Health benefits of an innovative model of care for chronic wounds patients in Queensland

Key Messages

- Wound management in Australia suffers from a lack of adequate coordination and communication between sectors that impacts patient health outcomes and costs.
- We compared the experiences and outcomes of 29 chronic wound patients for the 12 months prior to accessing a transdisciplinary specialist wound service, and the 3 months following their enrolment at this service.
- 40% healed completely by 3 months, with the average time to healing being 8 weeks. There was a statistically significant increase in quality of life (QoL) and a reduction in pain scores.
- Patients accessing wound care treatment at a specialist, transdisciplinary wound clinic experience an increase in QoL and receive consistent evidence-based practices

Abstract

Wound management in Australia suffers from a lack of adequate coordination and communication between sectors that impacts patient outcomes and costs. Wound Innovations is a specialist service comprising of a transdisciplinary team that aims to streamline and improve patient care and outcomes. We compared patient experiences and outcomes prior to accessing this specialist service, and the 3 months following their enrolment at the clinic. Information on patient experiences, wound history, and outcomes were collected through interviews and a review of medical records for the 12 months prior to enrolment at the clinic. Wound progress, quality of life (QoL) outcomes, and service use were tracked during the 3 month prospective phase. A sample of 29 participants were recruited. 40% healed completely by 3 months, with the average time to healing being 8 weeks. The average QoL score at baseline was 0.69 (from a score of 1, being best health imaginable). At 3 months, the average QoL score increased significantly to 0.84 ($P \leq 0.001$). On average, participants attended the clinic 4.6 times. The average decrease in wound size was 85.4% (95% CI [75.7%, 95%]). Accessing wound care treatment at a specialist, multidisciplinary wound clinic leads to an increase in quality of life and access to consistent evidence-based practices.

Keywords

chronic wounds, transdisciplinary, patient-centred care, evidence-based practice, specialist service

Introduction

Despite mounting evidence demonstrating that implementation of evidence-based and hence best practice wound care coincides with significant health improvements [1, 2] and cost savings [1-4], research suggests the majority of Australians with chronic wounds still do not receive evidence-based treatment [1, 5].

A range of barriers impede the implementation of evidence-based wound care. There is little awareness within the general public or governments of the significance of chronic wounds, high costs of dressings and services and poor reimbursement for wound services and consumables. There is limited access to evidence-based wound care, poor education and training of health professionals in evidence-based wound management, and poor coordination and communication between healthcare providers [6]. Patients requiring wound care might access a large number of healthcare providers, often using a combination of primary and secondary services. Frequent combinations include general practitioner (GP) care in isolation, GP and allied health professional teams, GP and medical specialists, and GP, medical specialist and community nursing teams [1]. The lack of adequate coordination and communication between sectors has a detrimental effect on patient health outcomes and costs [6].

The likely result is that chronic wounds have extended healing times, require frequent assessment and treatment from healthcare professionals, have high recurrence rates, and often result in hospitalisation because of infections and other complications [6]. This poor organisation of services impacts on the quality of life (QoL) of affected individuals, and imposes avoidable costs on the Australian health system and patients [6]. The marginal benefits such as improved patient outcomes and cost savings associated with best practice models of care are not well evaluated. There remain important gaps between research findings on cost-effectiveness and wide-spread implementation of innovative models of evidence-based wound care delivery to improve patient outcomes in the Australian setting.

The Wound Innovations specialist wound clinic was established as a business unit of the Wound Management Innovation Cooperative Research Centre (WMI CRC). The WMI CRC was funded by the Australian government as a research and knowledge translation body to assist in alleviating the growing issue of chronic wounds in Australia's healthcare system. The clinic began operation on 30 January 2017 and is designed to be a legacy activity of the WMI CRC, continuing operation after the end of the CRC's eight year term. The clinic aims to provide a holistic service for patients, their carers and clinicians in an attempt to improve wound outcomes. It also provides training for external healthcare professionals in evidence-based wound management [7]. Patients can access Wound Innovations through referrals from their primary care provider or by self referral and are charged a fee for service that includes cost of consultation and consumables.

Patients referred to Wound Innovations are seen by a multidisciplinary team comprising of a Vascular Specialist, a Wound Nurse Practitioner Candidate, an Advanced Clinical Podiatrist, and a Registered Nurse. The clinic also provides a telehealth service to patients, which are bulk-billed if eligible. A telehealth consultation is a real-time video consultation between the patient, their local health professional, and the clinical team at Wound Innovations. This service aims to reach those who may not be able to physically attend the clinic but require specialised care, for example those in rural and remote settings or those in residential aged care facilities.

