Auditing the benefits of a complex wounds clinic

With the introduction of clinical governance, it has become increasingly important for nurses to take responsibility to set standards and ensure quality care within the NHS. However, with the current financial pressures it is also necessary to demonstrate cost benefits to both develop and maintain existing services in tissue viability. This article discusses how audit was used to develop a community nurse-led complex wound clinic, and then demonstrates some outcomes and cost benefits to further enhance wound management in a primary care trust in London.

Liz Ovens, Paulina Louison, Violet Elliot

KEY WORDS
Audit
Complex wound clinic
Cost benefits
Multidisciplinary care

The NHS is experiencing major changes in care delivery, with an emphasis on directing provision from secondary to primary care (Department of Health, 2005). Although this is an ideal model of care for patients if appropriate, funding needs to be adequately provided to accommodate both patients who need a greater level of care in hospitals and the increasing number of patients in the community (Beldon, 2007).

Chronic wounds have a huge financial impact on the NHS (Harding, 1998) and most are managed in the community (Charles, 1996). With an increasing elderly population, these issues need to be addressed in the long term to ensure provision of cost-effective, high-quality, evidence-based care (Gunnewicht and Dunford, 2004).

Liz Ovens is Clinical Nurse Specialist in Tissue Viability, Paulina Louison is Sister, Complex Wound Clinic, and Violet Elliot is Deputy Sister, Complex Wound Clinic, Hillingdon Primary Care Trust, Hesa Primary Care Centre, Hayes, Middlesex

Demonstrating cost-efficient care is often difficult, particularly for specialist nurses (Benbow, 2007). However, audit can be an effective tool, and was used by the tissue viability nurse (TVN) working at Hillingdon Primary Care Trust (HPCT) to identify the need for a nurse-led complex wound clinic working alongside multidisciplinary healthcare providers on site (Harrow Primary Care Trust, 2003; HPCT, 2004). More recently, audit was used to demonstrate the effectiveness of such a service to ultimately further develop care in the community for patients with wounds (HPCT, 2006; 2007).

Development of the complex wound clinic

Patients with complex wounds have complex health needs (Vowden, 2005) and benefit from a multidisciplinary team approach (Frykberg, 1998; Valdes et al, 1999; Inlow et al, 2000; Kjaer et al, 2005). Complex wound clinics have been established nationally, but these tend to be based in secondary care (Donnelly and Shaw, 2000; Collier and Radley, 2005).

The site for the proposed clinic was already available, but funding was required for staff, transport and equipment. With current financial constraints on NHS trusts, funding for the development of services is difficult to obtain and it was therefore essential for the benefits of the clinic to be highlighted. To facilitate this, presentations were given to the management team outlining the extent of the problem concerning chronic wounds at the PCT (HPCT, 2004), scenarios of ineffective care, and the benefits of nurse-led community clinics to patients. An outline of strengths, weaknesses, opportunities and threats, and a cost benefit analysis was also provided (HPCT, 2005).

Funding was agreed as an invest to save initiative: saving on secondary care referrals and admissions, cost of dressings and ultimately nursing time. In-house training programmes for health professionals would provide local wound management training and hands-on practical experience. Practitioners and patients were kept informed of the progress throughout with meetings and their feedback/suggestions were collated.

Three trained nurses, a healthcare assistant and personal assistant were recruited to the team. Equipment was purchased, including a special leg wash facility that enabled the immersion of both legs in a large pool of water. This could be emptied using a pump system, which prevented manual handling of heavy buckets. Transport was arranged twice-weekly through a community transport service, which enabled frail, older, housebound patients to leave their home to attend the clinic. Transport is an important factor in preventing social isolation, providing services for people with reduced mobility and wheelchair users (Ellison et al, 2002), and preventing

Table 1
Aims and referral criteria

Aims of treatment care:
- To provide an accessible, qualitative, cost-effective and efficient service to practitioners and patients in the management of complex wounds within the PCT
- To assist healthcare professionals in the management of patients with chronic wounds by providing an evidence-based approach, outlining a care programme with the patient and the multidisciplinary team
- To provide care closer to patients' homes
- To provide expert training in the assessment and management of complex wounds
- To prevent inappropriate hospital admission where possible
- To facilitate early discharge from hospital
- To facilitate research and audit
- To encourage and promote public health through education and facilitation.

