

Final Report: Rural Research Capacity Building Program (2007 intake)

User satisfaction and experience with a telemedicine service for diabetic foot disease in an Australian rural community

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Abstract

Objective: To understand the experience of receiving medical management via telemedicine for rural patients with a diabetic 'high risk foot' diagnosis.

Methods: Semi-structured face to face interviews were conducted of patients who received a telemedicine service for management of their 'high risk' foot complication. Two carers of the patients were also interviewed. All patients interviewed had received the service within the previous two years and all except one had a diagnosis of diabetes, peripheral neuropathy and/or ischemia. The one non-diabetic patient had an idiopathic neuropathy with a history of foot ulceration.

Results: The experience of the service was very positive for the patients as well as the carers. The responses also indicated a high level of satisfaction with the service. All patients interviewed were over 60 years of age and had no previous awareness or experience of telemedicine. Initial responses when offered the service were positive and there was a strong common theme of frustration with the present care being provided. As a store-and-forward method of telemedicine had been used there was no visual contact with the specialists providing the advice, but this did not deter from the experience for the patients. Being present at the time of the consultation was also not important to the patients and 100% said they would use this type of service again. In the interviews patients commented on the stress associated with travel to an urban area for medical care and cited the greatest benefit for them was the reduction and/or elimination of need to travel, as a result of the telemedicine.

Conclusions: The telemedicine service was well accepted and a positive experience for the patients.

Implications: This report has used surrogate measures to indicate whether the use of telemedicine is an acceptable experience for the users of the service. With the growing trend of greater patient participation in health care decisions and high levels of patient satisfaction with telemedicine, this report supports the development of a Minimal Model service that incorporates the use of telemedicine for managing diabetic foot disease in the Bega Valley and the findings indicate the service would be well accepted by patients.

Executive Summary

Context

Early diagnosis and the ability to determine the correct pathway of care is fundamental to managing diabetic foot disease and preventing diabetes-related lower limb amputations. This skill has traditionally been the domain of multidisciplinary health teams, usually located within metropolitan teaching hospitals or diabetic foot centres. However with improvements in technology telemedicine networks are available for use by rural health providers to fill the gap in service availability and to provide equity of access for people living in rural Australia.

While local experience has shown the benefits of the service for patients, the aim of the project was to evaluate the experience of patients with diabetic foot disease who received specialist medical advice via telemedicine and to determine their satisfaction with the service.

From the health provider's point of view, the service is beneficial, thus giving reason to increase and improve operating efficiency. However, with the current move towards patient centred care and a change in role of health providers from one of 'medical authority to that of health care facilitator'¹ the project set out to determine what it is that the consumer wants and needs in managing their high risk foot disease and whether or not telemedicine should constitute a part of the service that the consumer will continue to use in the future.

Approach

A purposefully sampled qualitative research methodology of face-to-face interviews using a semi-structured interview style was applied. Eight subjects (six patients and two carers) were recruited from patients who had received a telemedicine service at the community health service between the years 2005-2008. Due to illness, one patient and two carers were unable to participate, two patients had moved from the area and one was deceased. Carers were only requested to be interviewed if they were involved on a daily basis in the care of the patient with the diabetic foot complication.

Patients and carers were interviewed about their experience of:

- the telemedicine service and
- their perception of the benefits of the service.

Patients were interviewed about their experience of:

- the impact of a high risk foot problem on their daily lives and
- their experience of the medical care for the management of the high risk foot problem, including the telemedicine service

Carers were interviewed about their experience of

- caring for someone diagnosed with a high risk foot problem and
- their experience of the telemedicine service for the person they were caring for

Results

The report resulted in some unexpected findings around the experiences of the patients and their carers. Prior to the telemedicine service all patients had been receiving care from health providers for an average period of seven months and one week without significant improvement or resolution of their foot problem. Due to this long term nature there was a common experience of frustration and anxiety.

The findings can be summarised as:

- Positive reactions, acceptance and relief when offered and on receipt of a telemedicine service.
- The benefits of immediacy of a service, rather than the uncertainty associated with being on a waiting list and not knowing when treatment could be commenced
- Other benefits cited were: not needing to travel to receive specialist medical advice as well as the related cost saving; the benefit of saving time and organizing a trip to receive medical advice; stress on the partner was saved as they were not required to travel also.
- Others believed that they “still had their foot” as a result of the intervention or that the foot problem was ‘now resolved’ due to the intervention.
- Full acceptance of the non face-to-face aspect of telemedicine
- All participants indicated they would use this type of service again

This high level of acceptance and positive experience of telemedicine is reflected in the literature.^{1,4,13,14,17,19.}

Implications

The positive reactions and experiences of the patients who received a telemedicine service suggest that telemedicine should be incorporated into a routine pathway of care for managing diabetic foot disease in rural areas that lack access to skilled multidisciplinary foot care centres. This pathway should not exclusively relate to diabetes but should also include any complications that cause the foot to fall into a ‘high risk’ category.

Following the guidelines of the International Diabetes Federation (IDF)², a Minimal Model High Risk Foot service is recommended for a region such as the one in this project. A Minimal Model service has three staff members: Doctor, Nurse and Podiatrist. By utilising the patient’s GP and the present 0.5FTE podiatry position, a service could be created with the additional allocation of a nurse to the present service.

Substantial evidence^{3,7,25} exists to demonstrate cost savings in patients with diabetic foot problems attending a multidisciplinary High Risk Foot Clinic through reduced admission to hospital, reduced length of stay and reduced rates of major lower-limb amputations. On the basis of this evidence a recommendation arising from this research includes further investigation for the development of a true multidisciplinary High Risk Foot Clinic in the form of a Minimal Model service.

Background

Diabetic Foot Disease

Diabetic foot disease is a major contributor to diabetes-related morbidity and mortality. Globally, health professionals recognise this as a serious issue yet despite numerous attempts to reduce the rate of lower limb amputation the incidence in many countries continues to rise. About 15% of people with diabetes will experience a foot ulcer in their life time with foot ulceration being the most common reason for lower limb amputation². Inadequate treatment of diabetic ulcers is a primary reason why diabetes-related amputation rates, estimated to be more than 3000 per year in Australia, are so high.

The highest risk factor for first time ulceration is peripheral neuropathy which results in the loss of protective sensation and foot injury. Patients are most often unaware that they have lost sensation until the foot ulcer occurs and due to this there is often a delay in seeking help for the wound as it is typically painless. The resultant delay significantly increases the likelihood of infection and worsens their outcome while lesions treated promptly can often be healed without the need for surgery. This highlights the vital role of foot assessment by health professionals in identifying those who are at increased risk so that appropriate ulcer prevention strategies can be used.

The Lack of Clear Referral Pathways

Unfortunately for diabetic foot disease there is no clear referral pathway. Where a person with retinopathy is referred to an ophthalmologist, there is no readily identifiable 'diabetic foot doctor'. There are many possible entry points for a patient with foot disease into the healthcare system, including resident doctors in the emergency department, vascular surgeons, orthopaedic surgeons, general surgeons, general practitioners, community nurses, podiatrists and diabetologists.

