on-going, significant issue that was highlighted in AMA 2019 Rural Health Issue Survey Report, despite the significant investment in the National Broadband network in rural and remote area.[5] The finding is also consistent with international evidence that highlighted technology maturity and internet coverage as a key barrier for the success of Telehealth.[5]

Conclusion

A large majority (four-fifths) of respondents to the patient satisfaction survey reported a positive experience of telehealth, and would happily use it again or recommend it to others. However, the other one-fifth of respondents did not enjoy using the service, rating the overall experience as "poor" and stating that they would not use it again or recommend it to others.

Female respondents appeared more likely to report a poor experience than males; and all "poor" experiences were reported by respondents across multiple UCCs aged under 45, while respondents over the age of 45 reported consistently good experiences.

Recommendations

5. The patient experience and benefit of telehealth services is positively correlated with the level of skill and experience of the on-duty nursing staff (based on qualitative evidence collected during interviews).
6. Experience suggests that nursing staff should consider more carefully whether telehealth will be appropriate or useful in individual patients for whom adequate physical examination via telehealth will be i) difficult or impossible, and/or ii) intrusive and insensitive.
7. The quality of video calls depends on the stability and quality of the internet service the device has access to. Therefore, a high-speed, stable internet connect should be provided.
8. Limitations of the patient experience analysis were due to a small proportion of returned surveys and in future more support is needed to improve response rates.

(numbering continued from previous section)

Utilisation

Methods

Basic descriptive statistics have been prepared summarising the MED consultations using Excel and Stata software packages. The sites had quite different models of care, both before and during the telehealth pilot period, so many of the analyses include a comparison between sites. These analyses have been designed to answer the following questions:

- How many MED calls were made and how did this differ between sites?
- Did the utilisation of MED calls change over time?
- Was there a particular age group where MED consultation were utilised more often and did this differ between sites?
- Was the MED service used more for one gender and did this differ between sites?
- What were the outcomes of MED calls and did this differ between sites?
- Did the sites use after hours telehealth services in different ways based on triage category?
- Was there an impact on overall admission and transfer rates for after hours presentations?

Three data sources were used to inform the analyses on utilisation:

1. Individual de-identified call data supplied by MED for all telehealth consultations that occurred during the pilot period (August 2019 to September 2020)
2. Individual de-identified call data matched with additional information supplied by the local health services to WVPHN such as outcome of consultation and triage category for the pilot period
3. Individual de-identified data on all presentations to UCCs for 12 months prior to the pilot period and the pilot period itself supplied by some local health services

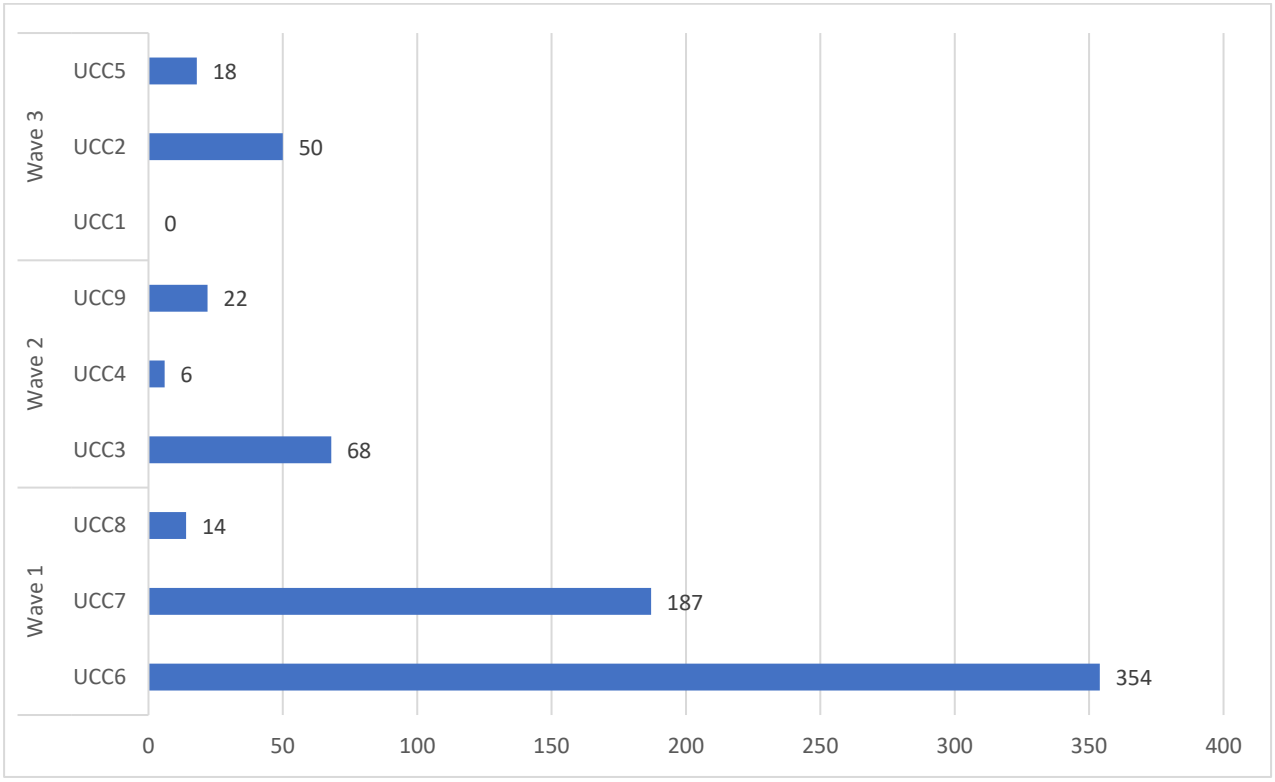
The second and third data sources were incomplete sets of data. Additional details from local health services on presentations related to MED services were missing for some calls and some entries from local health services could not be matched to MED calls. The second data set represents approximately 75% of all MED calls. Regarding the third set of data, information on all presentations to UCCs was provided by 6 (out of 8 sites that utilised the service) and 2 contained substantial amounts of missing data during the pilot period limiting their use.

Results

Overall utilisation

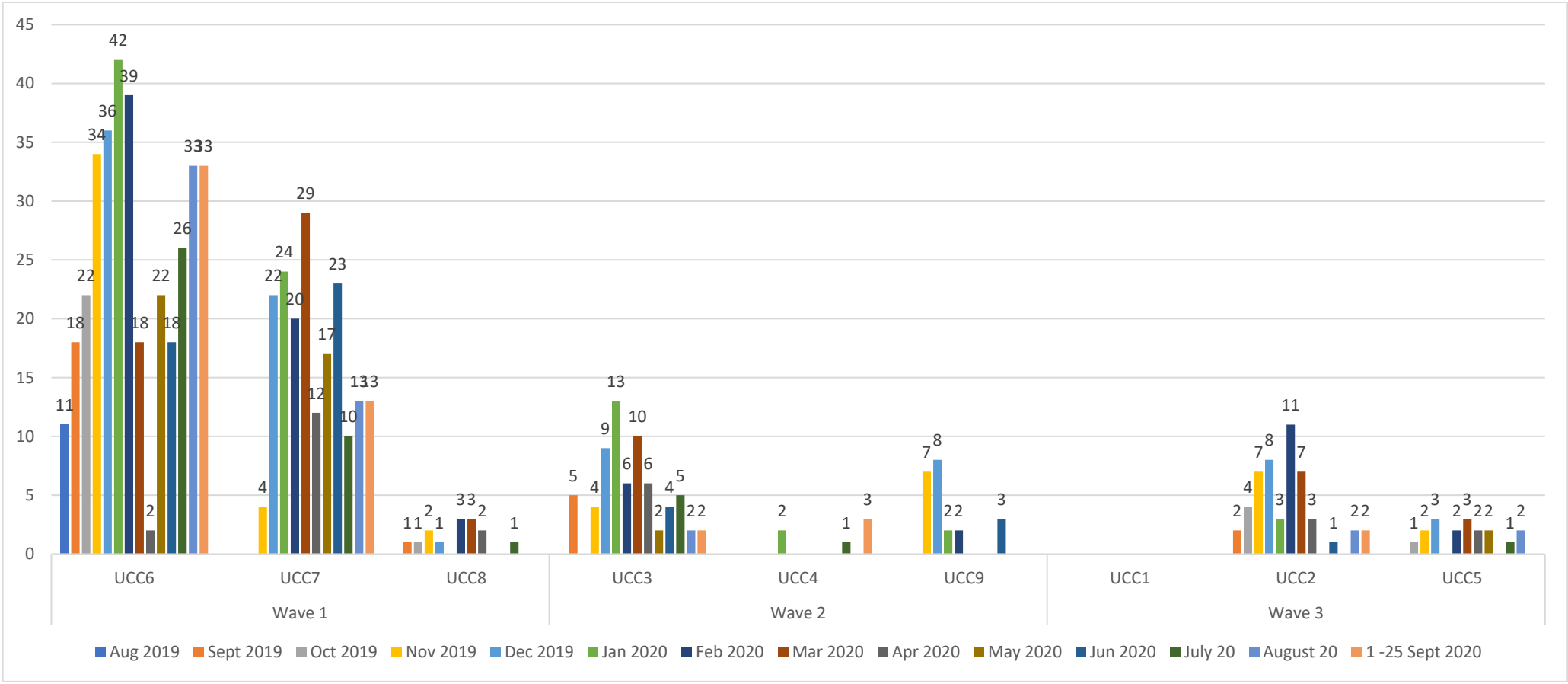
In total, 719 telehealth calls were made from UCCs during the pilot period. Figure 3 shows the wide variation in utilisation between sites, demonstrating the different models of care in place and place telehealth had within these models of care. The range of number of telehealth calls was between 6 and 354 for the sites that used the service. There were also 55 follow up calls in addition to the 719 primary calls which are not included in the analyses below. Figure 4 shows the utilisation of telehealth calls over time. There appears to be a gradual increase in telehealth consultations over time as a site starts using the service but this is less evident in those that are generally low users of the service overall. It is difficult to draw inferences about the effect that COVID-19 may have played in the use of telehealth over time. For example, the evaluation team has been advised that the drop in telehealth consultations that occurred in April 2020 for UCC6 was due to administrative factors related to allocated call availability.