Referral criteria:
- Patients must be registered with a GP within the PCT
- Wound present for longer than six weeks that is failing to heal or is deteriorating, e.g. postoperative wounds, pressure ulcers, leg ulcers, diabetic ulcers
- Patients requiring support in the management of complex wounds in the community setting determined on an individual basis
- For specialist support/advice/education regarding a complex wound following discharge from an acute care setting
- For patients recruited/being followed up as part of a relevant research project
- Patients requiring ongoing assessment/support/advice following wound healing to prevent recurrence, determined on an individual basis.

Referring a patient:
- Written referral on complex wound treatment centre referral form
- Provide adequate information, e.g. medical history, medication and previous treatment
- Patient must give consent to a referral and must be able to at least stand (a wheelchair is available if necessary)
- Practitioners must be able to attend the complex wound clinic following initial assessment for training in the ongoing management of their patients if necessary
- Practitioners must be able to undertake shared care in the management of their patients.

non-concordance through non-attendance (Thambiaya, 1996).

The aims of treatment care in the complex wound clinic, referral criteria and a management pathway are outlined in *Table 1* and *Figure 1*. Three patients formally opened the clinic on 1st November 2005, and all PCT staff were invited to attend. The clinic operates daily during the week, with the use of four clinical rooms. Patients are assessed in the clinic and then attend for up to four weeks of treatment (depending on progress), for initiation of new treatment, support, and continuity of care and education, which improves concordance with treatment and preventive measures (Taylor, 1996; Garber et al, 2002; Ribu and Wahl, 2004), and reduces the risk of amputation for patients with diabetic foot ulcers (Nash et al, 2005). This four-week period also allows time for the referring health professional to attend the clinic with each patient for training in ongoing shared care. Patients attend for regular review, and emergency slots are available for urgent assessment.

The diabetes nursing team, GPs with a special interest in diabetes, dietician, podiatry and phlebotomy clinics operate in the same facility, allowing care for patients with diabetic wounds to be coordinated in a one-stop facility. This provides the necessary components for management of diabetic foot ulcers in the community as recommended by the National Institute for Clinical Excellence (2004) and Fox (2006). The vascular consultant from the neighbouring hospital attends the clinic once a month to provide necessary vascular opinion (Fowler and Mitchell, 1998).

Two audits have been undertaken since the clinic opened: client evaluation of the complex wound clinic (HPCT, 2006); and evaluation of the effectiveness of the complex wound clinic (HPCT, 2007).

Audit 1: client evaluation of the complex wound clinic

The NHS Improvement Plan (DoH, 2004) placed emphasis on putting patients/users first by providing more personalised care and taking a holistic approach to health needs. *The Patient's Charter and You* (DoH, 1995) heightened patients' expectations of treatment and raised their rights as individuals. Despite this, research has shown that although satisfaction in the NHS increased in the 1990s, it has since slumped and not recovered and is related to people feeling they are not respected by the Government (University of Kent, 2006). The researchers at the University of Kent discuss that there is no point having a good health service if it does not treat you in a humane way; a point further demonstrated recently by Tingle (2007).

With the introduction of clinical governance (DoH, 1997), it has become increasingly important for nurses to take responsibility to set standards and ensure the quality of care within the NHS. With this in mind, the tissue viability team wanted to seek the views and opinions of their patients, to ensure they are kept central to service provision.

Method

A simple questionnaire with a tick column, rating each facility/service from 1–5 (5=excellent, 1=poor), was used to enable ease of use. The questionnaire had been previously used for a similar audit by a TVN at another