Thus accessing expert care is not easy, especially for people living in rural areas. With no well defined sub-speciality of diabetic foot disease several health disciplines are required to be involved. This has led to the development of multi-disciplinary 'high risk foot' services. High Risk foot services are usually situated in metropolitan teaching hospitals or diabetic foot centres. Rural communities generally lack the resources to develop such centres as there are limited numbers of specialists and low patient volumes to warrant the development of such specialised services.

The Telemedicine Service and the Bega Valley Foot service

Telemedicine involves the use of telecommunication technologies for the purposes of diagnosis, treatment advice and teaching. Exchange typically occurs over a distance and provides access to expertise that is otherwise not available at a certain location⁴.

In the Bega Valley a telemedicine service is provided by the community health podiatrist that links patients with diabetic foot complications to a specialist High Risk Foot Clinic at the Royal Prince Alfred Hospital (RPAH) in Sydney. A store-and-forward telemedicine service is provided when there are critical signs of infection, wound stagnation or simply a second opinion is required. The procedure for consultation follows the NSW Telehealth Wound Management Initiative 2005⁵.

The consultation occurs at a pre-arranged time suitable to both centres. Arranging time for all parties to be present is difficult, so approval is obtained from the patient before a consultation occurs in their absence. In the instance of the patient not being present at the consultation, the information obtained is provided at the next clinical appointment with the podiatrist. Documentation of the service occurs at both ends and a letter with the clinical advice provided is faxed from RPAH Diabetes Centre to the patient's general practitioner as well as the community health centre for storage in the patient's notes.

The Research Question

Preliminary data from the Bega Valley podiatry service has indicated that the incorporation of telemedicine as an adjunct to podiatry services is effective in terms of clinical outcomes and patient satisfaction. This finding has led to the development of the current research question: **What is user satisfaction and experience with a telemedicine service for diabetic foot disease in an Australian rural community?**

The objective of the research question is to understand the experiences of people with diabetic foot disease in the Bega Valley and their first experience of a telemedicine service for the management of the disease. This project aims to evaluate the readiness of the patients by investigating their satisfaction and experience of a telemedicine service. Results from this study may form the first steps towards developing a recognised High Risk Foot Service in the Bega Valley.

Literature Search

The search of the literature was multilayered as each layer had to be built upon to show the efficacy of the other. Initially evidence was sought for the effectiveness of multidiscipline teams in managing diabetic high risk foot disease as well as International and National guidelines for High Risk Foot services. The next layer of the search extended to the use of telemedicine in managing diabetic foot disease. Only two research articles were found, so the search was extended to any telemedicine research that had used visual images for the purposes of diagnosis and consultation. These articles were evaluated for purposes of clinical outcomes as well as patients' experiences, satisfaction and benefits of the service. Finally, a search was done on issues relating to telemedicine and rurality.

The searches were conducted from October 2007 – February 2008.

Search terms included: telemedicine; telehealth; diabetic foot disease; diabetic foot complications; diabetic foot ulcers;

The terms were used singularly and in combination. Due to the rapid changing nature of communication technologies the search was limited to 2000-present.

Search engines: Ovid; Medline; CINAHL.

Journal articles, research articles, unpublished reports, national policies and reports have been used.

Literature Review

Evidence for the effectiveness of a multidisciplinary Foot Clinic

Substantial evidence exists to indicate that treatment of diabetic patients with foot ulceration by a skilled multidisciplinary team is the most effective clinical setting for reducing amputation rates^{6,25}.

The National Evidence Based Guidelines for the Management of Type 2 Diabetes Mellitus^{6(p9)} recommend 'people with diabetes who have foot ulcers or with high risk feet should be cared for by a multidisciplinary service which should include a physician and a podiatrist and have ready access to a specialist nurse, orthotists and surgeon'.

These clinics are not common in Australia, so in order to access specialist care the patient is often referred to multiple health professionals at different sites and the time delay greatly increases the risk of amputation. An efficient system to provide treatment and rapid triaging to the appropriate care is needed but seldom available, especially in rural Australia.

Further evidence from the report on Chronic and Complex Priority Healthcare Programs – Central Sydney Area Health Service: Evaluation of the Diabetic Foot Disease Program⁷ found the length of stay (LOS) of patients attending the program (i.e. attending the multidisciplinary high risk foot centre) was 14 days shorter than patients admitted to hospital with diabetes related foot complications.

The International Diabetes Federation (IDF), whose role is to provide global references for diabetes information, has established guidelines for the provision of foot services for people with diabetes². These guidelines include multidisciplinary models for service provision which are divided into three tiers: Minimal, Intermediate and Maximal High Risk Foot/Diabetic Foot Clinics, with the Maximal model being known as a Centre of Excellence or Tertiary Referral Centre. Each model is structured according to resource availability and for a rural area such as the Bega Valley Shire; the Minimal Model has the potential to provide the region with a High Risk Foot Service.

The Minimal Model High Risk Foot Clinic is advised for a community health centre or regional hospital and is staffed by a doctor, nurse and podiatrist, with one of the above as co-ordinator. The aim of the service is to provide:

- preventative foot care
- foot care education
- treatment of foot ulceration and infection including wound care, pressure off loading, debridement
- medical management for infection and metabolic control.
- access to blood tests, wound culture, radiology and ultrasound

Crucial to the effectiveness of the Minimal Model service is the ability for close collaboration with a Maximal Model service via telemedicine or referral links, so in the absence of a Maximal Model clinic, the incorporation of telemedicine into rural health systems offers the potential for ready access with these centres. A review of the literature

shows that when the partnering of rural communities with tertiary centres via telemedicine occurs, the health care infrastructures can be successfully extended to these communities⁸.

Telemedicine and Diabetic Foot Disease

Only two articles were found relating to studies on the integration of telemedicine use for management of diabetic foot disease. RPAH Diabetes Centre initiated the use of telemedicine in 2000 with the creation of a National Diabetes Footcare Network, which linked 16 centres in rural and remote Australia. The evaluation of the program found telemedicine was able to facilitate urgent consultations and was also a useful adjunct to networking between rural and urban therapists⁹. As is common to all telehealth projects, the objective was to treat patients locally, reducing stress and costs involved by avoiding hospitalisation or unnecessary transport to a specialist centre. Ultimately the goal of telemedicine services such as the one in the study is to reduce the rate of diabetes related amputation.

An international study, 'The Use of Telemedicine in the Management of Diabetes Related Foot Ulceration'¹⁰ was a pilot study using a non-randomised comparison of forefoot ulcer healing rates. It found the data supported the use of telemedicine for the management of diabetes related forefoot ulceration and suggests telemedicine as a way to overcome barriers of distance, transport and economics that prevent patients from accessing care at major diabetes centres.