This article aims to compare the effectiveness of alternative health service pathways of care for patients with chronic wounds, with regard to implementation of evidence-based guidelines, transdisciplinary patient centred care and impact on wound healing. Further, QoL and cost of services to patients and health system will inform a subsequent economic evaluation of the Wound Innovations service.

Methods:

Study design

This project used a single cohort pre-post study design with two phases – a retrospective phase and a prospective phase for data collection. The retrospective phase incorporated the 12 months prior to enrolment at the Wound Innovations clinic, and the prospective phase covered the 3 months following enrolment. Information was gathered through patient interviews, clinical notes, and patient Medicare Benefits Schedule (MBS) and Pharmaceutical Benefits Scheme (PBS) data retrieved through the Department of Human Services (DHS).

Sample and site

New patients attending the Wound Innovations clinic, or under the care of the clinic through the telehealth system, and fitting the inclusion criteria were approached to participate. Prior to being approached, patients' eligibility for recruitment into the study was discussed with one of the clinicians at the service. Detailed inclusion and exclusion criteria can be found in Table 1.

Insert Table 1

Existing patients who did not attend the clinic regularly but fit the inclusion criteria were contacted by clinic staff and mailed consent forms using self-addressed return envelopes. Those who sent back a signed consent form were contacted by project investigators and data were collected through a telephone interview and a review of the patient's medical records.

Data collection and measures

Upon enrolment to the study and providing informed consent, information was collected on patient demographic characteristics, medical history, risk factors, a clinical wound assessment, and QoL. Where patients were unable to recall medical information, consultation was sought with the clinicians, or data were collected from the clinic database. For existing patients who had attended the clinic prior to study enrolment, baseline wound characteristics were collected from the clinic database.

In the retrospective phase, past year health care utilisation was measured via self-report. Data were collected on cost of dressings, services, and frequency of use per week. Patients were also asked to recall investigations or procedures prescribed over the prior 12 months, and whether there had been a change in the size or infection status of their wound. Data were also collected on hospital admissions due to wound complications, including frequency and length of stay, and patient out-of-pocket costs. MBS and PBS data for the 12 months prior to enrolment in Wound Innovations were retrieved.

In the prospective phase, data on healthcare utilisation were collected via self-report and again MBS and PBS data were available for the 3 months following enrolment at Wound Innovations. Wound management and treatments, and wound healing outcomes were measured monthly for 3 months after admission. In addition, data on QoL were collected at baseline, and after 1 and 3 months, and data on concordance to the Wound Innovations management plan were collected at 1, 2 and 3 months.

Wound progress was measured using the following methods:

- Silhouette scan results, determining length, width, depth, surface area and decrease in size of wound from baseline
- Clinical observations of exudate levels, colour and consistency
- Signs of infection
- Self reported pain scores (0-10)

Clinical notes were retrieved from Best Practice: BP Premier [(8)], the database software used by Wound Innovations.

Data on QoL were collected using the EuroQoL EQ-5D-5L tool and Visual Analogue Scale (EQ VAS)[(9)]. The EQ-5D-5L descriptive system comprises five dimensions: mobility, self-care, usual activities, pain or discomfort, and anxiety or depression. Each dimension has five levels, ranging from no problems to extreme problems. Participants are asked to indicate their health state by ticking the box next to the most appropriate statement in each of the five dimensions. The EQ VAS requires participants to rate their health on a vertical visual analogue scale, where the endpoints are labelled ‘The best health you can imagine’ (100) and ‘The worst health you can imagine’ (0). The VAS is used as a quantitative measure of

health outcomes that reflect the participants own feelings on their health [9]. Results were calculated by assigning a utility decrement weight to each statement, and subtracting these from the best possible health state (a score of 1) [10]. In cases where patients were discharged, or no longer attended the clinic before follow-up had ended, data on QoL and wound status were collected through telephone interviews.

Statistical Analysis

Descriptive statistics were calculated for each of the baseline and review data points. Paired *t* tests were used to compare the difference in individual patient pain scores and QoL between baseline and 3-month follow up. Average QoL scores for patients who had healed were compared with patients with active wounds at the 3-month follow up using independent two-sample *t* tests.