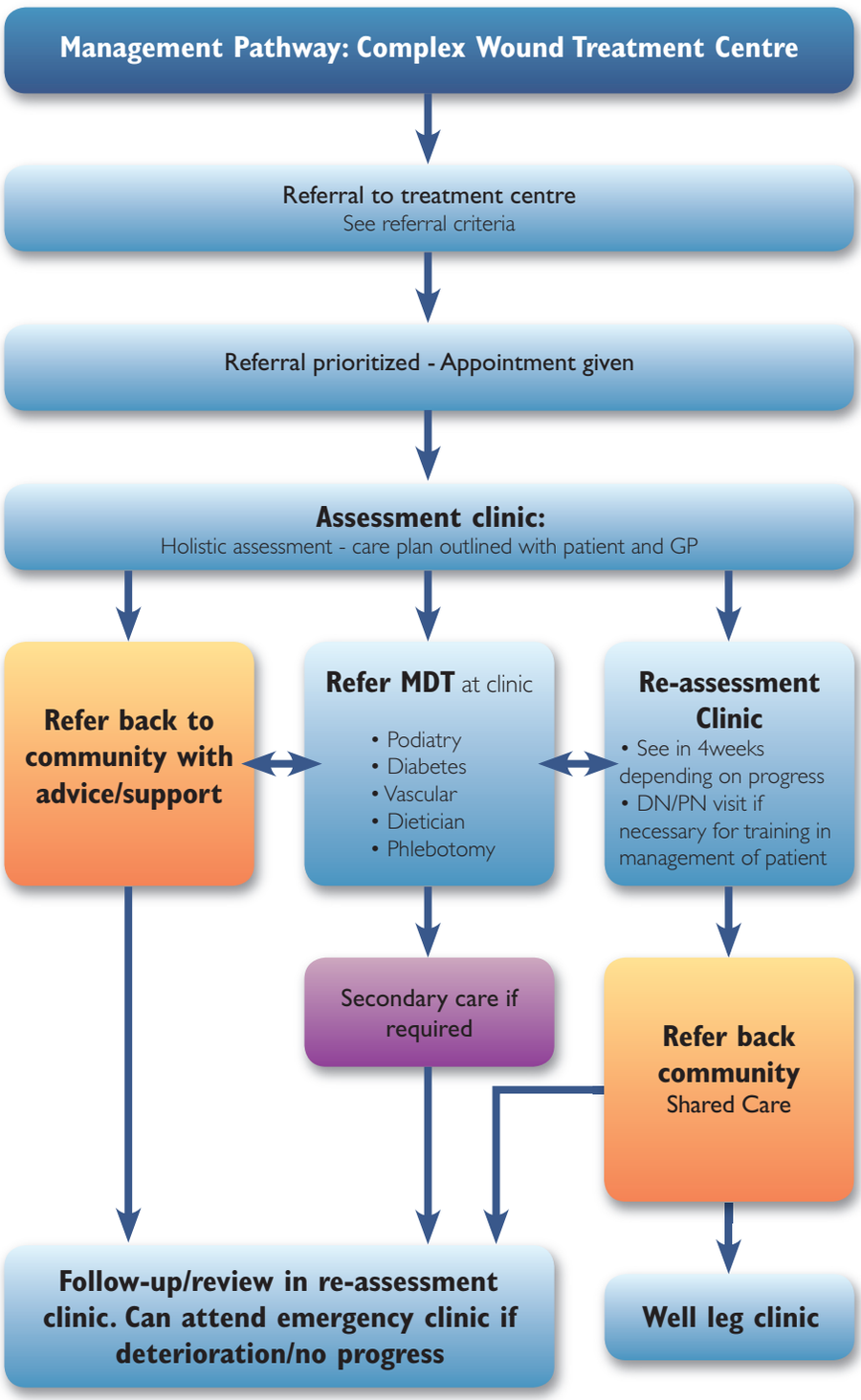

Figure 1. Management pathway in the complex wound clinic.

trust, and was approved by the clinical governance team. The questionnaire, which was anonymised, was either posted or given to patients when they attended the clinic. All patients who attended from November 2005–May 2006 were included, excluding 15 who were considered too frail or unable to respond. In total, 78 questionnaires were given out. An explanatory letter and a freepost envelope addressed to clinical governance were included, and a four-week deadline date was given for the return of the forms.

The services audited included:

- Waiting time for initial appointment
- Suitability/flexibility of appointments
- Waiting time at the clinic
- Transport to the clinic (if appropriate)
- Access to the clinic
- Facilities at the clinic
- Contact with nurses if necessary
- Information leaflets given
- Treatment received
- Privacy and dignity maintained.

Audit findings

The response rate was 72% (*n*=56). The clinical governance team collated the data:

- 70% (*n*=39) said that the information/support given by the nursing staff was excellent
- 79% (*n*=44) of patients found that the treatment they received was excellent
- 91% (*n*=51) rated the privacy and dignity in the clinic as excellent/very good
- 75% (*n*=42) of patients stated that they had experienced an improvement in their lives since attending the clinic
- 50% (*n*=28) of patients made extra comments, all of which were positive.

The only criticisms were:

- 7% (*n*=4) reported waiting time in the clinic as poor/satisfactory
- 16% (*n*=9) ranked access to the clinic as poor/satisfactory
- 4% (*n*=2) reported that the waiting area was extremely cold.

These issues are currently being addressed.

Although many patients with leg ulcers express their praise of nurses (Walshe, 1995; Hopkins, 2004; Brown, 2005), some studies also demonstrate professionals' lack of sharing knowledge and communication issues (Douglas, 2001; Rich and McLachlan, 2003), inconsistency of advice and inappropriate treatments (Ebbeskog and Emami, 2005), resulting in lack of trust and respect and disempowerment (Edwards et al, 2002). Quality of life can be improved when considering both the patients' perspectives and the use of good wound management (Charles, 2004), and therefore the results will have a positive effect on the outcomes for these patients.