Figure 3: Total utilisation of MED calls during pilot period by site and wave



Modified graph supplied by MED
UCC1 exited the pilot before it began

Figure 4: Total utilisation of MED calls during pilot period by site and wave over time



Modified graph supplied by MED
UCC1 exited the pilot before it began

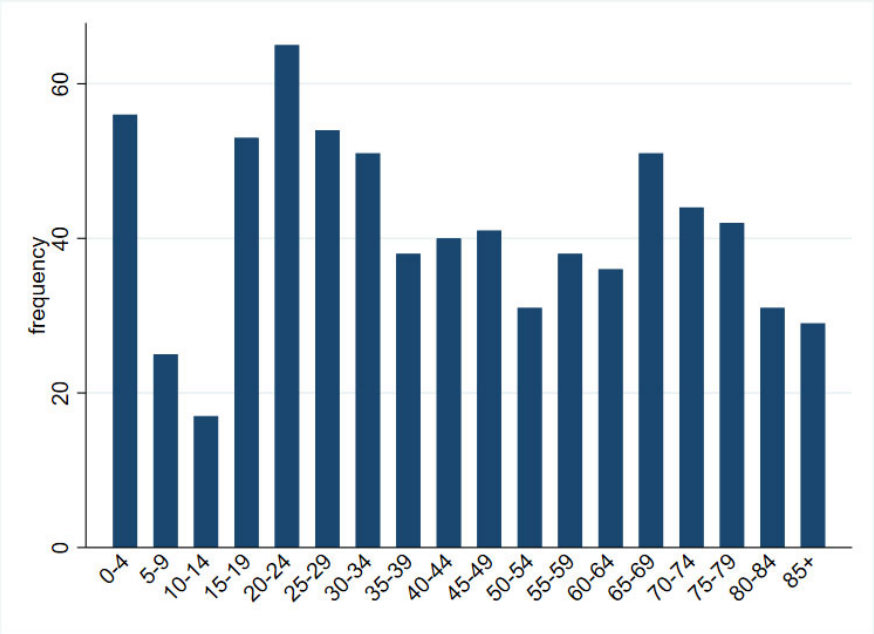
Demographics of MED utilisation

Telehealth consultations were fairly evenly distributed across all ages Figure 5. The highest number of telehealth consultations occurred for patients aged between 20 to 24, followed by those aged between 0 to 4. The age ranges with the least number of telehealth consultations are those aged between 10 to 14 and 5 to 9. Figure 7 contains the age distribution of all after hours presentations to six UCCs. A comparison of Figure 5 and Figure 7 suggests there may be a preference for using telehealth for younger patients; however, the age distribution of GP callouts would be required for a true comparison, but is not available. Figure 4 shows the same data by site. This confirms that telehealth consultations were used for a wide range of ages across all sites.

53% of MED consultations were provided for female patients. There tended to be a trend of a greater proportion of female patients accessing MED consultations for most sites with a couple of exceptions (Figure 8). A comparison of this data with Figure 9 which contains the gender distribution of all after hours presentations for six sites suggests that there are more females who present to UCCs after hours in general; however, the gender distribution of GP callouts is required for a true comparison.

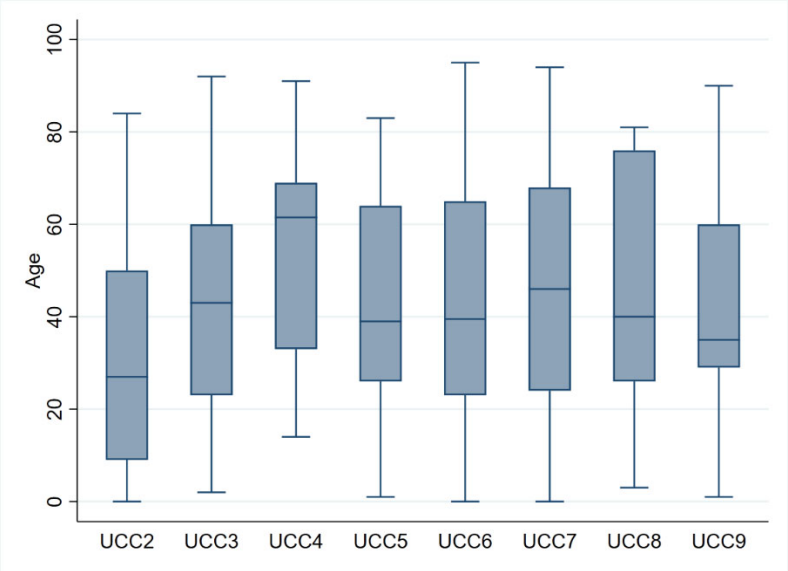
Data source 1 (call data supplied by MED) was the only one required to conduct analyses of demographics.

Figure 5: Age distribution of all telehealth consultations



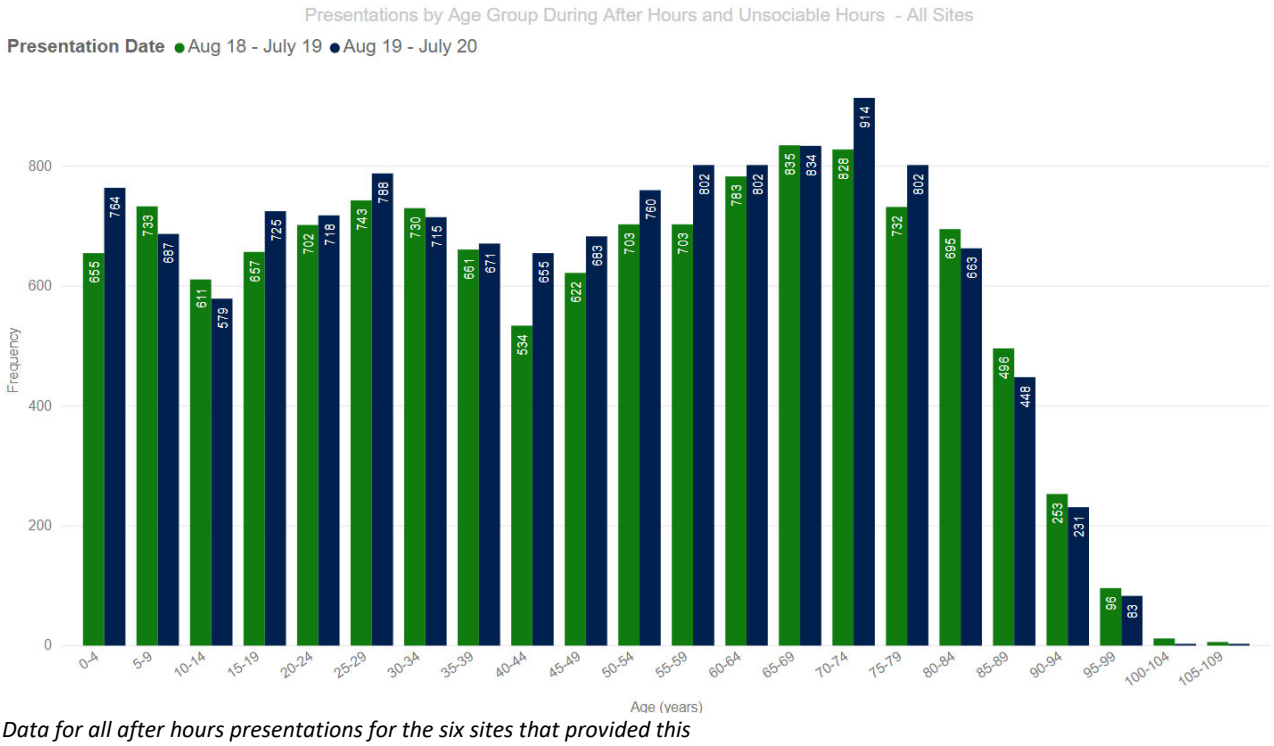
Data for MED calls only

Figure 6: Age distribution of telehealth consultations by site



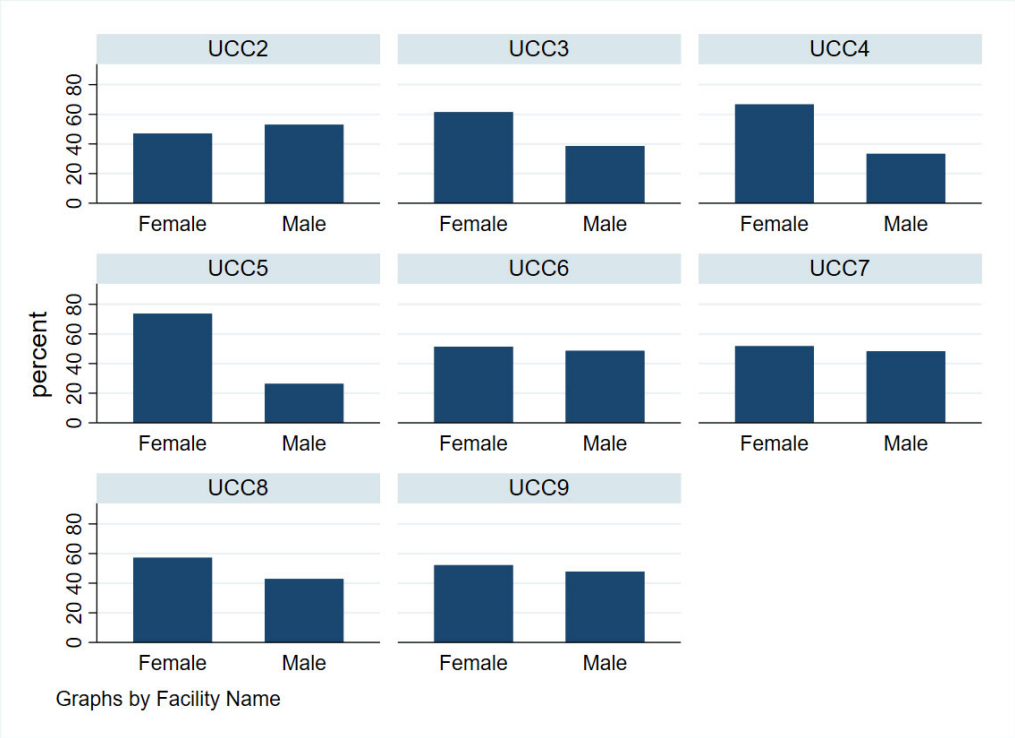
Data for MED calls only
UCC1 is excluded from this graph because they did not use any telehealth consultations
This is a box and whisker plot where the interquartile range, or half of the consultations for a site, is represented by the shaded area in the box, the median is the dark blue line within the box and the thin lines at the end of each line represents the minimum and maximum age of patients that were involved in a telehealth consultations.