Ethics

This study has been approved by the Metro South Health Service District Human Research Ethics Committee and QUT Human Research Ethics Committees, approval numbers HREC/16/QPAH/363 and 1700000867 respectively, and complied with the Declaration of Helsinki ethical rules. Written informed consent was obtained from all participants for both the study and access to DHS data.

Results

A sample of 29 participants was recruited into the study. Of these participants, 27 had active wounds, while two patients were receiving preventative treatment. Although these two patients had not previously been managed at Wound Innovations for their wounds, these participants were still included in the study as they had a long history of ulceration and were at high risk of recurrence without an appropriate preventative management plan. In total, 48 wounds were recorded for the 27 patients with active wounds.

Sample Characteristics

The average age of participants was 72 (range 25 – 92), with 45% being male. The average BMI of participants was 28.3, placing them in the 'Overweight' category [11]. Upon enrolment in the study, 48% of patients' wounds were considered recurrent - recurrence was defined as the patient having had a wound of the same aetiology previously, which had reached complete healing before the active wound began. Venous leg ulcers (VLUs) were the most common within the cohort (73%), with diabetic foot ulcers (DFUs) making up 7%. The remaining wounds were a mix of aetiologies, and as such were

classed as "Other". One participant had both venous leg ulcers and a diabetic foot ulcer. The average duration of active wounds was 96 (range 8 – 480) weeks. Further participant and wound characteristics are summarised in Table 2. *Insert Table 2*

Health service pathways and access to transdisciplinary patient-centred care

Retrospective phase

In the 12 months prior to enrolment at the clinic, the majority of participants (72%, n = 21) attended a GP service as their primary health care provider for their wound. Other primary care providers included in-home care with community nurses (17%, n = 5), hospital outpatient clinics (10%, n = 3), nurses within an aged care facility (10%, n = 3), podiatrists (7%, n = 2) and dermatologists (7%, n = 2). About 28% (n = 8) of participants accessed more than one of these services over the 12 months. One patient had not accessed any services prior to enrolment at the clinic and was self-managing the wound.

Participants attending GP services during the retrospective phase were attending approximately twice a week, with each visit averaging 29 minutes (range 5 – 60). About two thirds of participants (67%) were seen by a GP and registered nurse (RN) during each visit, a third (30%) by their GP only, and one participant (5%) was attended to by the practice nurse (RN) only.

Prospective Phase

On enrolment at the clinic, patients were assessed and a detailed medical and wound history was taken. The average length of an initial appointment was 103 minutes (range = 30 – 180), during which 96% of all patients (n = 28) were seen by a specialist (vascular surgeon or a podiatrist). Twenty-three participants (79%) were seen by a vascular surgeon, and 13 (45%) were seen by a podiatrist. Twenty-seven (93%) received transdisciplinary care, defined as having been seen by two or more healthcare professionals, with 10 (34%) seeing three or more. Three participants received care via telehealth for their initial appointment. Telehealth appointments were conducted by a vascular surgeon and RN and ranged in length from 30 to 75 minutes. In line with a patient-centred care approach, upon enrolment at the clinic, all participants received a tailored dressing plan on completion of their appointment, with directions on dressing type, application and exercises if appropriate. These dressing plans were also provided to the referring doctor or specialist directly by the clinic.

Hospitalisation

Retrospective phase

Based on patient self-reported data, in the 12 months prior to enrolment at the clinic, 36% (n = 9) of participants required hospitalisation because of wound complications. Of these participants, two had been hospitalised more than once. Three (33%) attended a public hospital, while the remaining six (67%) had stayed in a private hospital. Average length of stay (LOS) in public hospitals was 32 (7 – 60) days, while those in a private hospital had an average LOS of 39 (2 – 120) days. The average LOS for hospital presentations overall was 37 (2 – 120) days.

Prospective Phase

During the prospective phase, one participant was hospitalised because of their wound. Hospitalisation was recommended by the clinic's clinicians during the participant's initial appointment for surgical debridement and treatment of local infection. LOS for this hospitalisation was 19 days, with the participant staying in a private hospital.