The study also suggests that the intent of telemedicine is to reduce the number of visits required to a specialist centre and not to necessarily eliminate them. Telemedicine is not presented as a 'cure all' panacea and recognises that the similarity in healing rates for those who attend the diabetes centre and those who consult via telemedicine is attributed to the increased access to appropriately trained practitioners rather than the use of telemedicine technology per se.

Telemedicine and Wound Care

Essentially the use of telemedicine for diabetic foot complications is the same as for wound care telemedicine, as both services require images of wounds or body parts that are used for the purpose of diagnosis and management advice. Evidence in the literature supports the use of telemedicine for wound care which can be translated to use for diabetic foot disease.

Photographic images have been found to be reliable and valid for trunk and lower extremity vascular and pressure ulcers^{8,10} while success factors for telehealth implementation suggest a focus on chronic conditions which require visual information for proper management. An international report looking at the role of telemedicine in addressing problems of access and speciality shortages¹⁰ found the use of both interactive and store-and-forward technologies has also been particularly applicable for wound care and monitoring.

Health managers and physicians in non-metropolitan areas of Western Australia¹¹ have indicated that wound care is a priority for telemedicine projects while another Western Australian study looking at the challenges facing a telehealth wound care system¹² found

optimal wound care to be impeded by issues that included limited access to expert review.

Telemedicine and patient satisfaction

Research articles on telemedicine using visual images for medical management showed patient acceptance and satisfaction to be generally positive^{8,13-16} with few reports citing dissatisfaction⁴. Rapid access to speciality care that is not available locally⁸ and relief at not having to go to a hospital centre and spend time on travelling and consultation¹⁶ are among the benefits mentioned by patients. Additional comments by patients on receiving a telemedicine service included the benefit of avoiding travel during inclement weather and money saved staying near home¹³ while another study found the patients to be enthusiastic when offered and provided with a telemedicine service and also grateful for the saving in travel¹⁷.

A telemedicine satisfaction questionnaire¹⁸ evaluated patients on three levels: quality of care provided; similarity to face-to-face encounter; perception of the interaction. The study used the definition of patient satisfaction as 'evaluation based on the fulfilment of expectations' and found that one of the most significant predictors of patient satisfaction with a telemedicine service is the ability of the service to meet the patients' health care needs.

While the telemedicine satisfaction questionnaire demonstrated preliminary reliability and validity, it has not been tested further for use as a reliable tool (A Chang 2008, pers.comm. 16 May). Further studies of patient satisfaction in telemedicine have also used Likert scales such as the Saskatchewan telemedicine amputee clinic¹³ which found 97% of responses fell into the good to excellent range while a paediatric telehealth service¹⁹ also in Saskatchewan, found families to be very satisfied with the telehealth experience. When asked if they would use the service again there was a 100% positive response as well as when asked if they would recommend the service to another person. This positive response has been reflected further in the literature.^{1,4,13,14,17,19.}

Rurality

One of the central goals of telemedicine is to deliver health care to areas that are underserved due to geographical location¹⁴. This shortage of health care providers in rural areas and the need to travel to urban areas to access specialist advice is well known and not restricted to Australia¹⁵. Rural areas tend to be populations with older people who exhibit adverse health behaviours (smoking, obesity) and the chronic diseases associated with these^{3,8}. Coupled with the fact that there are increasing numbers of people of all ages developing diabetes, there is a likelihood of rural areas seeing an increase in the number of patients with diabetes related foot complications. As the Bega Valley Shire is no exception there is an anticipation of increased need for services to manage diabetic foot disease in the future.

The literature cites enormous benefits of telemedicine for rural areas. Telemedicine can add value by:

- redistributing medical expertise¹
- barriers between health professionals can be overcome through allowing community services to liaise with hospital consultants¹⁷

- through the importation of primary and speciality expertise via telemedicine, rural hospitals and clinics are able to increase their capacity for treating patients locally, without having to invest in expensive speciality clinics²⁰
- speciality consultation could potentially prevent patients from presenting relatively late in the course of an illness with advanced symptoms and the associated costs of care²¹
- 85% of patients seen via telehealth remain within their community health care environment reducing the costs associated with transfers¹⁵
- The Broken Hill teledermatology study found there to be savings in costs to patients and the government through earlier and more accurate diagnosis, as a result of fewer return visits to the GP and lower consumption of medications¹⁴

Telehealth technologies should be viewed as integral to rural development⁸ and local studies are needed. As each rural area has its own requirements relating to health service delivery, the use of telehealth technologies should be assessed on the relevance and importance of the local issues²². A successful telemedicine service in one region may not necessarily be generalisable to another.

Literature Influence on design selection

The study design for this project has come about as a combined result of the evidence in the literature and the need to work within the framework of available resources. The low number of patients available for recruitment has been the main influence on the design. The issue of low numbers has been reflected in the literature on both a national and international scale. Despite extensive interest in telemedicine, the actual number of participants remains relatively low¹⁸ and there are too few subjects within a telemedicine program to perform adequately powered studies²¹.

Demonstrating the effectiveness of telemedicine in terms of clinical outcomes is demanding and good quality information is scarce²² so a quantitative project evaluating the clinical outcomes of the service in the present study was precluded. Gagnon and Scott (2005) also support that an evaluation of telemedicine has different purposes for different stakeholders and so no single evaluation framework or methodology, even the randomised controlled trial, is totally objective.

Recommendations exist for investigating the non-monetary benefits for users^{23,22} such as the improvement in quality of life of patients while another international report recommends an evaluation of the readiness of a community to participate and succeed in telehealth²⁴. The investigation of readiness is seen as integral and a preliminary step in the successful implementation of telehealth services into existing health systems within rural communities.

Methods

Ethics

The GSAHS Human Research Ethics Committee granted ethics approval for the research in December 2008 with the Site Specific Assessment approved in February 2009.

Sampling

The subjects were purposefully sampled from among the patients that attended the podiatry service at a community health centre in the Bega Valley during the period 2005-2008. The inclusion criteria required participants to have a diagnosis of diabetes or idiopathic peripheral neuropathy and to have received a telemedicine consultation/s for management of a high risk foot complication.

The carer/spouse of any patient who met the criteria was also invited to participate in the study. Due to the long term nature of a high risk foot complication, carers/spouse inevitably become involved in the management and the project aim was to include the impact of the condition on their life also.

Several participants were excluded from the study due to co-morbidities that affected their ability to participate. Other exclusion criteria consisted of patients unable to provide consent in English and patients with an intellectual or mental impairment.

Recruitment

The initial invitation to participate was through a phone call to each prospective participant who was asked if he/she would be interested in having a one-on-one interview about their diabetic foot disease and the telemedicine service.