Table 2
Sources of referral to the complex wound clinic (*n*=160)

District nurse	61 (38%)
Practice nurse	57 (35%)
GP	18 (11%)
Mental health team	1 (0.5%)
Residential homes teams	6 (4.5%)
Paediatric nurse	3 (2%)
Tissue viability nurse (domicillary)	3 (2%)
Nursing homes	3 (2%)
Podiatry	3 (2%)
Vascular	5 (3%)

Table 3
Aetiology and longevity of wounds (*n*=213)

Aetiology	Number	Percentage	Average duration	Duration range
Venous leg ulcer	94	44	15.5 months	2 weeks–40 years
Mixed-aetiology leg ulcer	38	18	43 months (1 unknown)	6 weeks–20 years
Arterial leg ulcer	16	8	30 months (1 unknown)	2 weeks–20 years
Leg ulcer unknown	1	0.5	15 months	15 months
Lymphoedema with leg ulcer	13	6	49 months (1 unknown)	6 months–10 years
Lymphoedema (no wounds)	6	3	5 years	5 years
Pressure ulcer	5	2	2.5 months	3 weeks–3 months
Diabetic foot ulcer	11	5	11 months	6 weeks–3 years
Surgical wounds	3	1.5	3 months	2–6 months
Recurrent cellulitis (no wounds)	4	2	4 months	2–6 months
Chronic varicose eczema	6	3	10.5 years	1–20 years
Other	16	7	34 months	8 weeks–16 years

Patient satisfaction also has a direct effect on compliance (Bartlett et al, 1984; Ley, 1988), which is a particular problem in these patients with chronic/complex wounds (Moffat and Dorman, 1995). The positive effects of patient satisfaction have been outlined in Audit 2.

Audit 2: evaluation of the effectiveness of the complex wound clinic

The second audit was requested by senior management to determine the cost benefits of the clinic in its first year. The TVN would have ideally audited six months later in order to incorporate the newly admitted patients at the end of the year and measure the recurrence rates. Consequently, the results for outcomes and healing are probably lower than should have been reflected.

The aims/objectives of the audit were:

- To evaluate the effectiveness of the complex wound clinic in the management of complex wounds
- To determine the impact in prevention of secondary care referrals and admissions
- To demonstrate the benefits to the patient
- To show financial benefits
- To identify the need for further funding to increase capacity and develop a clinic in the northern area of the PCT.

Method

Data was collected and recorded on Excel spreadsheets from the clinical records, including age, gender, date of first visit, aetiology, referral source, GP, duration and size of wound, type of dressing and frequency of dressing change before attending the clinic, weeks to healing, vascular and other referrals, and prevention of secondary care referrals and admissions.

The audit provides information from November 2005–October 2006 inclusive. During this time 176 referrals were made to the clinic and 160 attended, with a total of 1,646 episodes of care (the 16 patients who did not attend the clinic had moved away, died or were unable to attend due to frailty or inability to stand). Data was recorded only for those patients who attended the clinic (*n*=160).

Audit findings

The sources of referral to the complex wound clinic are listed in *Table 2*; nearly half (75) of the referrals were made by GP practices. The age range of the patients was between 8–100 years with a mean age of 71 years: 32 (20%) patients were ≤60 years; 128 (80%) patients were ≥61 years; and 55 (34%) patients were ≥80 years. Eighty-two patients were male and 78 were female.

The aetiology and duration of all the wounds seen at the clinic are shown in *Table 3*. Some patients had more than one wound and the total amount of wounds seen was 213. The mean duration of all wounds was 31.5 months (from two weeks–40 years): 97(46%) wounds had been present for ≥one year; 40 (19%) wounds were present for ≥five years; and 22 (10%) wounds were present for ≥10 years. The longest average duration of wounds were caused by chronic varicose eczema and lymphoedema, although these wounds progressed extremely well with appropriate management (*Table 3*): 44% (n=94) of all wounds were venous leg ulcers, the most common cause of leg ulceration (Morrison and Moffatt, 1994); and 18% (n=38) were mixed-aetiology leg ulcers.

The healing time of wounds is shown in *Table 4* (n=213). Seventy-one (33%) wounds were healed within 24 weeks, and 86 (40%) healed within the audit dates (52 weeks). Two limbs with gross lymphoedema reduced in size/volume allowing garments to be worn and two limbs with recurrent cellulitis had no further episodes throughout the audit and thus had a positive outcome and prevention of admissions. Therefore complete healing/improvement was achieved in 90 wounds/problems (42%).