Use of evidence-based practice

Retrospective phase

Prior to enrolment at the clinic, participants generally reported low rates of experience with evidence-based wound management. For example, guidelines state that patients presenting with a lower limb wound should have an ankle brachial pressure index (ABPI) performed regularly to detect arterial or venous disease, which are risk factors in wound management [12, 13]. However on admission to the clinic, only 14% (n = 4) had previously had an ABPI performed. Twenty-four (83%) had been diagnosed with an infection in their wounds in the previous 12 months, and all of these participants had received antibiotics. Only 62% (n = 18) of participants reported having had a wound swab ordered, despite current guidelines stating that antibiotics should generally be prescribed after wound swabs and sensitivity testing, with the overuse of antibiotics contributing to the development of antibiotic-resistant bacteria [13]. Compression therapy is considered the gold standard of treatment for venous ulcers [13], however on enrolment at the clinic only five participants (23%) with this diagnosis were currently using compression garments or bandaging, or reported the use of compression therapy in the previous 12 months. Guidelines for the treatment for DFU recommend the use of pressure-offloading devices or footwear [14, 15], however only one of the two participants with a DFU presented at baseline with an appropriate device, despite both reporting accessing podiatry services during the retrospective phase.

Prospective Phase

In the prospective phase, during their initial appointments, 66% (n = 19) of patients had an ABPI performed while another 21% (n = 6) were unable to have the investigation performed due to the position or pain of their wounds, or due to significant oedema. In these cases, alternative assessments were explored such as performing a toe pressure brachial index

measurement (TBPI) or a review of previous medical records. Additionally, three patient appointments were telehealth appointments, meaning the facilities required to perform the ABPI investigation were unavailable. One participant had surgical dehiscence of an abdominal wound, where the investigation was deemed unnecessary. All participants diagnosed with venous insufficiency complications were prescribed compression therapy in the form of stockings, bandaging, or layered tubular bandages [13, 16]. Participants with a DFU were prescribed appropriate pressure-offloading devices or footwear, and were were seen by the clinic's podiatrist at each appointment.

On admission to the clinic, two participants displayed clinical signs of infection – one of these participants had a wound swab taken, was prescribed systemic antibiotics, in addition to being treated with antimicrobial dressings and debridement, and was recommended hospitalisation (see above). The other patient was treated with antimicrobial dressings and debridement only. Clinical signs of infection in both these participants had cleared by their next appointment at the clinic (29 days and 32 days, respectively).

Patient concordance to their prescribed dressing plan was measured at each data collection point in the prospective phase, including the reason why their dressing plan had not been followed if this was the case. The most common reason for non-concordance was pain/discomfort from the dressing (27%) and the required dressings unable to be sourced, either by the patient or their carer (27%). Overall, dressing plans were followed 77 to 81% of the time. Rates of concordance with compression therapy were higher, with 92-95% of responses indicating that compression had been tolerated and worn consistently. Again, pain/discomfort was the main reason for non-concordance.

Prospective wound-healing outcomes, recurrence and pain scores

Out of 27 patients with active wounds, the average wound size at baseline was calculated as 18.15cm^2 (0.1 – 184.4cm^2), with venous ulcers having the largest average surface area (see Table 2). Over the course of the prospective phase, there was an overall average surface area decrease of 85.4% (6.6% - 100%).

Two participants were lost to follow-up at 3 months and were unable to be contacted. Of the remaining 25 participants with active wounds at baseline, 10 participants (40%) had healed completely (no active wounds) by 3 months, with average healing time to complete healing being 8 weeks (range 4 - 12) (Table 3). Another three participants (11%) had one or more of their wounds heal; however, did not reach complete healing of all their wounds by the end of the study period. The remaining 12 participants showed clinical improvement in their wounds between baseline and 3 months, none of the wounds deteriorated over the follow-up period. Out of the 20 patients with active venous leg ulcers at baseline, 45% (n = 9) had healed completely by 3 months with an average healing time of 7 weeks (range 4 - 12).

In this study, two patients with history of ulceration, but no active wounds upon recruitment, received preventative care and did not develop recurrent wounds over the 3 months of follow-up. In total, out of 12 healed participants there were no recurrent wounds over the 3 month follow-up period. Table 3 displays a breakdown of wound healing by individual wounds.

Insert Table 3

The average percentage (%) reduction in wound size increased at each data point, with the average % reduction at 3 months being 85.4% (95% CI [75.7%, 98%]). This reduction is plotted in Figure 1.