Phone calls to the prospective participants were made by a person neutral to the service in anticipation of reducing the likelihood of coercion. The prospective participants were advised the interviews were to be conducted by the podiatrist who had provided the service and who was also likely to continue providing a podiatry service in the present and/or future. They were also advised that non-participation would not affect the receipt of their present service or any future service and that they were able to withdraw from the study at any time without any threat of the podiatry service being withdrawn from them.

If an expression of interest to participate was made over the phone, the Participant Information Sheet (appendix 1) and a letter of interest was forwarded by mail (appendix 2). This was then followed by another phone call seven to ten days later to arrange the interview time. The second phone call was also made by the neutral person who again reinforced the voluntary nature of participation in the study.

Due to illness one patient and two carers were unable to participate, while two patients had moved from the area and one was deceased. No patients or carers declined to participate.

Data Collection

Interviews were commenced in March 09 and completed by April 09. All interviews were conducted at a community health centre, with the interviewer following a semi-structured interview script for either a patient (appendix 3) or a carer/spouse (appendix 4). Patients and carers were interviewed separately, and all interviews were one-to-one, with the interviewer and interviewee only present.

The Participant Information Sheet was discussed with the participants prior to commencement to ensure the interview process was understood and to again reinforce the voluntary nature of participation. Issues concerning confidentiality and storage of information were highlighted and the consent form (appendix 5) was signed indicating both permission to interview and access the participant's medical records.

A digital note taker was used to record the interviews which took approximately 1.5 hours and field notes were recorded at the conclusion of each interview. Prompts and probes were included in the interview scripts and despite the small sample size there was adequate data collected to indicate saturation had been achieved. Following the interviews the data was transcribed by the interviewer for thematic analysis. The transcription process was essentially the beginning of analysis as this allowed the researcher to begin the process of immersion in the data.

Data Analysis

Combinations of a post-positivist paradigm and phenomenology have driven the analysis of the data collected in this study. Post-positivism, working from the perspective of what is a 'given' presents a direct experience of the events that happened and enables the researcher to get as close as possible to the events in the field being researched. This has been applied to analysis of the data that relates to the telemedicine service.

A phenomenological approach has been applied to analysis of the data pertaining to the experience of living with diabetic foot disease. In the absence of numbers to provide validity the study aim is to focus on the collection of in-depth data from the subjects and create an understanding of the lived experience for the patients.

A codebook was created for each topic area and themes were initially identified that were consistent with the questions being asked. The responses in each theme were categorised into Code Labels. Each Code Label was then given a definition and description, as well as exclusions and inclusions. Thematic analysis was continued by reflecting on the data to identify core consistencies, meanings and emergent themes.

Rigour

Consistency and similarity in the development of the codes and themes was checked and verified through use of an independent inter-rater (approved by the GSAHS Ethics Committee).

Bias

The inter-rater who checked for consistency in the development of themes identified that prompting had occurred during the interviews which raised both rigour and bias issues. It must therefore be recognised that there are limitations with regard to findings in relation to benefits of the service. However it must also be noted that the initial prompts were literature based and were found to lead to further spontaneous and voluntary responses around the issue.

Results

Despite a small sample group there was sufficient data collected to provide an insight into the experiences of patients who have diabetic foot disease and their first experience of a telemedicine service. A total of seven subjects were recruited (five patients and two carers). The subjects constituted three males and two females, while both the carers were female. The age of the patients ranged from 65 to 78 years while the age range of carers was 73 to 75 years. Table 1 shows the details of the participants. Names have been changed for confidentiality.

Table 1. Participant details

Name	Age	Type of Ulcer	Location	Duration of Ulcer prior to TMS	No. TM consultations
Male patients					
John	67	Neuro-ischemic	1 st mpj plantar	2/12	4
Karl	78	Neuropathic	Mid-foot plantar	1/12	3
Brian	69	Neuropathic	1 st mpj plantar	12/12	4
Female patients					
Margaret	72	Neuropathic(idiopathic)	1 st mpj plantar	12/12	2
Pat	63	Neuropathic	Mid-foot plantar	8/12	4
Carers					
Val	75	N/A	N/A	N/A	3
Mary	73	N/A	N/A	N/A	4
Average	70			7/12	

mpj = metatarsal-phalangeal joint; TMS = telemedicine service

Two patients attended RPAH Diabetes Centre for face-to-face consultations after the telemedicine contact indicated surgical intervention was required. The telemedicine service was then utilised to provide post-surgical follow-up.

Following in this section the results of the interpretation and analysis of the interviews are reported under three master themes. The first theme covers the feelings and attitudes of patients and carers about the diabetic foot condition and adjustments to daily life required when living with a diabetic foot complication. The second covers the experience of the telemedicine service and third theme is related to the perceived benefits for the recipients of the service.

Living with a diabetic foot complication

As a result of the neuropathy, most ulcers occur without warning and patients were able to recall that they first noticed the problem with the discovery of blood or a discharge on their shoe or sock,

"I was wearing sandals at the time when I noticed a whole lot of blood down there, because I hadn't felt anything" (Pat)

while only one person could recall the cause of the foot ulcer:

"Yes and I'm sure it had been caused by a day when I did a lot of lawn mowing with a hand mower". (John)

After the initial surprise of discovering a foot problem, feelings ranged from dismay to shock. These strong feelings suggest awareness of the complications associated with diabetic foot problems, indicating either previous experience of foot problems or well educated patients who are aware of the risk of amputation. One carer simply felt shocked with the discovery of the foot ulcer, while another patient indicated feeling extremely annoyed :

*"Shock, because of him being diabetic and the complications that can happen"
(Mary-carer)*

"I did feel annoyed, I thought, not again because its going to be weeks and weeks of extra time that I have to spend each day when I take my shower and do a dressing on it, the extra expense, the inconvenience of not being able to do the things I know need doing around the place" (Margaret)

The inconvenience of a foot problem is carried over into other aspects of daily activities. Restrictions come about as a result of not being able to wear normal shoes:

"The worst aspects are not being able to wear normal shoes, because it does make walking difficult" (John)

"I also find that I cannot carry a basket of wet washing from the house up to the clothesline" (Margaret)

However, there is a degree of acceptance in some of the patients who have previous experience with foot problems:

*"Well I have been through all of that now for years so it doesn't feel any different"
(Karl)*

"Well I suppose it does impinge on what you would otherwise do but you do get into a routine and I mean that is what has become what my life is and I really don't think of it any other way" (John)

Data collected also indicates that while there is a foot problem present there is also an associated fear of amputation:

*"Yes, that was always in the back of our mind, that was the biggest fear, yes really"
(Mary-carer)*

“Well being a diabetic that’s something you have in the back of your mind, its always there” (John)

“...very bad....quietly despairing that I may need an amputation” (Pat)

In 100% of the cases interviewed, the telemedicine service was not the first medical service to be consulted for management of the foot problem. Patients and carers were asked to reflect on their state of mind when they commenced receiving a service at the community health centre with special regard to how they were feeling prior to being offered a consultation with the multidisciplinary team at RPAH Diabetes Centre. The responses indicate a common theme of despair and a feeling that their problem would never resolve, with one patient comparing the stress level of his foot problem to open heart surgery:

“pretty down and out because I did not know how much longer I would be putting up with this....although we’ve had open heart surgery and everything it was nothing like this” (Brian)

“... and there was quite a bit of worry and stress over it all because it was so prolonged” (Mary-carer)

A patient who was experiencing his first complication said

“I was very concerned about it because I never had an ulcer before, this was the first time I had something on the foot and I just didn’t know how this was going to be handled because I realised that you are walking on this and it was all a new experience to me’. John

A theme of insufficient or inadequate medical care arose when patients were invited to comment on their experience of medical management of the foot complication prior to receiving the telemedicine consultation. Foot ulcers had been present for on average seven months with one patient experiencing ongoing treatment with no resolution for 12 months. One patient responded:

“I wanted someone who had a little bit more knowledge” (Pat)

while a carer expressed the ongoing concern she felt for her husband:

“yes, very anxious, very anxious because we weren’t making headway at all, and it was just an ongoing thing, going down to the hospital casualty and being put in hospital a week at a time on antibiotics” (Mary)

For one patient, acceptance of the telemedicine service was a last resort for help,

“...I went along with it because I had put up with enough and I really wanted someone to give some attention to my problem” (Brian)

The experience of the telemedicine service

Knowledge of telemedicine

All patients and carers responded positively to the offer of a telemedicine service with a common theme of no prior knowledge or experience of telemedicine. Responses included:

"No, I didn't know anything like that was being done...I was very impressed with that, I thought that was very good" (John)

"I think this is a very good idea" (Margaret)

"I had heard about it, I had read about it but I didn't know anything specific about it. I was happy to try anything to get some help" (Pat)

"Well, I felt like we would get somewhere with that" (Mary-carer)

Only one patient had some experience of teleconferencing used for education and responded:

"...and that certainly was helpful so I thought, well right, if its anything like that, yes, good" (Margaret)

Face-to-face contact

The store-and-forward method of teleconsulting has the advantage of facilitating communication independently of availability of the participants¹³, expediting access to specialist advice. However, this has been seen as a disadvantage⁴ as there may not be any direct communication between the patient and health providers at the other end. Patients and carers were questioned on whether face-to-face contact is important to them in the process of receiving medical care.

The responses of the patients and carers indicate that face-to-face contact is not important to the process of receiving advice for the management of their high risk foot complication. This is clearly shown in the responses:

"I wasn't worried about meeting them; I just felt that if I was getting help in any form I was very happy to accept it" (Pat)

"That doesn't concern me, I don't have a problem with that. Having seen specialists before I don't think it's so important at all. I think as long as the specialist is made aware of the case and he gives opinions and suggestions I think that's all that's required." (John)

Margaret likened telemedicine to looking up information in a book or on the internet:

"...look, if there were no telemedicine service and you wanted to know more about your problem you look it up in a book, magazine, computer. That's impersonal isn't it? But you are still getting the information you want, not necessarily the face-to-face contact"

Other responses indicate that the face-to-face contact being provided locally was sufficient contact with Karl and his carer Val responding that having the general practitioner and podiatrist available to look at the foot was sufficient face-to-face. Brian was also able to support this:

"No, it didn't bother me one bit. [lack of face-to-face contact with specialists] As far as I was concerned I was in good hands with my podiatrist. I think if you're sick enough and well concerned enough you'll go to whatever means to get some response ...it comes down to trust really" (Brian)

Store-and-forward method

When asked if they were comfortable with the consultation occurring in their absence the responses were again positive:

"I was quite happy about that. I was there to try and get my foot healed, so that was quite in line as far as I was concerned" (John)

"I realise there are only 24 hours in one day and goodness knows how many people out there need that sort of assistance" (Margaret)

However, to be present at a consultation could be of benefit as one patient described his experience:

"Yes I suppose it gave me more confidence and insights into the happenings and the process" (Brian)

Use the service again

The positive experience of the telemedicine service is further supported by the responses given when asked if they would use the service again:

"Yes, no worries at all. Like I said, it's important to get on top of these things and I think if it's a help to others that if you can do it this way then all the better" (Brian)

"Yes sure, why not, it was really good, marvellous" (Val-carer)

While everyone who was interviewed said they would use the service again and also recommend the service to another person, Karl indicated that a lack of local services is the reason why he would have to use it again:

"Well I have to [use the service] because I don't want to lose anymore limbs. If you haven't got expert advice then you have to go there" (Karl)

The lack of choice around services is also reflected in the comment by Margaret when talking about how she felt when she first developed her foot ulcer:

"I felt oh, I will have to put up with this again and sort of resigned to the fact there was nothing very much more than what I was doing that I could do. Living in a rural area you don't have much choice, but if you live on low income and in a rural area it doesn't leave you with much hope" (Margaret)

The benefits of a telemedicine service

While it was not the intention of this study to clinically measure the benefits of a telemedicine service, users of the service were asked about their perception of the benefits they gained from the service. Responses fell into three main categories relating to travel, waiting lists and outcomes of the treatment.

Travel

Foremost in patients minds were the costs and effort saved from having to travel to receive medical care. Margaret commented not only on the financial burden associated with travel but also the physical tiring from sitting on a bus for five hours and the stress from disruption to her daily routine. Carers also cited the benefits of not having to travel:

“But it’s much better if you can stay here and receive the advice without having to travel” (Val-carer)

“Well it’s a big help and it does save a lot, does save some tripping up there, perhaps for nothing, when you’ve got this service it can put your mind at ease” (Mary-carer)

However the seemingly most stressful aspect of travel to receive medical care revolves around the overwhelming experience of being in an urban area. Previous experiences for patients revealed:

“It was quite frightening, being in large areas and public places, lots of people. I had got out of the way of seeing large crowds of people and it was all kind of, everything was frightening, but I knew I needed help, I knew I had to go through with it” (Pat)

“If you live in a rural area there’s a certain amount of emotional stress in being in an urban setting. It’s so different, everything goes much faster, especially the traffic” (Margaret)

“We found it a bit daunting, well being in a rural area and then you have to go to a city, prior to that there’s making arrangements.....it was a bit of a harrowing experience for my wife and myself and anyway yeah, it’s a bit of an inconvenience and if you are not used to that sort of thing...” (Brian)

These comments reflect the high level of stress associated with travel for these patients and their carers and suggest that the positive attitude towards telemedicine comes about as a desire to obviate trips to the city for medical care.