Forty (43%) of the venous leg ulcers (*n*=94) healed within 12 weeks, 52 (55%) healed within 24 weeks and 55 (59%) healed within 52 weeks.

Twenty-eight (29%) wounds present for ≥ one year healed within 24 weeks, six wounds (15%) present for ≥ five years healed within 22 weeks and five (22%) wounds present for ≥ 10 years healed within 20 weeks.

The true healing time would be higher if the data collection had run for a further six months. Twenty-four patients had only been attending the clinic for up to eight weeks when the data was collected. Considering the high proportion of elderly patients, the previous longevity of wounds and complex medical conditions of the patients, these results were positive.

Three patients with bilateral lymphoedema and leg ulcers (one with both legs affected for 10 years, one with both legs affected for four years and one with one leg affected for five years and the other leg affected for six months) and one patient with bilateral lymphoedema and no wounds received intensive toe-to-groin lymphoedema bandaging through joint working with the lymphoedema nurse. Limitation of district nurses' time, space restrictions, manual handling issues and lack of skill and competency in lymphoedema bandaging had prevented the treatment being given previously.

All four patients had improved health outcomes: two legs healed within seven weeks; one leg healed within 22 weeks; and the two legs without wounds reduced considerably in size. This resulted in the six limbs being fitted with compression garments. Two of these patients had previously required daily dressings by the district nurses, and therefore savings could be demonstrated in reduced dressings and nursing time. All four patients had previously experienced hospital admissions with cellulitis, which was prevented throughout the audit dates, demonstrating further savings on prevention of secondary care episodes. A previous case study (McCann et al, 2006) outlines the cost–benefit regarding one of these patients.

Not all complex/chronic wounds will heal, and therefore a successful outcome for these patients is improved symptoms and experiences in daily living; 58% of patient wounds/problems that had not completely healed showed reduced size and exudate secretion, and there was a subsequent reduction in nursing time and dressings.

Outcomes of the remaining 123 wounds included:

- Thirty-three (27%)were lost to follow-up as a result of either not attending, hospital admission or moving away.
- Ninety ongoing
- Seventy-one (58%) continued to improve resulting in reduced nursing and dressings
- Twelve (10%) are being maintained (i.e. no change in progress but no

Table 4
Healing time of all wounds and problems (*n*=213)

Aetiology	Total healed	<6 weeks	<12 weeks	<24 weeks	<52 weeks	Ongoing	Unknown/died/ lost to follow up
Venous leg ulcer (n=94)	55 (59%)	22 (23%)	40 (43%)	52 (55%)	55 (59%)	35 (37%)	4 (4%)
Mixed-aetiology leg ulcer (n=38)	5 (13%)	2 (5%)	5 (13%)		5 (13%)	21 (55%)	12 (32%)
Arterial leg ulcer (n=16)	5 (31%)	1 (6.25%)		4 (25%)	5 (31%)	7 (43%)	4 (25%)
Leg ulcer aetiology unknown (n=1)						1 (100%)	
Lymphoedema with leg ulcer (n=13)	8 (61%)		4 (30%)	8 (61%)	8 (61%)	3 (23%)	2 (15%)
Lymphoedema (no wounds) (n=6)	2 (33%)	NA	NA	NA	NA	4 (67%)	0
Pressure ulcer (n=5)	2 (40%)			1 (20%)	2 (40%)	3 (60%)	0
Diabetic foot ulcer (n=11)	2 (18%)			2 (18%)	2 (18%)	3 (27%)	6(55%)
Post-operative (n=3)	3 (100%)	2 (66%)	3 (100%)		3 (100%)	0	0
Varicose eczema (n=6)	2(33%)			2(33%)	2(33%)	2 (33%)	2(33%)
Recurrent cellulitis (no wounds) (n=4)	2 (50%)		2 (50%)		2 (50%)	2 (50%)	
Other, e.g. malignant, cysts (n=16)	4 (25%)	2 (12.5%)		2 (12.5%)	4 (25%)	9 (56%)	3 (19%)

Table 5
Case scenario showing cost benefit of the complex wound clinic for one patient

The patient had a chronic venous leg ulcer for nine months, which was a recurrent problem for the past 10 years. The ulcer was exacerbating and required daily dressings by the district nurses. The patient had refused Doppler imaging and compression bandaging.