Insert Figure 1

Pain scores were recorded at baseline and 3 months. At baseline, 12 participants reported some pain from their wounds (a score of 1 or higher out of 10, where 10 was the worst pain possible). The average pain score at baseline was 6.35. At 3 months, the average pain score recorded for these same patients decreased to 4.74 (95% CI: [3.08, 6.39], and this decrease was statistically significant $p \leq 0.001$), with 8 of the 12 patients reporting no pain (a pain score of 0).

Quality of Life (QoL) Outcomes

An average of participants' QoL scores was calculated at each data point and results are shown in Table 4. EQ-5D-5L scores or utilities for health are measured on an interval scale, where 1 refers to full health and 0 refers to death, with negative values indicating states worse than death. Of the 29 participants, only 20 had QoL scores for both baseline and 3 month data points. For this cohort, the average QoL score at baseline was 0.68 (-0.002 to 1) with a statistically significant increase to 0.84 (0.53 to 1, $p \leq 0.001$) by 3 months (Table 4). The breakdown of healed vs non-healed QoL scores at 3 months can be found in Table 4.

Insert Table 4

Discussion

Time to healing compares favourably to published literature in the case of VLU, with guidelines stating wounds should heal within 12 weeks for uncomplicated wounds following best practice [13]. Patients with a VLU in this study showed an average healing time of 7 weeks (range 4 - 12). Another study in Queensland incorporating all wound types recorded an average healing time of 12 weeks [1], with Wound Innovations patients having an overall healing time for all wounds of 8 weeks (range 4 – 12). The rate of healing, however, remains lower than other comparable studies (45% for VLUs compared with 63% in the Edwards et al study [1]). One possible explanation for this slower healing rate may be that many patients

referred to the clinic have factors that may be delaying healing, such as misdiagnosis of the wound aetiology or underlying medical conditions that may have previously been overlooked.

Looking at quality of life, there was a statistically significant increase in the QoL scores between baseline and 3 months, particularly among patients with healed wounds. Interestingly, however, the average 3-month scores for patients who had not healed had also increased (0.69 at baseline to 0.8 at 3 months) – this could be because of these patients having an overall improvement in their wounds during their time at the clinic. In this study 'healed' was defined as those patients where all wounds healed. Some patients had one of several wounds heal but could not be considered "healed" in this study– this accounts for 27% (n = 3) of unhealed patients who provided both baseline and 3-month QoL scores, and could give further reason as to why this QoL score remains fairly high.

On average, participants attended the clinic once every 3 to 4 weeks - this includes telehealth appointments, but does not include unscheduled, follow-up telephone consultations between patients and clinicians. It appears that study participants tended to use the specialist service as a complementary service to their other health care providers, with most continuing to receive care from their GP or community nurse during the prospective phase. Often these services have referred patients to the specialist clinic and as such will receive dressing plans designed to form a consistent continuation of care, with regular communication between referrer, patient and clinic strongly encouraged.

This transdisciplinary approach, with a variety ofhealth disciplines contributing to a patient's journey, has been found to be highly beneficial, and is most effective when it's directed through a patient-centred approach with the focus on a common goal set by the patient [(17)]. This transdisciplinary approach is not only found through collaboration with other services, but within the clinic itself, with patients able to access a range of healthcare providers, resulting in a holistic approach to the care of their wound. The overall improvement in the use of evidence-based practice, wound outcomes and patient QoL observed in this study after admission to the clinic could well be attributed to the successful use of this multi-disciplinary model of care.

A significant aspect of patient-centred care is acknowledging the patient feedback and possible limitations of their ability to follow a suggested care plan. Brown [(18)] advocates shared decision-making in care, where the patient and their health care provider discuss the patient's ultimate priorities for treatment, from which a care plan is created [(18)]. This approach has previously been associated with improved preventive care and concordance with goals and wound management strategies [(17, 19)], and the high rates of dressing plan concordance, in particular to compression therapy, could well be attributed to the successful application of this practice within this clinic.

Limitations

This study design has limited external validity, and the extent to which the results of this study can be generalised to other situations and to other people is limited. The pre-post study design results in participants acting as their own controls with no independent control group, therefore causality is not assured with regards to wound outcomes and quality of life. Due to the study being conducted soon after the clinic began operating, the slow initial patient flow, and the strict exclusion criteria, we were only able to calculate the outcomes and costs from a small sample of chronic wound patients. The sample size for QoL scores is reduced again, as some participants were not asked by the clinic to complete a QoL survey at baseline, or were lost to follow up before 3 months. The range of wound aetiologies limits comparability to other wound outcome reports, as many studies tend to focus on one single wound type. The duration of follow-up was only 3 months and may not have been long enough to accurately estimate recurrence. Hospitalisation, health service use and out-of-pocket costs from the retrospective phase was self-reported by participants and may have been affected by recall bias; however, patient's MBS and PBS data accurately confirmed much of this information.