Waiting lists

“Yes, that was another thing, there was no waiting” (Mary-carer)

“The telemedicine situation does cut down that waiting dramatically and it’s very reassuring to think, I’ve got a problem now, someone can help me now, not I’ve got a problem and I have to sit here in misery for the next twelve months until something happens” (Margaret)

Typically the waiting lists for specialists are months long. Telemedicine expedites this process which was noticeable to the users. Although there could have been a wait of a week between the consultation and the results being forwarded to the patient, one patient explained the process as:

“Sometimes I felt as though progress was a bit slow, but I did know there was progress being made and that someone was taking care, was taking the interest in my problem, not just thinking oh, she is a silly old woman who has a sore foot, why doesn’t she just put a bandage on it” (Margaret)

Outcomes

All users of the service indicated positive outcomes as a result of the telemedicine service and at the time of interviewing all except John had resolved foot ulcers. John still believed there were many benefits and that he would not have got to the stage of healing without it:

“There have been many benefits. I mean at this stage the foot has almost healed and I know full well that I couldn’t have got it to that point on my own and the service I received, it was what I needed and it has been very good” (John)

Overall Pat is able to sum up the positive experience of the service which she believed assisted in obviating the need for an amputation:

“Yes, I’ve still got my foot, very positive. I was absolutely delighted when I woke up and still had two feet” (Pat)

Discussion

The key findings from this qualitative study indicate that the users of the health service were positive and accepting of the telemedicine service and all indicated that they had benefited from the service. The study provides an understanding of the experiences of the users prior to the telemedicine service, of the experience of a telemedicine service and the experience of living with a high risk foot problem.

On average, the duration of treatment for the foot ulcer prior to the telemedicine service, with no significant change in condition, was seven months. This was the experience for four out of the five patients interviewed, and all four expressed frustration and concern that they were not receiving adequate medical care. The experience of this prolonged duration was an important aspect of the study as it highlighted the impact of the chronic nature of high risk foot problems in terms of stress to the patients and their carers.

This data can also contribute rigour to the findings of the study as it shows that despite low numbers in the study, prolonged duration of a high risk foot problem is a financial and human resource burden on the health system in terms of the need for wound care and infection management. Management of diabetic foot ulcers by a dedicated high risk foot multidisciplinary service can assist in earlier diagnosis^{6,25} and earlier implementation of treatment that in the long run can potentially reduce medical costs by reducing the prolonged nature.

When initially offered a telemedicine service reactions were very positive despite an overall low level of awareness of telemedicine. Considering the average age of the participants is 70, this study indicates generational differences are not a hindrance when providing a telemedicine service, as has been inferred in the literature⁴.

Data also shows that the general feeling of patients at this time was one of despair and a sense that their foot would never get better. These comments could be interpreted as a loss of faith in the medical care they were receiving. Despondency can be responsible for making anyone clutch at any straw, and the offer of a service not previously tried can be seen as a last resort, so the positive reactions could be analysed in this light.

However, the response could also be seen as a positive reaction to providing consumers with a choice about their health care and providing an opportunity to participate in decision making about their own care. One patient had commented on the lack of choice in health care in a rural area and equated the lack of choice with a lack of hope. With the

current trend towards patient centred care ¹ telemedicine can be seen as a way to provide choice to consumers in rural areas.

The study also found a very positive response to the experience of the telemedicine service with participants responding that they would use the service again if the need arose. These findings are consistent with the literature ^{1,8,13,17,19} and could be interpreted as high levels of satisfaction with the service.

In their preliminary study on the development of a Telemedicine Satisfaction Questionnaire, Yip et al (2003) define satisfaction as a match between the care expected and that received and suggest that satisfaction is an accepted indicator of a health service. Using this definition of satisfaction, the results of the present study indicate patients are satisfied with telemedicine as part of the health care service and that their expectations of the health service have been fulfilled.

The absence of face-to-face contact has been seen as a disadvantage in the literature ⁴. This was not reflected in the present study with respondents clearly indicating that face-to-face contact was not a necessity. One patient had commented that there was enough face-to-face contact occurring through the local service providers while another patient compared the telemedicine service to resourcing a book or the internet, adding that this was impersonal, but it did not matter as long as the information was obtained. These responses would suggest that patients do not experience the service as a depersonalised event. We could further infer that patients are not wanting or needing to develop a practitioner/patient relationship with the specialists consulted via telemedicine.

The literature also indicates that studies on satisfaction with telemedicine have methodological limitations ⁴ and that a social audit analysis on the non-monetary benefits may be warranted as part of the assessment of a service. This study was able to provide data supporting the non-monetary benefits of a telemedicine service.

The elimination and/or reduction of need to travel to an urban area for medical care as a result of having access to a local telemedicine service was found to be a positive benefit for all patients interviewed in this study. While patients responded to the prompts in the interview and agreed that there were cost savings associated with travel as a result of the telemedicine, the avoidance of stress associated with travel to an urban area was the benefit that seemed to have the larger impact on the users.

It was found that the experience of travel to an urban area can be an overwhelming experience for patients who reside in a rural area. Financial considerations of travel are typically mentioned in the literature ¹⁰ while the physical and emotional stress (ie. non-monetary) associated with travel are not. Two patients interviewed also commented on their concern over the stress placed on their carer as a result of a need to travel, so they saw the benefits of non-travel also extending to their carer. The disruption to routine and the need to call on the help of others (e.g. asking neighbours to collect mail, feed pets) also added to the stress of travel, so any reduction in this was seen as a bonus.

Satisfaction with the experience of the service could also be seen as an indication of the readiness of the community to accept telemedicine technology as part of their routine

medical care. As readiness can be defined as the degree to which a community is prepared to participate and succeed in telehealth²⁴, the findings of this study suggest that health consumers in this local community are ready. However, future studies are required to assess the readiness of the local health providers.

Strengths of the study

Consistency and similarity in the coding was found when an inter-rater was randomly assigned interview scripts to improve the rigour of data analysis quality.

The study is assessing health service delivery issues that are relevant and of importance to the local area. Telemedicine studies that are pertinent to local areas are recommended in the literature²² as every rural area has different requirements.

Limitations of the study

While a limitation of this study is the small number of participants, the researcher has attempted to present all findings as clearly as possible in an effort to provide as much data as possible and to show consistency between the data collected and the study findings.

Due to the dual role of interviewer and health service provider, the researcher acknowledges the potential for bias as the patients may have been trying to provide answers they thought the researcher would like to hear. However it was observed that all subjects were keen to participate and appeared to be frank and honest about their experience.

Perhaps a further limitation of this prior established clinical relationship is that some information may have been assumed rather than explicitly discussed and as a result some essential information was explicated from the transcripts and not brought into the data, potentially limiting the depth of the findings.

Conclusion

The inclusion of a telemedicine service in the local community health podiatry service has provided patients with access to a specialist multi-disciplinary team at RPAH Diabetes Centre. The advice provided as a result of the store-and-forward telemedicine consultations has been applied at a local level by the podiatrist and other involved health service providers, working together as a team. This suggests that through the local service providers adequate face-to-face contact occurs, providing a foundation that telemedicine can arise from and be an adjunct to local care rather than a replacement.