Cost of care before referral (excluding antibiotics, analgesia, etc):
- **District nurse visits daily at a cost of £77 per hour (Personal Social Services Research Unit, 2004) = £539 per week x 9 months = £21,021**
- **Dressings/ bandages at a cost of £13.67 per day (British Medical Association and Royal Pharmaceutical Society of Great Britain, 2005) = £95.69 per week x 9 months = £3,731**
- ***Total cost for 9 months* = £24,752**
- **Approximate total cost per year if left untreated = £30,940.**

Cost of care after referral to the complex wound clinic:
- **Assessment, education and support for the patient in the clinic allowed correct treatment regimens to be put in place. The wound healed within 10 weeks and has remained healed for more than 12 months**
- **Tissue viability nurses at a cost of £69 per hour (Personal Social Services Research Unit, 2004) twice-weekly x 2 weeks = £276 and at £69 per hour once-weekly x 8 weeks = £552**
- **Dressings/bandages at a cost of £5.55 per day (BMA and RPSGB, 2005) twice-weekly x 2 weeks = £22.20 and at £5.55 per day once-weekly x 8 weeks = £44.40**
- ***Total cost for care at the complex wound clinic = £894.60***
- **The only ongoing cost per annum is for compression hosiery following healing.**

deterioration) and being prevented from secondary care admission.
- Seven (6%) deteriorated as a result of problems such as deteriorating general health and concordance issues.

The outcome for the patients who attended the clinic during the audit period (*n*=160) included:
- A total of 121 (76%) patients had improved outcomes, i.e. either healed (72; 45%) or were improving, e.g. reducing in size, reduced pain and odour (49, 31%), resulting in reduced dressing changes and nursing time
- Eleven (7%) patients were being maintained, i.e. there was no change in their condition, but it was not exacerbating
- Three (2%) patients had exacerbating symptoms (two of these patients were non-concordant with treatment and refused secondary care intervention, and one patient is awaiting surgical intervention)
- Twenty-five (16%) patients were lost to follow up, e.g. moved away or admitted to hospital.

Cost benefits of improved patient outcomes

TVNs need to demonstrate their worth in order to continue providing nurse-led care for patients with wounds and to ensure that services are adequately resourced for the future (Fletcher, 2006; Beldon, 2007; Benbow, 2007).

Five patient scenarios showing the cost benefit following their treatment in the complex wound clinic were calculated with the trust's finance department. These patients are also included in all the data. These actual patient scenarios represented the cost reduction achieved by providing specialist nurse intervention to facilitate healing of chronic wounds in the complex wound clinic. One costing is outlined in *Table 5*. Time constraints prevented cost benefits being undertaken for all the patients, therefore five patients were chosen from different care settings, longevity of wounds, and previous treatment. Three patients experienced complete healing and two patients required reduced dressing changes and nursing time following treatment at the clinic.

An average cost reduction was calculated from four of the five patients. The fifth patient had been receiving twice daily dressings to mixed aetiology leg ulcers before intervention at the clinic which was not unusual. This patient therefore demonstrated a very high cost for dressings and nursing time before commencing reduced compression therapy under supervision in the clinic. Although this example was extremely beneficial in demonstrating high cost reduction following specialist intervention, the PCT's finance department felt this could be seen as an outlier and should therefore not be used for determining an average cost reduction. The remaining four patients were fairly representative of the patients attending the clinic in the audit; if anything these patients had wounds present (mean=12 months; range=3–24 months) for less than the whole clinic population (mean=31.5 months range=2 weeks – 40 years). The sample included three patients with healed wounds and one patient with improved wounds resulting in reduced dressings.

An average cost reduction of £12,868 per patient for the year was calculated in reduced dressings and nursing time (the amounts did not include savings on medication such as antibiotics, analgesia and secondary care episodes).

The total amount of patients who had experienced either complete healing or improvement resulting in reduced dressings was 121 patients. Savings for the PCT in terms of nursing care would only be achieved from patients being attended by district nurses and not those seen by practice nurses who are employed by GPs. Therefore to give a true representation of the cost reductions, only those patients who were attended by the district nurses were included to determine an approximate total cost benefit of providing specialist interventions for patients with wounds, although savings on dressings would also be made for the remaining patients attending practice

nurses and many of these patients would ultimately have been referred to the district nurses if they had not improved. Therefore calculations were made on 45 patients who were cared for by the district nurses of whom 20 (44%) patients were completely healed. An approximate under-estimated cost benefit of £579,060 per annum was calculated (45 x £12,868) from a reduction in nursing time and dressings.

Secondary care referrals

Complex wound management is costly in terms of managing patients over the long term in outpatient appointments, hospital admissions and primary care such as nursing time, dressings, antibiotics and analgesia.