Figure 7: Age distribution for all after hours UCC presentations



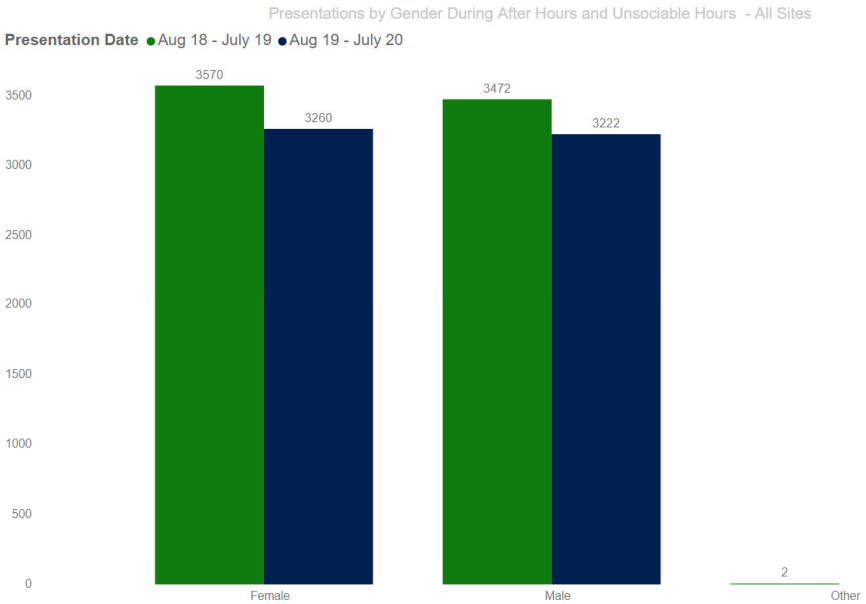
Data for all after hours presentations for the six sites that provided this

Figure 8: Telehealth consultations by gender and site



Data for MED calls only

Figure 9: Gender distribution of all after hours presentations to UCCs



Based on data on all UCC presentations from six sites that provided this

Departure status and the outcome of MED consultations

All three data sources were analysed to elucidate the outcome of MED consultations and try to establish how this compared with current practice. Table 39 reports the outcome of MED consultations as recorded by MED emergency physicians. Most consultations were 'managed in situ' with 7% requiring transfer to an emergency department at another facility. This proportion is in between the transfer rate for all after

hours UCC presentations of the other four sites we have data for (Figure 12; two sites are more than this and two are less). Additional analysis was conducted using the second set of data to tease apart a more nuanced understanding of the consultations that were 'managed in situ' (i.e. whether they were admitted or discharged home) because this information was not available from the first set of data. Figure 10 shows that most UCC presentations involving an MED consultation were discharged home with a small proportion (less than those that were transferred to another facility) admitted to the UCC's facility. This is generally representative of most sites except for UCC5 and UCC8 (Figure 11). The proportions for these two sites may simply reflect the lower overall utilisation of MED consultations at these sites (i.e. one or few presentations can skew the proportions). The data used for Figure 10 and Figure 11 represent approximately 75% of all MED calls due to missing data from local health services or the inability to match information received from local health services with the call data received from MED.

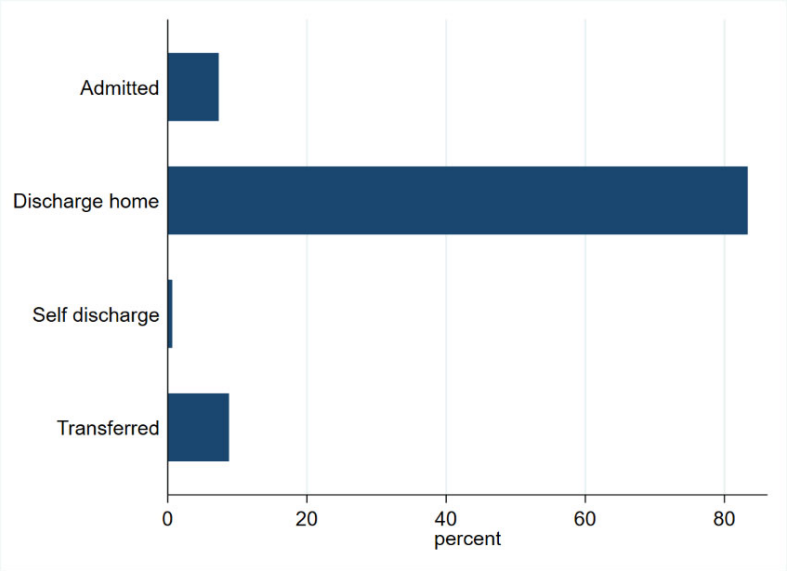
Figure 12 reports departure status for all after hours calls regardless of who attended to the patient, comparing the 12 months of the pilot period with the corresponding 12 months prior to the pilot. Therefore, this contains a mix of presentations that resulted in a MED call, those that required a GP callout and those that were attended by the UCC nurse. Reasonably complete data for this was only available for four sites. The proportion of transfers and admissions does not appear to change substantially between the pilot and pre-pilot periods for each site. Figure 13, shows the same analysis but only for the 'pre-COVID' period and the corresponding months the year before. So seven months of data is used for Wave 1 (August 2019 to February 2020 pilot vs. August 2018 to February 2019 pre-pilot), 6 months of data for Wave 2 (September 2019 to February 2020 pilot vs. September 2018 to February 2019 pre-pilot) and 5 months for Wave 3. Data was not available to compare the departure status of GP callouts to MED calls.

Table 39: Outcome of MED consultation by site

Urgent Care Centre	Follow up	Go to ED	Manage in Situ	Other	Grand Total
UCC2	5	1	49		55
UCC3	2	9	58	1	70
UCC4	1	2	4		7
UCC5	3		18		21
UCC6	20	30	322	2	374
UCC7	43	7	180		230
UCC8			13	1	14
UCC9	4	1	21		26
Grand Total	78	50	665	4	797

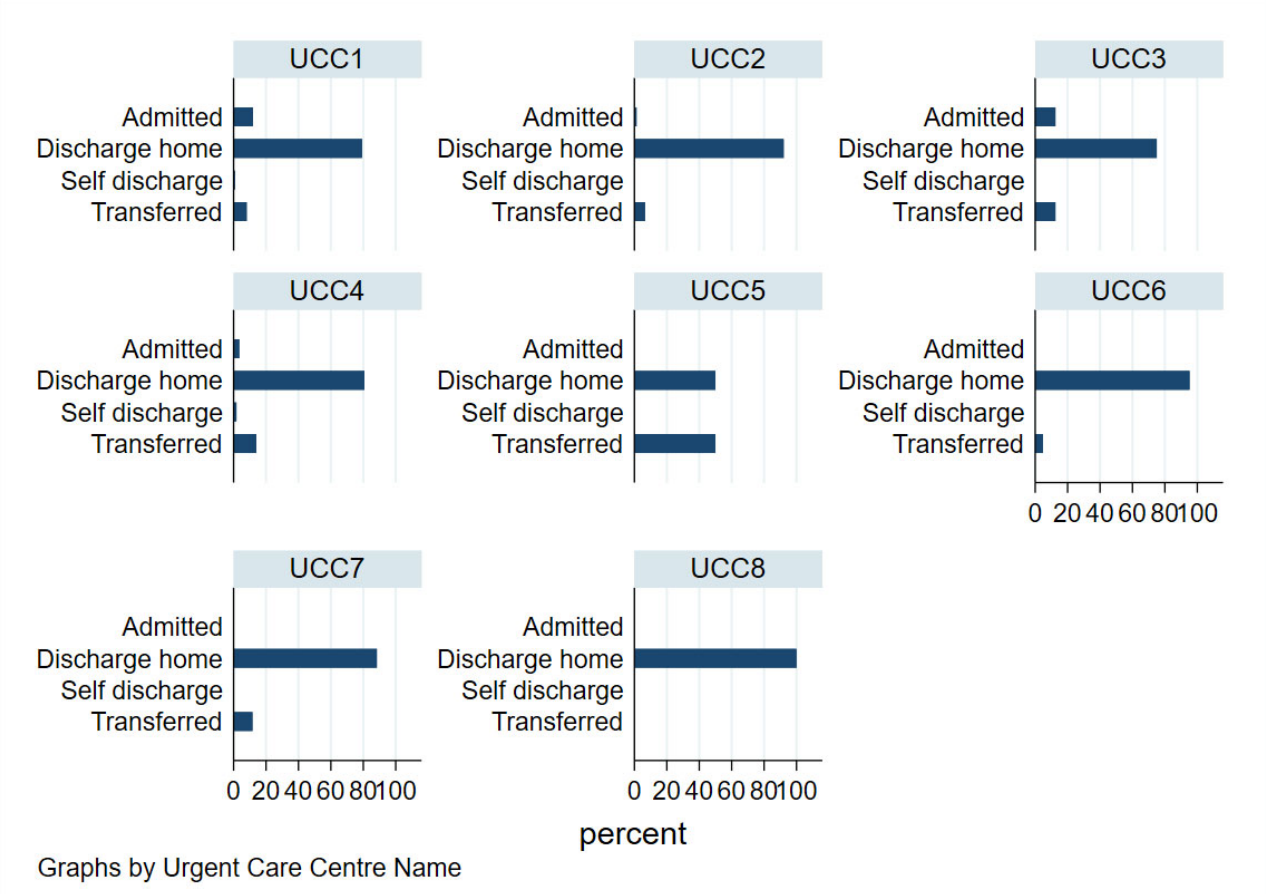
Modified table supplied by MED
Data for MED calls only