Research has shown that a higher opinion of local health care quality has been associated with the provision of telemedicine as it provides rural residents with the opportunity to enter a 'progressive, integrated and state of the art health care system'²⁰. All service users in this study reported a favourable experience with telemedicine and all indicated a willingness to use the service in the future if the need arose. This suggests a positive perception of the telemedicine service provided through the community health podiatry service.

For patients and carers interviewed the overall response is one of shock and dismay at the onset of a foot ulcer which eventually develops into annoyance as the daily inconvenience of the prolonged nature of the problem sets in. Underlying these reactions is a constant fear of amputation. The findings of this study suggest that the high stress levels associated with diabetic foot disease may be alleviated by access to a local high risk foot service that incorporates the use of telemedicine.

Having access to a local high risk foot service in the form of an IDF recommended Minimal Model Service may assist in streamlining and expediting service to the users and ultimately improve their quality of life. The positive responses to the inclusion of telemedicine indicate that the establishment of a recognised high risk foot service that incorporates its use will be well received by the patients.

Recommendations for practice

The high acceptability and positive experiences for the patients who used the telemedicine service as part of the management of their diabetic foot complication suggests success with the present community health podiatry service. However, without further development and support for the service, management of the increasing numbers of referrals to the service and long term sustainability is questionable.

Based on the findings of this report it is recommended that the Health Service investigates the development of a High Risk Foot Service which provides routine care for high risk clients and patients. Investigations may include adopting models of care recommended in the literature such as a Minimal Model IDF service. This includes the incorporation of other health providers and the integration of telemedicine into the routine care for high risk clients.

This recommendation supports the current changes recommended in the GSAHS 'Improving Community Care' draft framework document²⁶. The establishment of a High Risk Foot Service supports the integration and sharing care between the community and hospital; clear pathways; drawing on multi-professional teams and investigating in services including telehealth.

The recommendation of this report is further supported by the GSAHS 'Developing and sustaining change in community care' Annexure 1 Document²⁷ which advises services to be developed which: integrate community care with secondary care and specialists; working in multidisciplinary teams and packaging evidence based interventions together.

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Appendix 1



Participant Information Sheet

User satisfaction and experience with a telemedicine service for diabetic foot disease in an Australian rural community.

You are invited to participate in a study looking at the experiences of people with diabetic foot disease who live in the Bega Valley. The study will include

- your experience of living with a diabetic foot complication
- your carers experience
- your experience of the telemedicine service received for the management of your complication

The study is being conducted by Ms Jenni Devine, podiatrist and novice researcher. Jenni is participating in a program run by the NSW Institute of Rural Clinical Services and Teaching whose aim is developing research skills in rural practitioners. Jenni is applying the project to her area of interest, diabetic foot disease.

Before you decide whether or not to participate in this study, it is important for you to understand why the research is being done and what it will involve. Please take the time to read the following information to assist you in your decision.

1. 'What is the purpose of this study?'

Unless you have experienced living with a diabetic foot complication you do not know the impact it can make on your life. This study aims to evaluate the experience for individuals who have had a diabetic foot complication such as an ulcer, infection, Charcot foot or amputation.

Carers will also be invited to share their experience of living with a spouse/partner who has diabetic foot disease.

Everyone invited to participate in this study has received a telemedicine service with Royal Prince Alfred Hospital Diabetes Centre. The study would also like to investigate your satisfaction levels of receiving medical assistance in this way.

2. 'Why have I been invited to participate in this study?'

You have been invited to participate in this study because you have received a telemedicine service for the management of your diabetic foot complication from the podiatry clinic at Pambula community health centre.

3. 'What if I don't want to participate in this study, or if I want to withdraw later?'

Participation in this study is voluntary. You are free to decide whether or not you would like to participate. If you decide not to participate, it will not affect the service you receive from the podiatry clinic now or in the future.

You do not have to provide a reason if you choose not to participate and if you wish to withdraw from the study once it has started, you can do so at any time without having to give an explanation either.

4. 'What does this study involve?'

This study will be conducted at Pambula community health centre, a centre you are familiar with, over the first few months of 2009.

If you agree to participate in this study you will be required to attend for an interview with the researcher. The interviews are expected to last for 1-2 hours. The interviews will be recorded on a digital recorder for later analysis.

If you wish to participate you will be asked to sign a consent form. This will be clearly explained to you by the researcher.

The researcher will also be required to access your medical records to record the number of telemedicine consultations that were provided for you. You will also be asked to sign consent for this to happen.

5. 'Will I benefit from this study?'

This study aims to improve our knowledge about the management of diabetic foot disease in the Bega Valley.

There are no likely immediate benefits to participating in the study however you and other people with diabetes may benefit in the future by

- providing information to clinicians about the experience of patients who are living with diabetic foot disease and thereby improving their management of these patients
- potentially informing the further development of a high risk foot service for the Bega Valley

6. 'Are there risks to me taking part in this study?'

There is no known or likelihood of risk to you if you do agree to participate in this study.

7. 'How will my confidentiality be protected?'

Any information collected from you will be added to the data being collected from all participants of this study and will be presented so that you are not identified.

Only the researcher will have access to your details and content of the information that will be held securely at Pambula community health centre.

8. 'What will happen with the results?'

If you are interested to partake in the study and provide permission by signing the consent form, the results of the study may be used for the following purposes

- publish the results in a health journal
- present the results at a conference or other professional forum
- discuss/present the results with Royal Prince Alfred Hospital Diabetes Centre
- discuss the results with Greater Southern Area Health Service management
- present the results to the Institute of Rural Clinical Services and Teaching
- present the results to the Greater Southern Area Health Service Human Research Ethics Committee

Results of the study will be provided to you upon request.

9. "What happens if I suffer harm, injury or complications as a result of this study?"

If you suffer any stress as a result of participating in this study you should contact the researcher as soon as possible. Assistance in obtaining appropriate care and/or counselling will be provided.

10. 'How is this study being paid for?'

The researcher is being funded by the NSW Institute of Rural Clinical Services and Teaching as part of the Rural Research Capacity Building Program.

11. 'Will taking part in this study cost me anything, and will I be paid?'

Participation in this study will not cost you anything apart from your time and effort to attend the interview. We thank you for your participation. No monetary payment will be given for participation.

12. 'What should I do if I want to discuss this study further before I decide?'

When you have read this information sheet, the researcher is available to discuss with you any further questions you may have. Please do not hesitate to contact her.

Jennifer Devine
PO Box 226
Pambula NSW 2549
Tel 02 6495 7294 Tues/Wed/Thurs

13. 'Who should I contact if I have concerns about the conduct of this study?'

This study has been approved by the GSAHS Human Research Ethics Committee. If you have any concerns about the conduct of this study please contact the committee through:

The Complaints Officer
GSAHS HREC
PO Box 395
Albury NSW 2640
Tel 02 6080 8900 Fax 02 6080 8999

Thank you for your time in considering to participate in this study.

