

Good Hope Hospital Leg Ulcer Telemedicine Study

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Introduction

Chronic leg ulcers affect approximately 0.5% of the population and it has been estimated that the cost of management in the UK exceeds £600M per annum, most of which is spent in the community on dressings and district nurse time. The majority of leg ulcers have a vascular cause with up to 70% being due to venous insufficiency and 15% due to arterial disease. Several large studies have shown that without access to specialist assessment and advice only 22% of ulcers are healed at 12 weeks. Evidence-based guidelines for the management of leg ulcers are now well established and include (a) early assessment by a specialist team, (b) full investigation of the underlying cause, (c) specific treatment which may include surgery, and (d) dedicated community-based nurse-led clinics for dressings and monitoring of progress. However, even with access to specialist services, good care in the community is essential to achieve and maintain healing, improve the quality of life for the patient and minimise the cost of treatment.

The Vascular Surgery Department at Good Hope Hospital has seen a four-fold increase in demand for specialist assessments for chronic leg ulcers over the last five years and action is now needed to prevent excessive outpatient waiting times and maintain a high quality clinical service. The core of the proposed strategy is shared care of the patient by the community and hospital teams without duplication of effort so that the community team can concentrate on the initial assessment, day-to-day treatment and maintenance of healing and the hospital team can focus on the specialist assessment and treatment. Improved communication between the hospital and community teams was identified as the most important factor in delivering a more effective and efficient service to patients.

Telemedicine is the use of modern information technology to provide remote expert medical advice to patients and their carers and can include anything from a telephone conversation to sophisticated live video-conferencing. Electronic patient records are the natural extension of conventional paper-based clinical records. When secure access to a shared record is provided for both the community and hospital teams the result is a telemedicine system. NHS-net is a computer network that links primary and secondary care facilities and can therefore support a shared electronic patient record and telemedicine; the missing link is a lack of proven clinical applications.

Leg Ulcer Telemedicine (LUTM) Study

The LUTM study was a prospective, randomised trial of fifty leg ulcer patients designed firstly to test the feasibility of a shared electronic patient record (EPR) that includes colour digital images, and secondly to compare the outcome for patients managed using the shared EPR with those managed using conventional paper-based records. Patients were randomised after the decision was made to refer to the One Stop Clinic (OSC) at Good Hope Hospital and no ulcers were excluded on the basis of size, cause or duration. The primary outcome measures were the healing rate at 12 and 24 weeks and cost of treatment over 24 weeks. The study was approved by the North Birmingham Research Ethics Committee and funded by the Good Hope Hospital Research and Development Department. Eight community nurse teams volunteered to participate and were provided with colour digital cameras, the telemedicine software and specific training. After proving technical feasibility in November 2001, fifty patients were recruited over a 16-month period from Dec 2001 to May 2003.

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Results

The study population was comparable with other studies with an average patient age of 74 years, an initial ulcer size of 11.2 sq cm (range 0.4 - 114 sq cm) and an ulcer present prior to referral of 4.8 months duration. For the whole study group, the average healing time was 73 days and treatment required a median of two hospital visits and 26 appointments with the community nurses. Table 1 shows that the patients managed using the shared electronic record had a shorter wait for the specialist assessment (T test, $P < 0.05$) and a better outcome in terms of healing at both 12 (Wilcoxon, $P = 0.09$) and 24 weeks (Wilcoxon, $P = 0.12$).

Table 1. Comparison between conventional and telemedicine groups

Group	n	Ulcer Size (sq cm)	Time to OSC (days)	12 week healing	24 week healing
Paper	25	8.9	41	38%	60%
Electronic	25	13.2	12	64%	78%

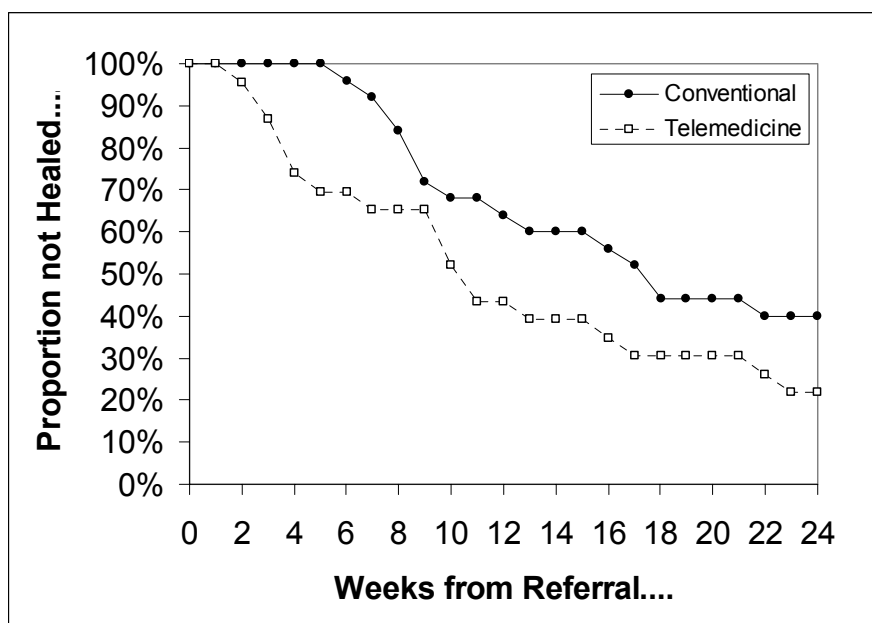


Fig 1. Outcome in terms of ulcers remaining unhealed following referral.

The cost analysis showed that on average each patient costs £50 per week to treat in the community. The use of the EPR was associated with a reduction of 26% in the average community treatment cost over 24 weeks (£814 to £602).

Thus, compared with studies of community-only treatment, this small study shows that direct access to a hospital-based specialist leg ulcer assessment service doubles the proportion of ulcers healed at 12 weeks. The additional use of shared electronic records triples the healing rate at 12 weeks with a further reduction in the cost of treatment.

Conclusion

Shared care of leg-ulcer patients by hospital and community teams using electronic records and telemedicine delivers better short-term outcome at a lower cost.