Conclusion

Findings from this small sample of patients with chronic wounds seem to indicate that accessing wound care treatment at a specialist, multidisciplinary wound clinic leads to an increase in QoL, reduction in hospitalisations and improved access to consistent evidence-based practices, compared to those who access multiple, uncoordinated services. Increased usage of a specialised, transdisciplinary service such as this could contribute to alleviating the substantial growing burden of chronic wounds in Australia.

The information gathered within this study will be used to inform an economic evaluation of the service, providing insight into whether utilising a specialist transdisciplinary wounds service is a cost-effective approach to managing wounds, compared to the continuation of routine healthcare services. The evaluation will take a societal perspective, taking into account both the costs to patients and the cost to the healthcare system, and will include patient-provided data and MBS/PBS information to calculate costs. This evaluation will be able to provide further insight into whether a large scale implementation of evidence-based wound care would represent good value for money in Australia.

Acknowledgements

The authors gratefully acknowledge Dr John Bingley and the clinical and administrative staff at Wound Innovations clinic for their expertise and support. The authors would like to acknowledge the support of the Australian Government's Cooperative Research Centres Program.

The Wound Management Innovation Cooperative Research Centre (WMI CRC) received funding from the Australian Government, Curtin University, Queensland University of Technology, Smith & Nephew Pty Limited, Southern Cross University, University of South Australia, Wounds Australia, Blue Care, the Department of Health South Australia, the Department of Health and Human Services Victoria, Ego Pharmaceuticals Pty Ltd, Metropolitan Health Service/Wounds West, Queensland Health, Royal District Nursing Service Limited as part of the Bolton Clarke Group, Royal Melbourne Institute of Technology, Silver Chain Group Ltd, 3M Australia Pty LT, KCI Medical Australia Pty Ltd, Capital Health Network Pty Ltd, Mölnlycke Health Care Pty Ltd, Paul Hartmann Pty Ltd, Swinburne University of Technology, The University of Queensland, University of Melbourne, University of Tasmania, The University of Western Australia, Wounds Australia Ltd.

This study was funded by the WMI CRC. The funders had no role in the design of the study and collection, analysis, and interpretation of data and writing, and submitting the manuscript for publication. The authors have no other conflicts of interest to report.

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Tables

Table 1 - Participant inclusion and exclusion criteria

Inclusion Criteria	*Exclusion criteria*
• Adults over 18 years of age • Principal diagnosis of chronic wound or surgical wound dehiscence including active and healed wounds (in patients with history of chronic wounds). • Provided initial consent to be involved in research at Wound Innovations by signing the Wound Innovations clinic consent form • Able to provide informed consent	• Patients under the age of 18 years • Cognitive impairment, intellectual disability or mental illness • Unable to comply with study protocol • Acute wounds (wounds healed within <14 days of wounding) • Untreated systemic infection at recruitment • Uncontrolled immunosuppressive disorders • Indicated on the initial Wound Innovations consent form that they do not wish to be involved in research