The information sheet is for you to keep.

Appendix 2

GREATER SOUTHERN
AREA HEALTH SERVICE
NSWHEALTH



Jenni Devine
Pambula Community Health Centre
Merimbola St
Pambula NSW 2549
Ph: 6495 7294

Date

Dear

Thank you for expressing interest in participating in a research project that is looking at the experiences of people with diabetic foot disease. The project aims to evaluate the telemedicine service that was provided to you and your experience of living with a high risk foot. The project is also interested in the experience of your carer/partner (if applicable).

Enclosed is a Participant Information Sheet. Please take the time to read this as it will explain everything to you.

If you decide not to participate or to withdraw from the project you do not have to give a reason.

The project is being funded by the NSW Institute of Rural Clinical Services and Teaching as part of the Rural Research Capacity Building Program. As a novice researcher I am being supervised by Ms Marg McGill, manager of the Royal Prince Alfred Hospital Diabetes Centre and an experienced researcher.

I will be contacting you soon by phone to answer any questions you may have and to make an appointment for your interview. Please do not hesitate to call me at any stage if you do have questions.

Yours sincerely

Ms Jenni Devine
Podiatrist

Appendix 3

Interview Script-Patients

User satisfaction and experience with telemedicine for diabetic foot disease in an Australian rural community

Topic area: Diabetes and foot complications

Purpose is to get the participant comfortable talking, an introduction/warm up.

- Can you recall when you first got your diagnosis of diabetes? How did you feel? How did you cope?
- How have you been managing the disease over the years? Are there any impacts/changes it has made to your life?
- Do you recall when you first developed your diabetic foot complaint? Was it due to trauma or did it just appear? What was your reaction to the problem?
- Who did you first seek medical advice from? Prompt: GP, nurse
- The outcomes of this advice? Prompt: wound began to heal etc
- Can you recall how the referral to the community health centre podiatry clinic came about? Prompt: word of mouth, requested by self etc
- By the time you attended the community centre at what stage was the foot problem at? Prompt: starting to heal, not healing, infected etc
- And how were you feeling?

Topic area: The telemedicine service

Purpose is to obtain a picture of the impressions and experience of the service

- What was your first impression when offered a telemedicine service?
- What had you heard about telemedicine?
- Do you recall how many services there were?
- How did you feel about the fact that you do not meet or see the specialists personally?
- How important is being able to see the specialist?
- Were you present when the consultation was conducted? Yes – what was that like/did you feel your needs were being met? No- was that your choice not to be present?
- How did you feel about a 3rd party (the podiatrist) conducting the consultation for you?
- Would you use this type of service again? Were there any benefits to this service?
- Would you recommend a telemedicine service like this to another person? If yes, how would you describe it to them? If no, why not?
- What were the outcomes for you? Positive/negative
- Do you think the service met your needs? In what way?
- On a scale of 1-10 (10=high) where would you rate the service?

Topic area: Living with a diabetic high risk foot

Purpose is to obtain a picture of what it is like to live with a diabetic foot complication

- Is the diabetic foot problem now resolved or are there still ongoing issues?
- In what ways did/does this problem impact on your daily life?
- How did/do you cope with the impact? Prompt: feel annoyed, anxious
- How did the long term nature of the problem make you feel?
- What were the worst aspects of the problem? Prompt: fearful of amputation, limitations in activities
- {For people with resolved problems} How do you feel now your problem is resolved?
- {For people with a partner} How do you think they felt/cope with the experience?

Appendix 4

Interview Script-carers

User satisfaction and experience with telemedicine for diabetic foot disease in an Australian rural community

Topic area: Diabetes and foot complications

Purpose is to get the participant comfortable talking, an introduction/warm up.

- Can you recall when your partner first got his/her diagnosis of diabetes?
- How has he/she been managing the disease over the years? Have you made adjustments to your life to help cope? Prompt: Diet, exercise etc?
- Can you recall when he/she first developed the diabetic foot complaint? How did the problem develop? Prompt: trauma, cut to foot etc
- Who did he/she first seek medical advice from? Prompt: GP, nurse, podiatrist. The outcomes? Prompt: wound began to improve, purchased orthotics, etc
- Can you recall how the referral to the community health centre came about? Prompt: requested by patient, word of mouth etc
- By the time you attended the community health centre what stage was the problem at? Prompt: starting to heal, not healing, infected etc
And how were you feeling?

Topic area: The telemedicine service

Purpose is to obtain a picture of the impressions and experience of the service

- What was your first impression when your partner was offered a telemedicine service?
- How did you feel about the fact that you would not be seeing the specialists face to face? How important is face to face in the case of your partners treatment for the diabetic foot problem?
- Were you present when the consultation was conducted? Yes – what was that like/did you feel your partner's needs were being met? No- was that your choice not to be present?
- How did you feel about a 3rd party (the podiatrist) conducting the consultation for your partner?
- Would you accept the use of this type of service again?
- Would you recommend this service to another person? If yes, how would you describe the service to this person?
- Are there any positive/negative outcomes you can see as a result of the service?
- On a scale of 1-10 (10=high) where would you rate the service?

Topic area: Living with a diabetic high risk foot

Purpose is to obtain a picture of what it is like to live with a partner who has a diabetic foot complication

- Is the diabetic foot problem now resolved or are there still issues?
- Where there expectations placed on you as the carer? How did you cope with these (if any)?
- As a high risk foot problem is not a like a cold that you recover from in 2 weeks, how did the long term nature of the problem make you feel?
- If the problem is resolved, how do you feel now? If not resolved, how do you feel now?
- How has your awareness of diabetic foot problems changed the way you and your partner live? Prompt: changed sports, not as active etc
- How do you think your partner coped with the experience?

Appendix 5



CONSENT FORM

Research Project: Satisfaction and experience with telemedicine for managing diabetic foot disease.

I (your name)

have had the purpose of the research and any related benefits and risks explained to me by the researcher and I have a copy of the Participant Information Sheet.

I am aware that the research will involve

- Participation in an interview with the researcher that may last 1-2 hours. The interview will be held at Pambula Community Health Centre at a time and date that is convenient to both parties.
- The researcher accessing my medical records at community health to determine the number of telemedicine consultations I have received in the management of my diabetic foot complication.

I understand that as part of the study all information collected about me, as well as my personal details, is confidential, and that neither my name nor any other identifying information will be published

I understand that I am free to withdraw from the study at any time and I do not have to give a reason. If I wish to withdraw I should contact the researcher to let her know. If I do withdraw this will not affect my relationship with the researcher or with the health care organisation where the study takes place, nor will it affect any health care treatment that I receive now or in the future.

I have read and understood the written explanation provided to me on the participant information sheet and have been given this sheet to keep.

I am aware of who to contact if I have any complaints about the conduct of the research and that these contact details can be found on the participant information sheet.

I agree to participate in the above-named study

Name:.....(Print)

Signature:Date:.....