The tissue viability team and vascular consultant have completely changed the pathway for patients for the management of complex wounds in the PCT. Previously, patients were referred to secondary care for assessment, such as wound care clinics at the neighbouring district general hospitals. Patients are now directed to the complex wound clinic as the first point of specialist intervention rather than being referred to secondary care for specialist support. Ultimately, patients are now being holistically assessed and only those who require ongoing intervention from a specialist consultant are referred to the vascular consultant who attends the clinic monthly.

Many patients either refuse or are unsuitable for vascular surgery, and can be managed by specialist nurses undertaking appropriate assessment and application of correct treatment regimens. These patients do not require secondary care intervention and would have previously necessitated several follow-ups until their wound healed; 75 (47%) patients have been prevented from secondary care referral. Thus cost reductions were made by preventing the need for further outpatient and follow-up appointments.

Referrals to the multidisciplinary team

Fifty-nine referrals were made to the multiprofessional team within the clinic, and 53 of these to the attending vascular consultant. Patients referred to the vascular consultant had arterial, mixed arterial/venous or venous disease requiring surgical intervention to enable healing or prevent recurrence. Three patients required surgical debridement of grade IV heel pressure ulcers developed in secondary care, and one patient required emergency admission. In total, six (4%) referrals were made to secondary care.

Prevention of secondary care admissions

Ultimately, 128 (80%) patients were prevented from admission to secondary care. This relates to patients who would have been admitted with severe infections and/or cellulitis as a result of chronic wounds and complex medical health problems. Some of these patients may have resulted in more costly admission caused by septicaemia and/or limb loss. Figures were demonstrated outlining the cost benefit of preventing admissions.

Assessment, treatment, concordance and education for patients

Assessment

All patients attending the clinic received a holistic assessment (n=160) and all patients with leg ulcers (n=132, 100%) had Doppler imaging as part of this assessment. During the assessment/screening, four patients were also diagnosed with diabetes and/or heart disease and chronic fungal infections, which had been previously undetected.

Treatment

The gold standard treatment for venous leg ulcers is high compression therapy (Effective Health Care Bulletin 1997). All venous aetiology leg ulcers (n=94) received this treatment. All patients with diabetic foot ulcers (n=11) were either under the care of podiatry already or were referred to the one-stop clinic on site and referred to a vascular consultant as necessary, as recommended by NICE (2004).

Patient concordance to treatment and education

Healing does not only rely on innovations in treatment; of equal importance is the compliance of the patient. If the patient refuses to comply with optimum treatments science then healing might not occur (Lindsay, 2001), and poor treatment compliance is a particular problem in patients with leg ulcers (Moffat and Dorman, 1995).

Patient empowerment, education, support and continuity of care lead to high levels of compliance with compression therapy (Furlong, 2001). Becker (1979) found that patients comply when they believe the doctor is correct. The skills and experience in the management of complex wounds of the nurses working in the clinic is vital to gain patients' trust and respect.

Communication with healthcare professionals

The clinic provides shared care with healthcare professionals for the management of wounds, and it is therefore important to ensure good communication so that continuity is maintained. This was one of the reported problems before the establishment of the complex wound clinic. The tissue viability team keep regular communication with all healthcare professionals via letter and telephone calls, and many have commented on the efficiency of the service.

A future audit will identify the views of healthcare professionals regarding the clinic, and in particular, communication.

Training

Lack of training in wound care, and particularly leg ulcer management, was identified as a particular problem in the PCT (HPCT, 2004), resulting in lack of competence and confidence in undertaking Doppler imaging and applying high-compression therapy. A training pathway has been developed, incorporating a rolling programme for the management of patients with leg ulcers to include three half-day theoretical sessions and three practical workshops. Many healthcare professionals have attended the clinic for hands-on practical experience,

Key Points

- Changes in the NHS and an increasing elderly population require tissue viability nurses to develop efficient and cost-effective services for the future.
- Audit is a useful tool to develop services and provide evidence of quality care and cost benefits.
- Development of a community nurse-led complex wound clinic has provided a multidisciplinary approach for patients in primary care rather than secondary care.
- Two audits have identified efficient and cost-effective care to further develop the service.

which has been shown to be one of the most effective methods of implementing change in practice and in promoting evidence-based care (Greenhalgh, 2000).

Education and support are also necessary for patients with complex chronic wounds (Edwards et al, 2002; Garber et al, 2002). It is intended that a social club with the use of a group room with a television within the facility will enable the team and voluntary patients to undertake education sessions to reinforce preventive measures for patients with leg ulcers, diabetic foot ulcers and pressure ulcers.