Figure 10: Departure status of MED consultations all sites



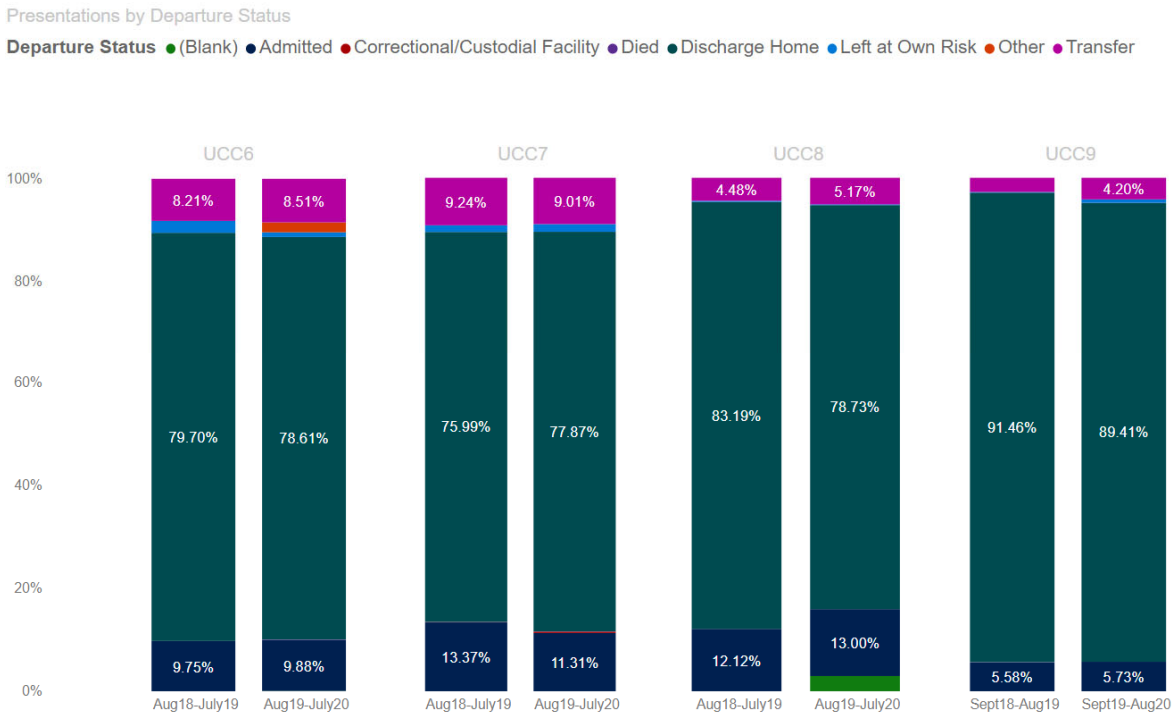
Data for MED calls only

Figure 11: Departure status of MED consultations by site



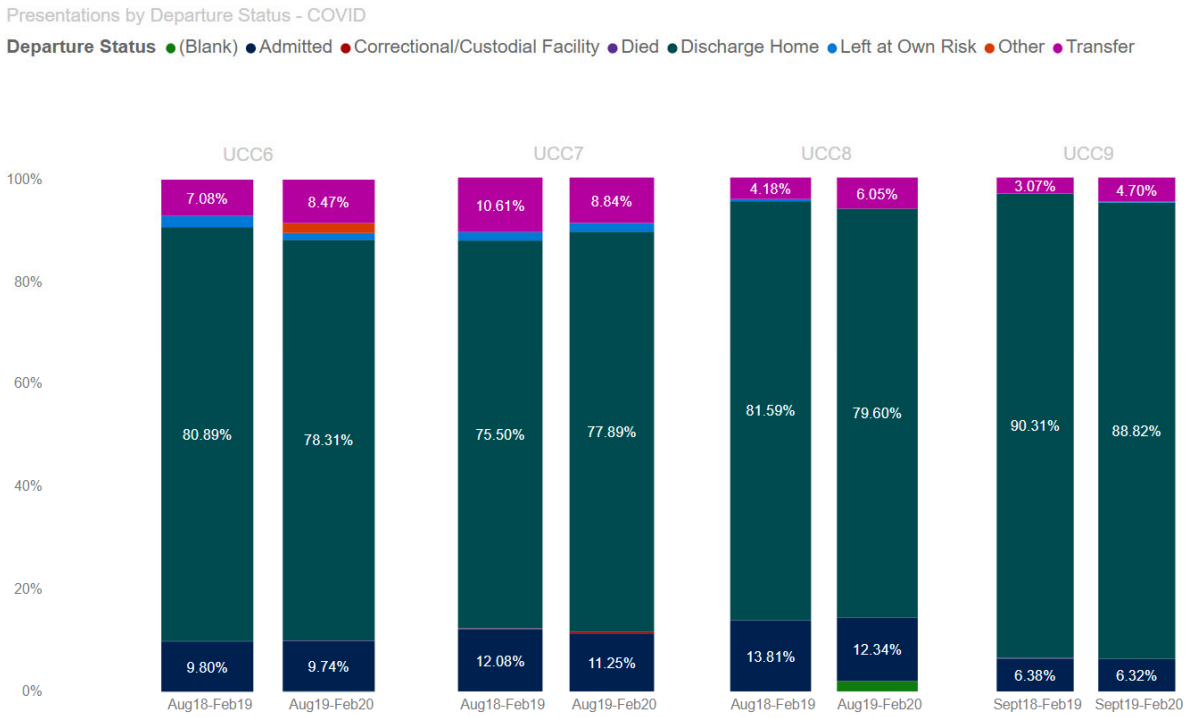
Each horizontal bar represents the proportion of primary (excluding follow ups) MED calls that resulted in a departure status out of all matched MED calls for that site

Figure 12: Departure status of all after hours presentations to selected UCCs, pilot period vs. pre-pilot period



Data for all after hours presentations

Figure 13: Departure status of all after hours presentations to selected UCCs, pre-COVID-19 pilot period vs. corresponding months for the previous year



Data for all after hours presentations

Urgency of presentations

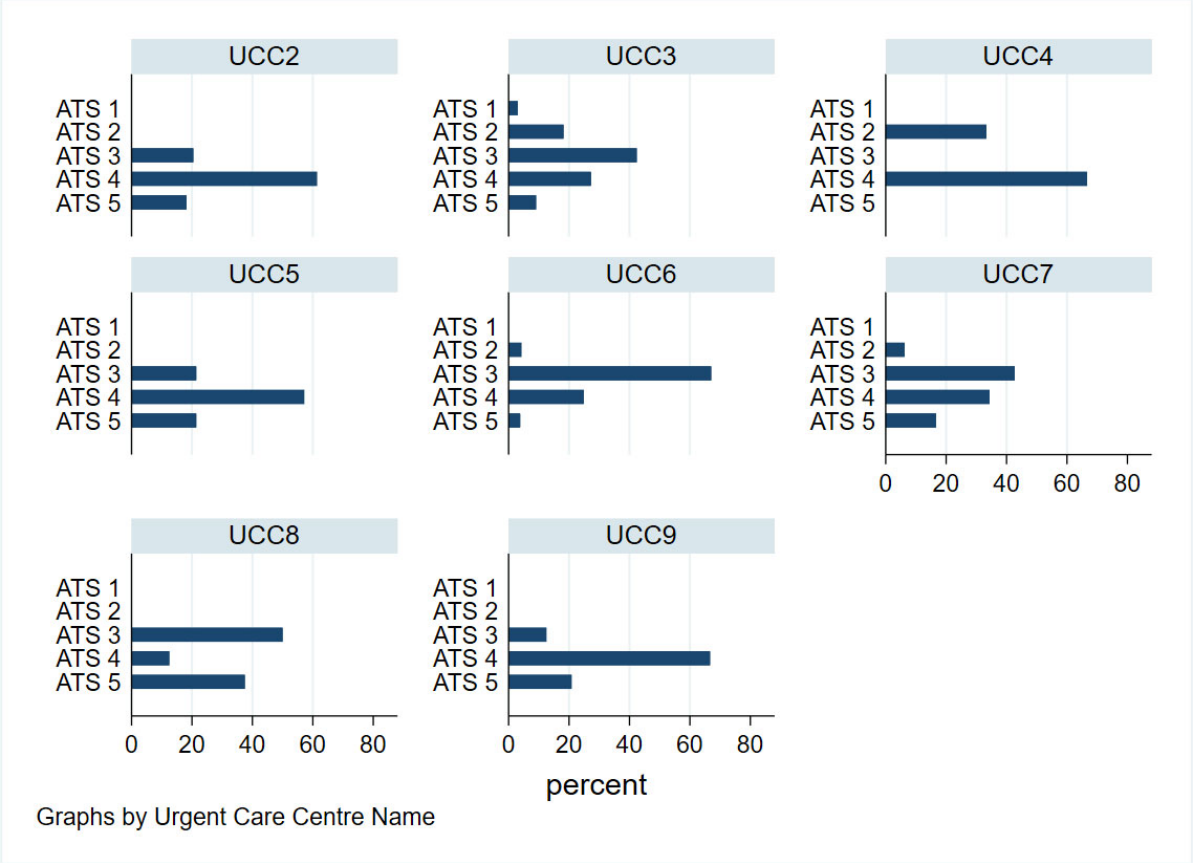
Over half (52%) of MED calls were made for presentations that fell under Australian Triage Scale (ATS) category 3 followed by ATS category 4 (33%) (Table 40). A telehealth consultation was used only once for ATS category 1 and 24 times for ATS category 2. The information provided in Figure 14 and Table 41 suggests that UCCs used the telehealth service in different ways based on urgency. Some sites used telehealth predominantly for ATS 3 and some predominantly for ATS 4. Some sites never used the telehealth service for ATS 1 and 2.

Table 40: Distribution of Australian Triage Scale category all sites

Australian Triage Scale Category	Frequency	Percent
ATS 1	1	0.21
ATS 2	24	5.02
ATS 3	248	51.88
ATS 4	158	33.05
ATS 5	47	9.83
Total	**478**	**100**

Data for MED calls only
Number of calls reported here is less than total MED calls due to missing data and matching errors

Figure 14: Distribution of Australian Triage Scale category by site



Data for MED calls only, where matching was possible

Table 41: Frequency of MED calls by urgency category and site

Category	UCC2	UCC3	UCC4	UCC5	UCC6	UCC7	UCC8	UCC9	Total
ATS 1	0	1	0	0	0	0	0	0	1
ATS 2	0	6	1	0	11	6	0	0	24
ATS 3	9	14	0	3	175	41	4	3	249
ATS 4	27	9	2	8	65	33	1	16	161
ATS 5	8	3	0	3	10	16	3	5	48
Total	**44**	**33**	**3**	**14**	**261**	**96**	**8**	**24**	**483**

Discussion

The after hours telehealth service was utilised 719 times over the pilot period (excluding follow up calls) and the degree to which local health services accessed the service varied widely between sites. Total utilisation was less than half what was available to sites during the pilot period (2000 funded consultations). This lower than expected uptake reflects in part the specific service models chosen by some UCCs; in some, higher-skilled and qualified nurses used the telehealth service quite sparingly, in others telehealth was only used for limited periods when GPs were unavailable. It also almost certainly reflects in part the impacts of COVID restrictions and broader changes in community health-seeking behaviours during COVID, with overall UCC attendances reduced in several months. MED calls were utilised across a wide range of ages, with the most frequent patients being in their early 20s or infants. The telehealth service appears to have been used slightly more often for female patients across most sites. The demographic distribution of MED calls may reflect the characteristics of those people that normally present to UCCs after hours or require escalation to GP callouts rather than revealing a preference to use telehealth services for those people per se.

The telehealth service was used most often for ATS categories 3 and 4 and rarely used for ATS category 2 and 1. The utilisation of MED calls appears to have varied between sites based on urgency. There does not appear to be any impact on transfers or admissions but data on the normal transfer and admission rates for GP callouts is required to make a true comparison here.

All participating health services have advised that they have entered into a Service Provider Agreement to continue using MED after the pilot but with different intentions as to how they will continue to access the service.

Conclusion

The after hours telehealth service was used for a wide range of patients and appears to be a flexible service that can be tailored to the models of care in place in local health services.

Recommendations

9. Use of telehealth for ATS 1, ATS 2 and ATS 3 will depend on the model of care and nursing experience available at each health service, and appears to be most appropriate when nursing staff have high skill levels (e.g. RIPERN, nurse practitioner).
10. Consider using telehealth exclusively for lower urgency categories (ATS 4 and ATS 5) at sites or situations where nursing staff skill and experience levels are less extensive.
11. In the context of Western Victoria, routine participation in the RAHDAR database by all UCCs and their parent health services could assist in the systematic collection of consistent data across sites.

(numbering continued from previous section)

Acknowledgements

We would like to acknowledge Brook Martyn from Western Victoria PHN for matching data received from local health services with MED call data which was critical to some of these analyses and MED for sharing their de-identified data with the evaluation team.

Thank you to Kate Kloot, School of Medicine, Deakin University, for conducting additional analysis of UCC presentation data and producing figures 7, 9, 12 and 13.

Cost analysis

Introduction

The addition of an after hours telehealth service to the models of care used by Urgent Care Centres (UCCs) in rural and remote areas had the potential to impact a variety of resources used and costs. The change in these elements relative to changes in other resources meant the after hours telehealth service could have been cost-increasing or cost-decreasing, and this may have differed between sites depending on how they used the service. Therefore, a cost analysis was conducted to establish whether the after hours telehealth service provided by My Emergency Doctor (MED) was considered 'value for money'.