Table 2 - Baseline demographic, health and wound characteristics

Characteristics	**Total** **n = 29** **(Wound type n = 30)***	**Venous Leg Ulcers** **n = 22** **73%**	**Diabetic Foot Ulcers** **n = 2** **7%**	**Other**** **n = 6** **20%**
Demographic				
Age (mean, range)	72 (25 - 92)	75 (25 - 92)	63 (45 - 81)	69 (51 – 88)
Gender				
Male [n (%)]	13 (45%)	9 (41%)	1 (50%)	3 (50%)
Co-morbidities/Health				
BMI (mean, range)	28.32 (17.3-47.4)	27.68 (17.3 – 47.4)	35.75 (30.5 – 41)	28.36 (24.9 – 33.7)
Arthritis/musculoskeletal conditions [n (%)]	17 (59%)	14 (64%)	1 (50%)	3 (50%)
Cancer [n (%)]	7 (24%)	6 (27%)	0 (0%)	1 (17%)
Cardiovascular disease [n (%)]	18 (62%)	15 (68%)	1 (50%)	3 (50%)
Chronic kidney disease [n (%)]	4 (14%)	3 (14%)	1 (50%)	1 (17%)
Chronic respiratory conditions [n (%)]	4 (14%)	2 (9%)	0 (0%)	2 (33%)
Diabetes mellitus [n (%)]	5 (17%)	3 (14%)	2 (100%)	1 (17%)
Gastrointestinal conditions [n (%)]	11 (38%)	10 (45%)	1 (50%)	1 (17%)
Autoimmune disorders [n (%)]	4 (14%)	2 (9%)	0 (0%)	2 (33%)
Haematological disorders [n (%)]	5 (17%)	2 (9%)	0 (0%)	3 (50%)
Smoker [n (%)]	1 (3%)	0 (0%)	0 (0%)	1 (17%)
Previous smoker [n (%)]	5 (17%)	4 (18%)	0 (0%)	1 (17%)
Hypertension [n (%)]	19 (66%)	15 (68%)	2 (100%)	3 (50%)
Hypercholesterolemia [n (%)]	6 (21%)	6 (27%)	1 (50%)	0 (0%)
Venous insufficiency [n (%)]	13 (45%)	12 (55%)	0 (0%)	1 (17%)
Reduced mobility [n (%)]	16 (55%)	13 (59%)	1 (50%)	3 (50%)
Fall risks [n (%)]	2 (7%)	1 (5%)	0 (0%)	1 (17%)
Previous amputation [n (%)]	2 (7%)	2 (9%)	0 (0%)	0 (0%)

Wound characteristics on admission				
Recurrence				
New Recurrent [n (%)]	14 (48%)	9 (41%)	1 (50%)	4 (67%)
New Not Recurrent [n (%)]	13 (45%)	11 (50%)	1 (50%)	2 (33%)
Healed with history of previous ulceration*** [n (%)]	2 (7%)	2 (9%)	0 (0%)	0 (0%)
Baseline measurements				
Wound area cm^2 (mean, range)	18.15cm^2 (0.1 – 184.4)	24.78 cm^2 (0.1 – 184.4)	7.55cm^2 (0.1 – 15)	8.66cm^2 (0.5 – 31.8)
Wound duration - weeks (mean, range)	96 (8 - 480)	125 (8 – 480)	20 (8 – 32)	24 (8 – 48)
Oedema [n (%)]	24 (83%)	20 (91%)	1 (50%)	4 (67%)
Clinical signs of infection [n (%)]	2 (4%)	1 (5%)	1 (50%)	0 (0%)
Pain associated with wound [n(%)]	13 (45%)	10 (45%)	1 (50%)	2 (33%)
Pain score out of 10 (mean, range)	6	7 (3 – 10)	5	4 (2 – 9)
For those with wound-associated pain (n = 12)				

**1 participant had two wound types – 1 diabetic foot ulcer and 2 venous ulcers. Participant was included in both wound types*

***Other wounds were mixed venous/arterial, scar breakdown, surgical dehiscence, vasculitic ulcer, pyoderma gangenosum*

****2 participants were receiving preventative treatment from the clinic to reduce the chance of recurrence and had not presented at the clinic with an active wound prior to treatment.*

Table 3 - Wound healing at 3 months by wound type

Wound type	% healed by 3 months (by wound type)	Time to complete healing in weeks (mean, range)
Venous n = 34	47% (n = 16)	7 (4 – 12)
DFU n = 2	50% (n = 1)	12
Other n = 12	20% (n = 2)	7*
All wounds n = 48	40% (n = 19)	8 (4 – 12)

**both wounds healed at 7 weeks*

Table 4 - Comparison of EQ-5D-5L scores

	EQ-5D-5L scores (mean, range)	**Difference between baseline and 3 month p-value, (95% CI)**
Baseline **n = 20***	0.69 (-0.002 to 1)	<0.001
3 months **n = 20**	0.84 (0.55 to 1)	
	EQ-5D-5L scores (mean, range)	**Difference between healed participants and those with an active wound at 3 months p-value, (95% CI)**
3 months – Healed **n = 8**	0.87 (0.59 to 1)	0.35
3 months - Active wound **n = 12**	0.81 (0.56 to 1)	

**Only includes patients with EQ-5D-5L completed questionnaires at baseline and 3 months*