Factors that potentially influence the cost effectiveness of a telehealth service such as this are:

- Cost of telehealth consultations (MED calls)
- Cost of current on call GP services, consisting of
    - Cost per night for being on call
    - Cost per callout
    - Overall contractual arrangements with local GP clinics, where after hours on call services may be only one of several services provided
- Proportion of nights during the year a GP is on call
- Number of callouts per night/month/year and whether the GP attended in person or over the phone
- Degree to which the telehealth service replaced calls that otherwise would have been made to an on call GP
    - In contrast, the degree to which MED consultations were utilised for presentations that would not previously have been referred to an on call GP (e.g. due to a low level of seriousness or urgency)

These factors impacting total cost may have changed over time between the pilot and pre-pilot periods and this may have differed between sites. For example, some sites reduced the number of nights they had a GP on call during the pilot period and some did not.

This analysis was focused on 'incremental' costs due to the addition of telehealth services and excluded those that remain the same regardless of whether a site used MED consultations or not, such as the fixed costs of running the facility (utilities and building costs) and nursing staff rostered to work in the UCC.

Methods

A cost analysis was conducted to investigate the model of care which minimised costs based on the assumption that there is no difference in the effectiveness between interventions (whether that be a difference to patient outcomes due to the health professional attending to the patient or the quality of life of GPs). This economic approach was taken due to the lack of quantitative data to the contrary. This assumption should be considered in the context of the qualitative studies reported in prior sections.

The cost analysis was developed by adding unit costs to build upon the data on activity presented in the prior section of this report on utilisation. An additional data source was used for this (in addition to the three discussed in the utilisation section of this report) consisting of two optional surveys to sites with questions on unit costs and general changes in utilisation of on GP services. Sufficient data was available

from four sites to conduct the cost analysis based on a combination of overall UCC activity data and responses received to the cost surveys.

Table 42 contains the main parameters used for the cost analysis. A range of figures were provided by sites for cost per night on call and cost per callout. This data was anonymised and could not be assigned to specific sites and their respective activity. Therefore, an approximate mid-point was used in the base case for all sites and varied in sensitivity analysis. All sites indicated that a GP was on call all nights of the year (with minor exceptions) in the pre-pilot period. During the telehealth pilot period, the change in the number of nights a GP was on call differed substantially between sites, with reductions ranging from none to 73%. The baseline (pre-pilot) proportion of UCC presentations where a call was made to the on call GP differed substantially between sites and whether this changed during the telehealth pilot period also differed substantially between sites. These wide variations in how after hours services were used are part of the reason why the other four sites (that used MED) were excluded from the cost analysis if they provided insufficient data. The actual cost of after hours GP services was not available because contracts or detailed costings were not provided by sites to the evaluation team so this analysis should be considered an approximation.

The approach for calculating the cost elements over the 12 month periods (pilot vs. pre-pilot) are as follows:

- Cost of being on call – the proportion of nights on call from Table 42 was applied to the number of days in each month. The proportion of nights on call was derived by dividing the number of nights on call advised by the sites in the cost survey by 365 (number of days in a year).
- Cost of GP callouts – the number of callouts each month was estimated by applying the proportion in Table 42 by the after hours presentations for that month. The proportion of presentations requiring GP callout was calculated by dividing the number of callouts over the 12 month period reported by the sites in the cost survey by the total after hours UCC presentations for that 12 month period. The after hours UCC presentations were obtained from data source 3 discussed in the utilisation section. It was assumed that the proportion of UCC presentations requiring a GP callout was the same for all months.
- The cost of MED calls was obtained by multiplying the number of MED calls in a month by the cost per call.

The analysis adopted the perspective of the local health service. There was no discounting applied due to the short term nature of the analysis. The analysis was conducted in Microsoft Excel 2016.

Table 42: Input parameters for cost analysis

Parameter	UCC6	UCC8	UCC7	UCC9
Cost per night on call	$300	$300	$300	$300
Cost per callout	$30	$30	$30	$30
Proportion of nights on call pre-pilot	100%	100%	99%	99%
Proportion of nights on call during telehealth pilot	100%	23%	99%	89%
Proportion of presentations requiring a GP callout pre-pilot	43.7%	49.9%	87.5%	27.3%
Proportion of presentations requiring GP callout during telehealth pilot	13.24%	49.3%	78.3%	29.9%

Cost per night on call and cost per callout were assumed to be the same for all sites in the base case in the absence of site-specific data and varied in sensitivity analysis

Results

The estimated monthly spend for the pilot period vs pre-pilot period is reported in Figure 15, Figure 16, Figure 17 and Figure 18 for the four sites included in the analysis. The orange telehealth line below the pre-pilot line indicates a month in which on call expenses were less than the corresponding month in the pre-pilot period. This is likely to be an oversimplification of the actual contracted costs of GP services (not provided to the evaluation team) but should be representative of the overall conclusions that would be made if this data was available. Table 43 reports the total costs for each 12 month period and the cost increase or decrease estimated to have occurred by site and overall. UCC6 is estimated to have experienced a minor increase in cost due to telehealth, predominantly because the high volume of MED calls utilised outweighed the cost savings due to a substantial reduction in number of GP callouts that occurred during the telehealth period. UCC8 is estimated to have substantial cost savings due to the material reduction number of nights a GP was on call during the telehealth period. UCC9 is also estimated to have experienced cost savings. Although there was actually a slight increase in the proportion of UCC presentations requiring a GP callout, overall UCC after hours activity was less in the pilot period and this reduction in activity coincided with the first wave of COVID-19 in Australia. UCC7 is estimated to have experienced an increase in costs due to a higher volume of MED use outweighing a reduction in costs due to decreased number of GP callouts.

An alternative comparison was conducted using the time period prior to the first wave of COVID-19 in Victoria. This consists of 7 months of data in each period for the three sites in wave 1 (August to February) included in this cost analysis and 6 months of data for UCC9 in wave 2 (September to February). There were no sites from wave 3 that could be included in the cost analysis due to data limitations. The conclusion of this analysis (mindful of the assumptions specified in the methods section) was that the impact on cost changes in scale but not direction. That is, sites that experienced cost savings for the entire pilot period were expected to have experienced cost savings for the pre-COVID period as well.

Sensitivity analysis

Two sensitivity analyses were conducted to test the impact of the cost of nightly on call rates and cost per callout on overall conclusions. Figure 19 shows that as the cost per night for a GP being on call changes

from $200 to $500, the telehealth period remains cost saving in all scenarios. Figure 20 shows that as the cost per callout changes from $0 to $60, the telehealth period remains cost saving in all scenarios.

Figure 15: Approximate monthly call expenses pilot vs. pre-pilot periods, UCC6

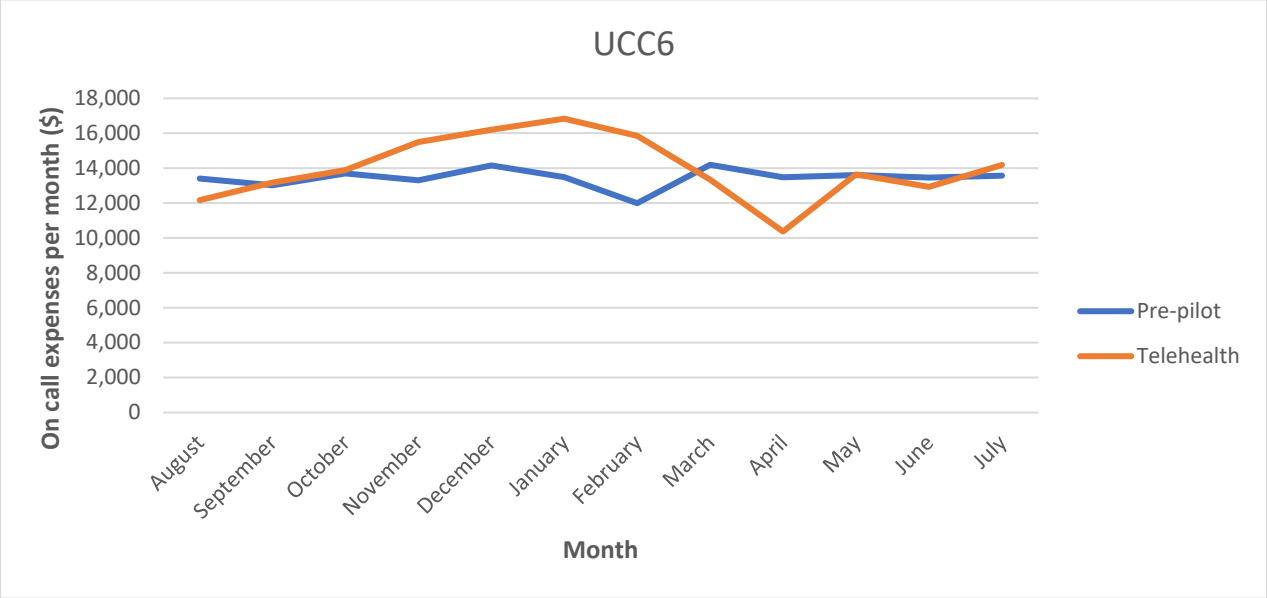


Figure 16: Approximate monthly call expenses pilot vs. pre-pilot periods, UCC8

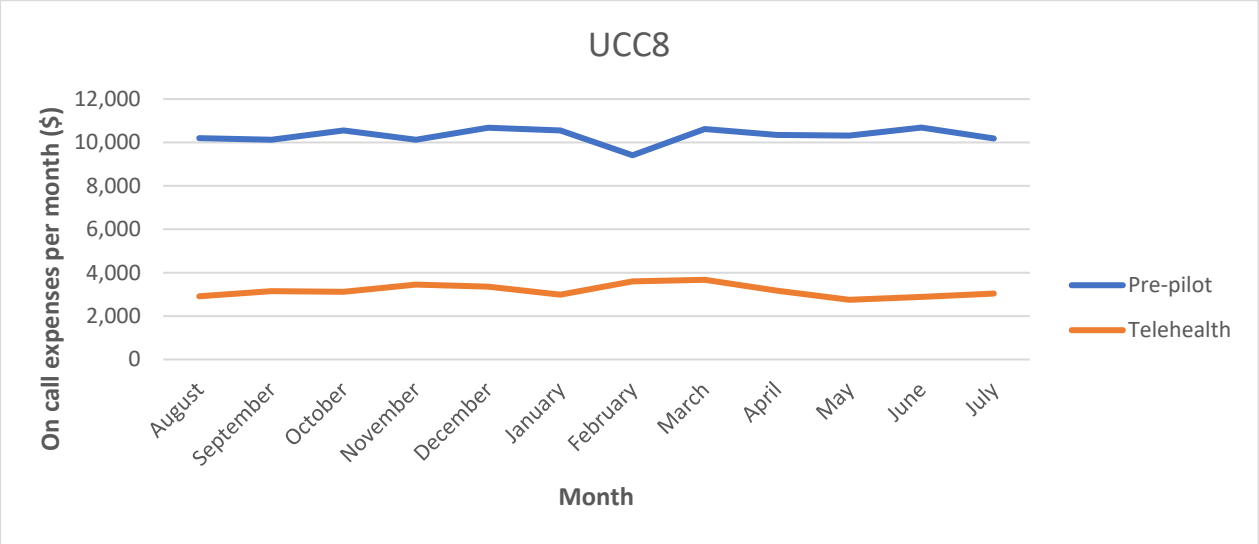


Figure 17: Approximate monthly expenses pilot vs. pre-pilot periods, UCC9

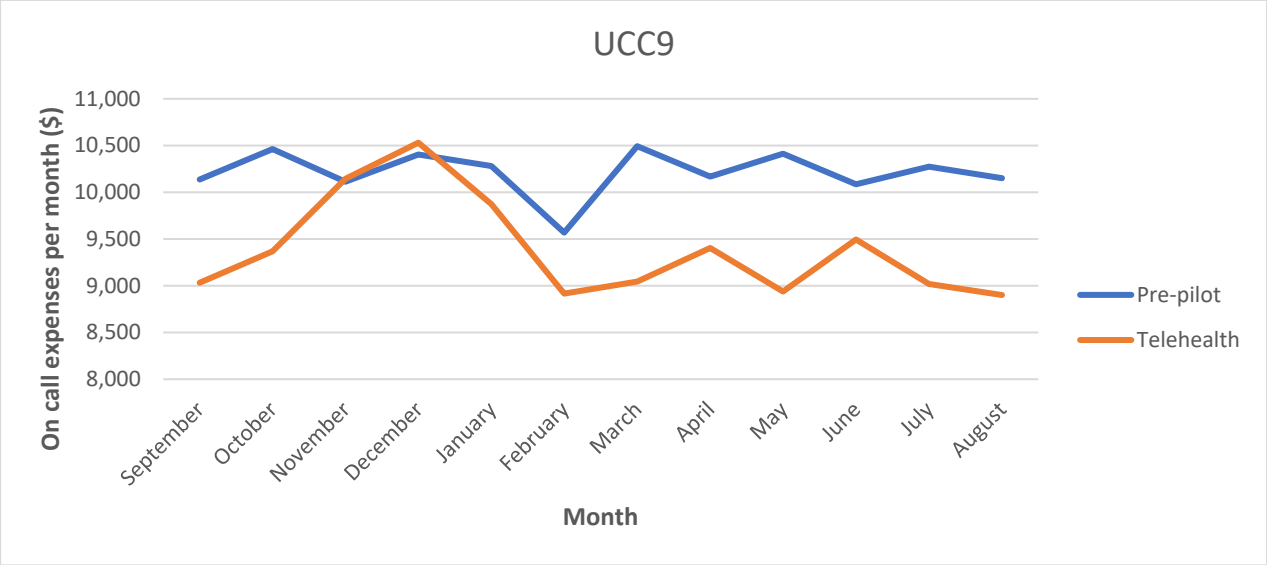


Figure 18: Approximate monthly expenses pilot vs. pre-pilot periods, UCC7

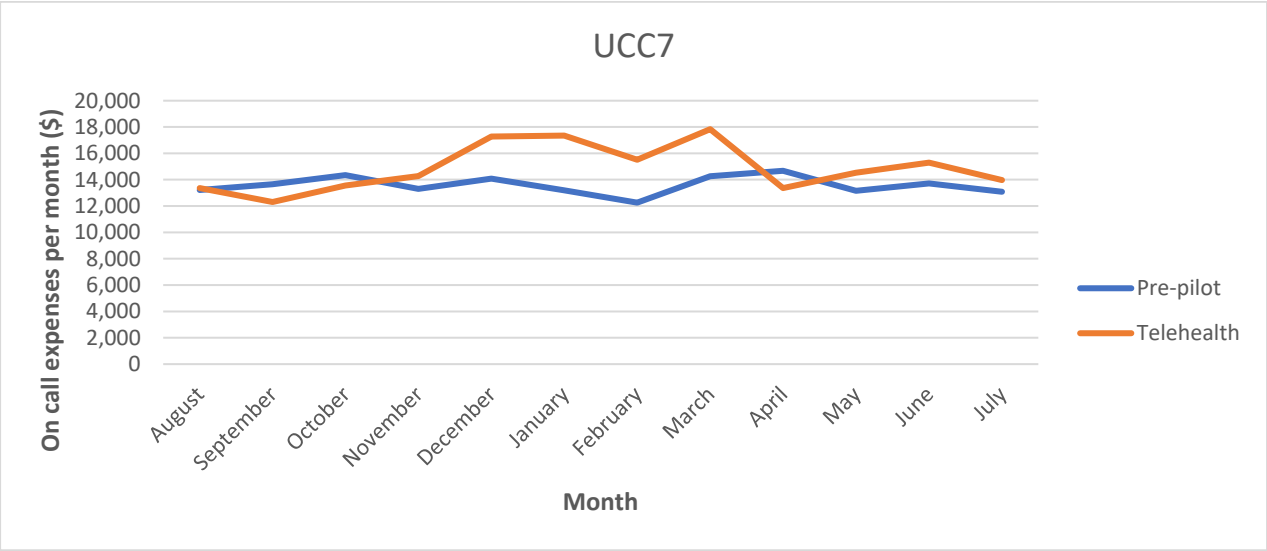


Table 43: Total approximate expenses pilot vs. pre-pilot periods by site

	Pre-pilot	Telehealth	Difference
UCC6			
Nights on call	$110,100	$110,400	$300
Callout fee	$51,210	$14,430	-$36,780
MED consultation fee	$0	$43,200	$43,200
Total UCC6	$161,310	$168,030	$6,720
UCC8			
Nights on call	$110,100	$25,200	-$84,900
Callout fee	$13,710	$10,800	-$2,910
MED consultation fee	$0	$2,100	$2,100
Total UCC8	$123,810	$38,100	-$85,710
UCC9			
Nights on call	$110,100	$99,600	-$10,500
Callout fee	$12,450	$9,766	-$2,684
MED consultation fee	$0	$3,300	$3,300
Total UCC9	$122,550	$112,666	-$9,884
UCC7			
Nights on call	$110,100	$110,400	$300
Callout fee	$52,830	$44,070	-$8,760
MED consultation fee	$0	$24,150	$24,150
Total UCC7	$162,930	$178,620	$15,690
Total all sites	**$570,600**	**$497,416**	**-$73,184**

Table 44: Total approximate costs by site for pre-COVID months of the pilot period compared with the corresponding months of the year before

	Pre-pilot	Telehealth	Difference
UCC6			
Nights on call	$63,600	$63,900	$300
Callout fee	$29,433	$9,380	-$20,053
MED consultation fee	$0	$30,300	$30,300
Total UCC6	$93,033	$103,580	$10,547
UCC8			
Nights on call	$63,600	$14,700	-$48,900
Callout fee	$8,052	$6,683	-$1,370
MED consultation fee	$0	$1,200	$1,200
Total UCC8	$71,652	$22,583	-$49,070
UCC9			
Nights on call	$54,300	$49,200	-$5,100
Callout fee	$6,667	$5,815	-$852
MED consultation fee	$0	$2,850	$2,850
Total UCC9	$60,967	$57,865	-$3,102
UCC7			
Nights on call	$63,600	$63,900	$300
Callout fee	$30,432	$29,239	-$1,193
MED consultation fee	$0	$10,500	$10,500
Total UCC7	$94,032	$103,639	$9,607
Total all sites	**$319,685**	**$287,667**	**-$32,018**

Figure 19: Sensitivity analysis 1 - cost per night for on call GP

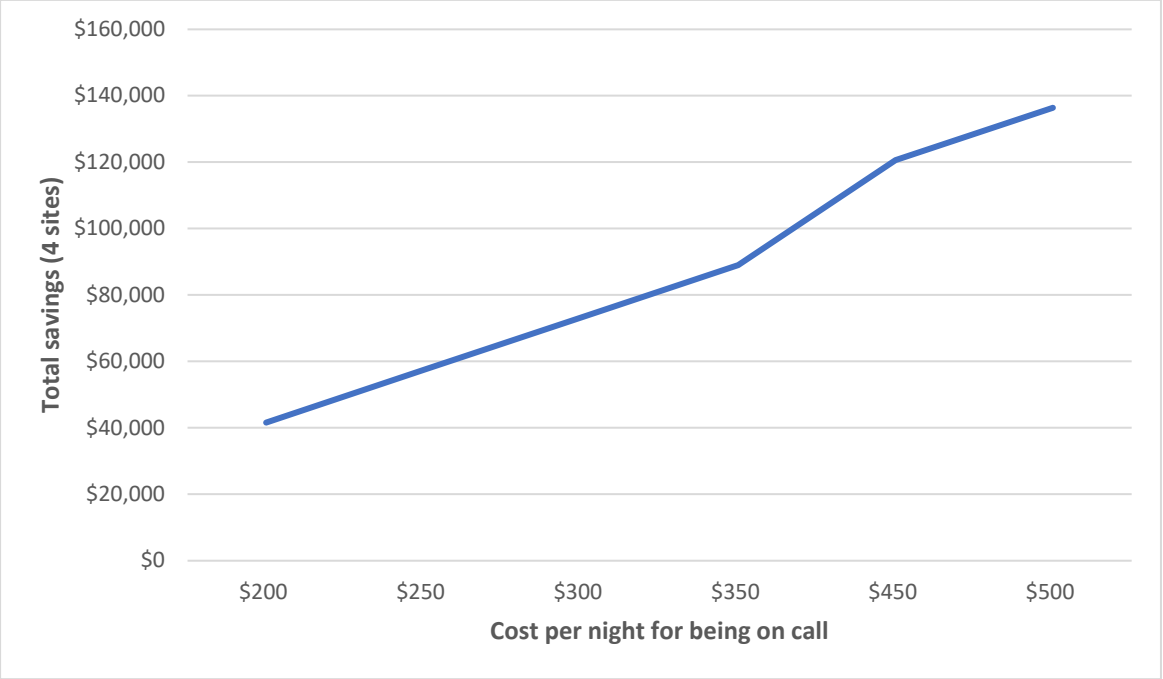
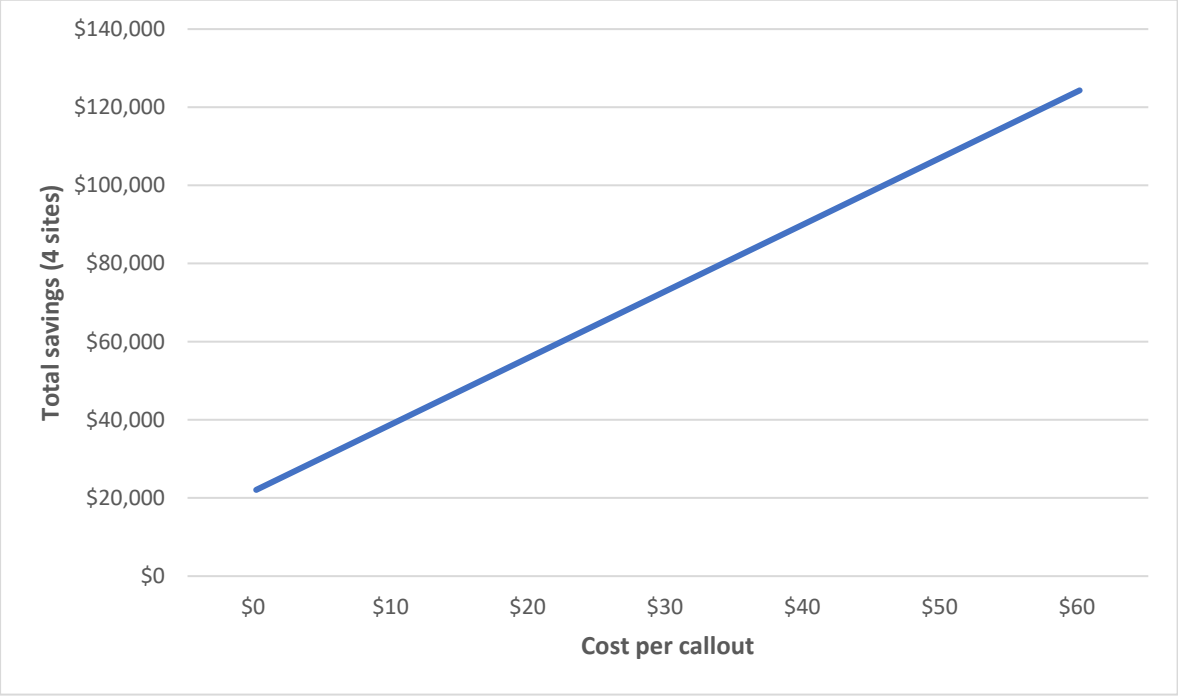


Figure 20: Sensitivity analysis 2 - cost per callout



Discussion

Based on the four sites included in this cost analysis (out of 8 that used MED) and the assumptions specified in the methods section, the telehealth period was cost saving compared with the pre-pilot period overall. However, it was cost increasing for two sites and cost decreasing for 2 sites. The overall cost saving may be influenced by the reduced activity experienced by all UCCs over the pilot period, but the findings remained the same when the time period was restricted to pre-COVID months. They key driver of whether the addition of telehealth services resulted in cost savings was the volume of MED calls and whether this increase in costs was outweighed by a reduction in the number of nights a GP was on call. If the after hours telehealth service was cost increasing for some sites, this is not necessarily a bad thing and the findings of the qualitative studies in earlier sections can contribute to decisions on whether the increase in costs is worth the benefits that it provides.

These results are broadly consistent with other studies on the topic. A systematic review of real time video telehealth published in 2010 included 36 studies, 22 of which found telehealth to be less costly than the non-telehealth alternative, 11 found greater costs and 3 gave the same or mixed results.[12] Nine studies included in this review involved specialty clinicians consulting with health providers in rural and regional hospital patients in the emergency department or who were admitted. Three of these were based on randomised controlled trials, with 2 finding increased costs and one lower costs than usual care. Out of the other six non-random comparison studies, five reported reduced costs and one increased costs. Five of the non-random comparison studies reported improved health outcomes, including reduced numbers of patients transported out of rural areas and reduced time to transportation. One of the key findings of the review was that the "organisational model of care was more important in determining the value of the service than the clinical discipline, the type of technology, or the date of the study".[12]

Researchers in the United States (US) conducted a cost-benefit analysis of a telehealth-based consultation between patients who had called emergency services and a specialist emergency physician in Houston, with calls initiated by attending paramedics.[13] The analysis of 5,570 patients treated over 12 months found a 6.7% reduction in potentially medically unnecessary emergency department visits, an average cost for a telehealth patient of US$167 (US$103 less than the control group) and $928,000 of annual cost savings from the societal perspective or $2,468 cost savings per emergency department visit averted.[13] The generalisability of this study to the WVPHN after hours pilot is hampered due to it being based in a large city during business hours with calls occurring at the scene of the patient.

Spanish researchers conducted a systematic review of a variety of telehealth services in a variety of settings.[14] One of the included studies of a rural telemedicine-based collaborative care depression intervention concluded that it was effective but expensive. Another study included in this review on outpatient pulmonary care for rural populations found that telemedicine was a cost-effective alternative.[14]

There were a number of limitations to the present cost analysis. There was a lack of data to inform some aspects of the analysis, such as the actual cost of GP on call services and monthly GP callout figures (as opposed to a total for the year). In addition, individual data on the outcome of GP consultations was not available to compare against the MED consultations to see if there were any differences in admissions or transfers. Only 4 sites were able to be included in the analysis based on the data that was available. The impacts of Medicare payments were not included due to a lack of information provided about these payments operated for each local health service but where most of these payments are paid to the GPs this is unlikely to affect the conclusions of this analysis based on the UCC perspective.

Conclusion

An after hours telehealth service is likely to be cost saving if the cost of telehealth consultations can be offset by a reduction in on call GP costs. This is only likely to be achieved if the implementation of telehealth allows an overall reduction in the number of nights for which a GP is on call. If GPs remain on call every night under current typical contracts, telehealth will probably not be cost saving even if the number of GP callouts is reduced.

Recommendations

12. An after hours telehealth service has the potential to be cost saving for lower levels of utilisation and a commensurate reduction in the number of nights local GPs are on-call. High utilisation levels of telehealth and/or failure to reduce the number of nights that GPS are on-call are likely to be associated with increased overall costs.
13. Improved data collection in Urgent Care Centres would enable a more thorough investigation of whether there are any differences between GP and telehealth consultations in outcomes, such as admissions or transfers, and costs. The UCC Models of Care Toolkit prepared by the Victorian Department of Health and Human Services provides guidance on the type of measures that would be useful to collect[1]: How many patients are being treated (by triage category and diagnosis); How many of these patients were able to remain at the rural health service for treatment; Outcome – admitted or discharged; How many patients were transferred and by whom; How many and length of telehealth consultations during the patient episode; Length of stay and nursing hours; Patient feedback and complaints; Staff satisfaction. In addition to the measures suggested in the UCC Models of Care Toolkit, collection of data on the number of GP call-outs and on the costs of both the telehealth service and the GP on-call arrangements would substantially assist robust cost-effectiveness analysis.
14. Limitations of the cost analysis due to data collection stemmed from limitations in data available from UCCs. One option for enhancing data collection efforts would be to detail clear expectations in contractual agreements so that all parties are aware of exactly what data will need to be provided.

(numbering continued from previous section)

Summary and Conclusions

There were two main objectives of implementing telehealth in a small number of UCCs on a pilot basis:

1. Reduce the significant after hours on-call burden placed on some GPs and/or provide an alternative to costly locum coverage.
2. Address some of the workforce challenges that commonly impact small rural communities including difficulties in recruitment and retention of GPs when there is significant after hours commitments, an enhanced work-life balance for GPs, and contending with an ageing GP workforce.

There are two elements to the on-call burden placed on local GPs: the number of call-outs that occur during an after hours period; and the number nights in a given week, month or year the GP is on call, regardless of how many call-outs eventuate. Information gathered during one-on-one interviews suggested that having the telehealth service available resulted in less after hours call-outs to GPs across most sites, particularly for cases of lower urgency (ATS 4 and 5). However, the degree to which this occurred is unknown due to data limitations and the change may have been minor at some sites due to their model of care. In terms of the number of nights that a GP was on call, survey responses from four (out of eight) sites highlight how differently telehealth was used: one UCC reported no change in the number of nights a GP was on call, while the other sites reported reductions in the proportion of nights on call of 1%, 11% and 77%. One of the learnings of the pilot was the flexibility of a telehealth service such as MED to dovetail together with the health service's model of care according to their needs and how they wish to use the service. GPs consistently reported in interviews that implementation of telehealth had little impact on their income during the pilot period.

In terms of the workforce challenges of attracting GPs to rural areas, only time will tell. Direct impacts on recruitment or retention could not be observed in a short-term evaluation such as this one. Comments received from GPs was overwhelmingly positive, with negative feedback usually relating to aspects of how the service operated (things that can be fixed) rather than whether the service should be offered at all. The MED / UCC telehealth model does seem to offer real opportunities to reduce overnight call-outs of GPs, and to provide a useful mechanism by which to cover for short-term GP absences (e.g. leave, illness etc). However, qualitative data suggests the model works best when it is supported by a more highly qualified and skilled nursing workforce – whose recruitment and retention in rural areas is also not without challenges.

There were a number of factors (outside the control of MED) that impacted the experience of the service by patients and/or UCC staff. Firstly, the technology itself relies on a fast, stable internet connection, something that is not guaranteed in all rural and remote areas. Secondly, interviews with MED physicians and GPs suggest that nursing skill and experience affects the overall experience of the telehealth call. The personal preferences of nursing staff were likely to have affected the frequency with which telehealth was used. For example, some nurses preferred have a doctor physically present in the UCC or needed to speak to the GP prior to a call to MED, whereas others appreciated the immediacy of quickly being connected with an emergency physician and preferred to let the local GP rest late at night.

Staff Experience

A majority of staff interviewed felt that the telehealth pilot and MED was an excellent service, which should be continued. The key advantage perceived by staff was – as planned – in reducing the burden of after hours care on local GPs. The results of the staff and stakeholder interviews suggest that telehealth

works well in some instances and less well in others, depending upon the (1) organisational policy and (2) the likelihood of needing to call a medical professional for back up if telehealth was not available. Areas identified for improvement included better patient information sharing platforms between local sites and telehealth providers, and better approaches to engaging local stakeholders with the service. Based upon the thematic analysis of these interviews, respondents overwhelmingly feel that the My Emergency Doctor (MED) telehealth model is a safe and suitable service to be offered in a rural area.

Patient Experience

About four-fifths of respondents to the patient experience survey clearly had a positive experience of telehealth, were satisfied with it overall, and would use it again or recommend it to others. Seven out of 46 respondents did not enjoy using the service, rating their overall experience as "poor" and stated that they would not use it again or recommend it to others. Although the precise reasons for these poor experiences could not be conclusively ascertained due to the concise nature of the survey, they were all reported by females less than 45 years of age, suggesting there are certain conditions experienced by this cohort that are less appropriate for assessment over videoconference. Comments on some postal surveys suggested that inherent difficulties in conducting adequate or sensitive physical examinations might explain some of this dissatisfaction.

Service Utilisation

The after hours telehealth service was utilised 719 times over the pilot period (excluding follow up calls) and the degree to which local health services accessed the service varied widely between sites. Total utilisation was less than half the total number of consultations originally allocated to sites during the pilot period. This lower than expected uptake most likely reflects the chosen service models of some UCCs, which used telehealth only sparingly and in quite specific circumstances. MED calls were utilised across a wide range of ages, with the most frequent patients being in their early 20s or infants. The telehealth service appears to have been used slightly more often for female patients across most sites. The demographic distribution of MED calls may reflect the characteristics of those people that normally present to Urgent Care Centres (UCCs) after hours or require escalation to GP callouts rather than revealing a preference to use telehealth services for those people per se. The telehealth service was used most often for Australian Triage Scale (ATS) categories 3 and 4 and rarely used for ATS category 2 and 1. The utilisation of MED calls appears to have varied between sites based on urgency. There does not appear to have been any impact on transfers or admissions, but data on the normal transfer and admission rates for GP callouts is required to make a true comparison here; unfortunately comprehensive and robust data on GP callouts were not available from most sites.

Cost Analysis

The cost analysis was based on data available from four of the eight sites; the other sites could not provide key elements of the data required for this analysis. Based on the four sites included in this cost analysis, the availability of telehealth during the pilot period was cost saving in aggregate compared with the pre-pilot period overall. However, it was estimated to be cost increasing for two sites and cost decreasing for 2 sites. The overall cost saving may be influenced by the reduced activity experienced by all UCCs over the pilot period, which coincided with overall reductions in health care utilisation during the COVID pandemic and lockdown periods, but the findings remained the same when the time period was restricted to pre-COVID months only. They key driver of whether the addition of telehealth services

resulted in cost savings was the volume of MED calls and whether this increase in costs was outweighed by a reduction in the number of nights a GP was on call. If telehealth calls are used sparingly, and availability of the telehealth service allows a reduction in the number of nights for which a GP is rostered on call, then telehealth is likely to be cost saving. By contrast, if the availability of telehealth leads to more calls being made overall, and/or GPs remain rostered on call every night, the telehealth model is likely to be cost increasing. However, even if costs were increased, this may still be a desirable outcome, given the findings of the qualitative studies that the telehealth service reduced on-call burden on GPs and was valued by most patients.

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Appendix 1: Australasian Triage Scale

Table 45: Australasian Triage Scale

ATS Category	Response	Description of Category	Clinical Descriptors (indicative only)
Category 1	Immediate simultaneous assessment and treatment	Immediately Life-Threatening	Cardiac arrest Respiratory arrest
		Conditions that are threats to life (or imminent risk of deterioration) and require immediate aggressive intervention.	Immediate risk to airway – impending arrest Respiratory rate <10/min Extreme respiratory distress BP< 80 (adult) or severely shocked child/infant Unresponsive or responds to pain only (GCS < 9) Ongoing/prolonged seizure IV overdose and unresponsive or hypoventilation Severe behavioural disorder with immediate threat of dangerous violence
Category 2	Assessment and treatment within 10 minutes. (assessment and treatment often simultaneous)	Imminently life-threatening	Airway risk – severe stridor or drooling with distress Severe respiratory distress
		The patient's condition is serious enough or deteriorating so rapidly that there is the potential of threat to life, or organ system failure, if not treated within ten minutes of arrival	Circulatory compromise
		or	Clammy or mottled skin, poor perfusion
			HR<50 or >150 (adult)
		Important time-critical treatment	Hypotension with haemodynamic effects
		The potential for time-critical treatment (e.g. thrombolysis, antidote) to make a significant effect on clinical outcome depends on treatment commencing within a few minutes of the patient's arrival in the ED	Severe blood loss Chest pain of likely cardiac nature Very severe pain - any cause
		or	
		Very severe pain	Suspected sepsis (physiologically unstable) Febrile neutropenia

		Humane practice mandates the relief of very severe pain or distress within 10 minutes	BSL < 3 mmol/l Drowsy, decreased responsiveness any cause (GCS< 13) Acute stroke Fever with signs of lethargy (any age) Acid or alkali splash to eye – requiring irrigation Suspected endophthalmitis post-eye procedure (post-cataract, post-intravitreal injection), sudden onset pain, blurred vision and red eye. Major multi trauma (requiring rapid organised team response) Severe localised trauma – major fracture, amputation Suspected testicular torsion High-risk history: Significant sedative or other toxic ingestion Significant/dangerous envenomation Severe pain or other feature suggesting PE, aortic dissection/AAA or ectopic pregnancy Behavioural/Psychiatric: violent or aggressive immediate threat to self or others requires or has required restraint severe agitation or aggression
Category 3	Assessment and treatment start within 30 mins	Potentially Life-Threatening The patient's condition may progress to life or limb threatening, or may lead to significant morbidity, if assessment and treatment are not commenced within thirty minutes of arrival	Severe hypertension. Moderately severe blood loss – any cause Moderate shortness of breath.
		or	Seizure (now alert) Persistent vomiting
		Situational Urgency	Dehydration
		There is potential for adverse outcome if time-critical treatment is not commenced within thirty minutes	Head injury with short LOC- now alert Suspected sepsis (physiologically stable)
		or	Moderately severe pain – any cause – requiring analgesia
			Chest pain likely non-cardiac and mod severity Abdominal pain without high risk features – mod severe or patient age >65 years

		Humane practice mandates the relief of severe discomfort or distress within thirty minutes	Moderate limb injury – deformity, severe laceration, crush Limb – altered sensation, acutely absent pulse Trauma - high-risk history with no other high- risk features Stable neonate Child at risk of abuse/suspected non-accidental injury Behavioural/Psychiatric: very distressed, risk of self-harm acutely psychotic or thought disordered situational crisis, deliberate self-harm agitated / withdrawn potentially aggressive
Category 4	Assessment and treatment start within 60 mins	Potentially serious	Mild haemorrhage
		The patient's condition may deteriorate, or adverse outcome may result, if assessment and treatment is not commenced within one hour of arrival in ED. Symptoms moderate or prolonged	Foreign body aspiration, no respiratory distress Chest injury without rib pain or respiratory distress Difficulty swallowing, no respiratory distress Minor head injury, no loss of consciousness"
		or	Moderate pain, some risk features
			Vomiting or diarrhoea without dehydration
		Situational Urgency	
		There is potential for adverse outcome if time-critical treatment is not commenced within hour	Eye inflammation or foreign body – normal vision
		or	
		Significant complexity or Severity	Minor limb trauma – sprained ankle, possible fracture, uncomplicated laceration requiring investigation or intervention – Normal vital signs, low/moderate pain
		Likely to require complex work-up and consultation and/or inpatient management	Tight cast, no neurovascular impairment Swollen “hot” joint
		Or	
		Humane practice mandates	Non-specific abdominal pain
		the relief of discomfort or distress within one hour	Under observation and/or no immediate risk to self or others
Category 5	Assessment and treatment start within 120 minutes	Less Urgent	Minimal pain with no high risk features Low-risk history and now asymptomatic Minor symptoms of existing stable illness Minor symptoms of low-risk conditions

		The patient's condition is chronic or minor enough that symptoms or clinical outcome will not be significantly affected if assessment and treatment are delayed up to two hours from arrival	Minor wounds - small abrasions, minor lacerations (not requiring sutures)
		or	Scheduled revisit e.g. wound review, complex
			Dressings.
		Clinico-administrative problems	Immunisation only Behavioural/Psychiatric:
		Results review, medical certificates, prescriptions only	Known patient with chronic symptoms Social crisis, clinically well patient Child at risk of abuse/suspected non-accidental injury Behavioural/Psychiatric: very distressed, risk of self-harm acutely psychotic or thought disordered situational crisis, deliberate self-harm agitated / withdrawn potentially aggressive

Reference: Guidelines on the Implementation of the ATS in Emergency Departments

Appendix 2: Telehealth satisfaction survey

Urgent Care Centre Name:

Telehealth Satisfaction Survey

1. Your Age

18 - 29	
30 - 44	
45 - 64	
65 - 74	
75 - 84	
85+	

2. Your Gender

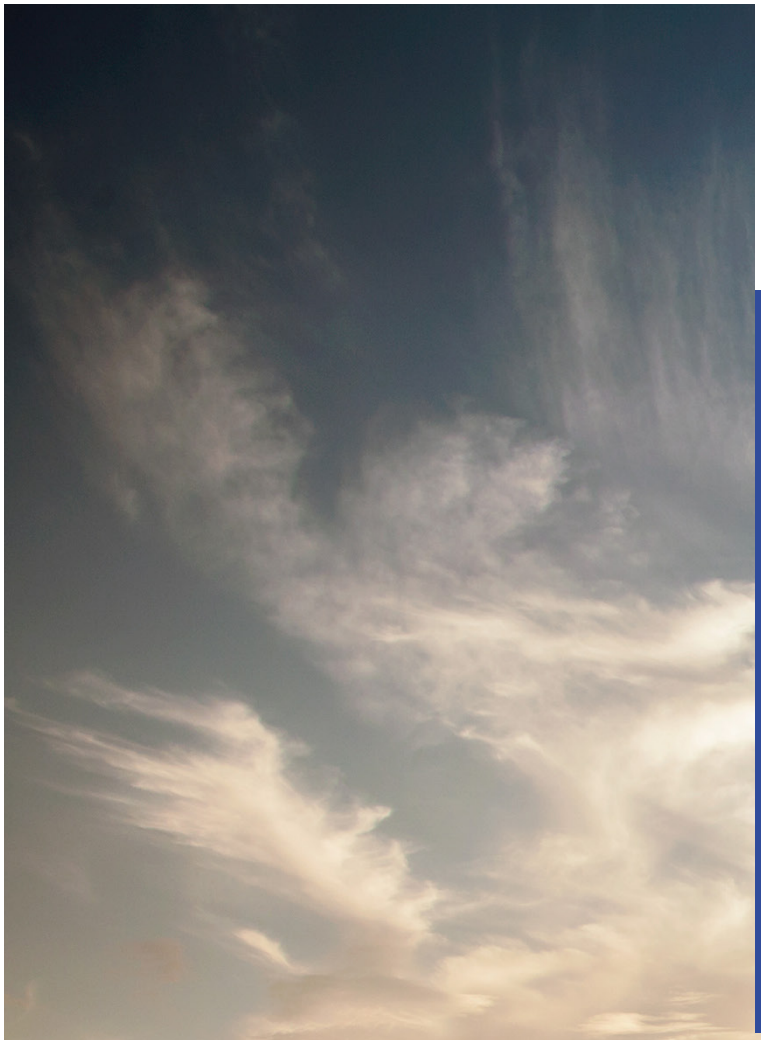
Female	
Male	
Other	
Prefer not to say	

3. How satisfied were you with:

	Poor	Fair	Good	Excellent
The voice quality of the equipment	◯	◯	◯	◯
The visual quality of the equipment	◯	◯	◯	◯
Your personal comfort in using the telehealth system	◯	◯	◯	◯
The length of time to get an appointment	◯	◯	◯	◯
The length of time with the specialist	◯	◯	◯	◯
The explanation of your treatment by the specialist	◯	◯	◯	◯
The thoroughness, carefulness and skillfulness of the specialist	◯	◯	◯	◯
The courtesy, respect, sensitivity and friendliness of the specialist	◯	◯	◯	◯
How well your privacy was respected	◯	◯	◯	◯
How well the staff answered your questions about the equipment	◯	◯	◯	◯
Your overall treatment experience at telehealth	◯	◯	◯	◯

4. Would you use Telehealth again? Yes ☐ No ☐

5. Would you recommend Telehealth to another person? Yes ☐ No ☐



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