Transport

Transport has been extremely beneficial, enabling frail patients to attend, with many from local nursing homes. Pick up is carefully considered for each patient's appointment so that waiting time is minimal.

Problems

A small proportion of GP practices have not provided shared care in the management of their patients, and thus the complex wound clinic has been required to undertake total management of these patients. This has unfortunately resulted in a waiting list for new referrals of about eight weeks. The introduction of practice-based commissioning will ensure that provision of such services is adequately commissioned in the future.

Recommendations of the audit

Recommendations made on completion of the audit include:

- Continue to provide a high-quality service for patients with complex wounds
- Increase staffing to enable adequate capacity of the clinic
- Develop a clinic in the north of the PCT to provide care closer to patients' homes, reduce the waiting list in the complex wound clinic and increase the efficiency of transport services
- Recruit a lymphoedema specialist
- Re-audit the data in 12–18 months to determine the true healing ratio and undertake recurrence rates
- Undertake an audit to determine healthcare professionals' satisfaction with the clinic
- Undertake a scientific quality-of-life study.

Conclusion

Provision of a nurse-led community complex wound clinic has provided specialist nurse-led services in a high-street location as an alternative to hospital care when appropriate as recommended by the DoH (2004). Listening to patients, empathy, patient choice, flexible treatment options and the nurse/patient relationship all have an impact on the outcomes for patients, and the time allowed for each patient in the clinic has facilitated this. Access to multidisciplinary services in the same facility has created a holistic approach for patients with complex wounds. The clinic has become a centre of expertise in wound management, offering clinical training to practitioners to further enhance care for patients.

Using audit has identified huge cost benefits of providing specialist nursing care in the PCT. Cost benefits were demonstrated by:

- Prevention of secondary care admissions
- Prevention of inappropriate secondary care referrals for outpatient appointments, including follow-up appointments and wound management in secondary care
- Long-term savings on dressings and nursing time as a result of chronic wound healing and appropriate management.

Plans for the future of the service include using telemedicine between vascular and dermatology secondary care; training of the team to undertake debridement, skin biopsy, skin patch tests; and accredited training programmes. The vascular consultant is keen to use a mobile duplex scan for the unit to enable a one-stop vascular assessment to improve efficiency (Rich et al, 2001). The vascular consultant currently undertakes the VNUS Closure Procedure® for varicose veins (www.vnus.com) in his district general hospital, and would ultimately like to transfer some of this treatment to the clinic to improve the patient experience by providing care in the community. Further joint working with podiatry will focus on extending multidisciplinary services for patients with diabetic foot problems.

The results and recommendations of the audits will be taken forward to ensure these plans are integrated within the future objectives of the PCT to further enhance wound management for patients. WUK

The authors would like to thank: the Tissue Viability Team, Complex Wound Clinic; Sue Elvin, Associate Director, Provider Services; Annette Patterson, Locality Nurse Manager; Stuart Castle-Mason, Finance Department; and Mr Das, Vascular Consultant, Hillingdon NHS Hospital Podiatry Services, Hillingdon Primary Care Trust, Hesa Primary Care Centre, Hayes, Middlesex.

References

Bartlett EE, Grayson M, Barker R et al (1984) The effects of physician communication skills on patient satisfaction, recall and adherence. *J Chronic Dis* 37: 755–63

Becker MH (1979) Understanding patient compliance. In: Cohen SJ *New Directions in Patient Compliance*. Lexington Books, Lexington, Massachusetts

Beldon P (2007) TVNs must work together to fight short-sighted job cuts. *Wounds UK* **3(1)**: 96–7

Benbow M (2007) Where is tissue viability in 2007? *J Community Nurs* **21**: 13–16

British Medical Association and Royal Pharmaceutical Society of Great Britain (2005) *British National Formulary*. Pharmaceutical Press, London

Brown A (2005) Chronic leg ulcers, part 2: do they affect a patient's social life? *Br J Nurs* **14**: 986–9

Charles H (1996) Developing a leg ulcer management programme. *Prof Nurse* **11**: 475–7

Charles H (2004) Does leg ulcer treatment improve patients' quality of life? *J Wound Care* **13**: 209–15

Collier M, Radley K (2005) The development of a nurse-led complex wound clinic. *Nurs Stand* **19**: 74–80

Department of Health (1995) *The Patient's Charter and You*. HMSO, London

Department of Health (1997) *Designed to Care*. HMSO, London

Department of Health (2004) *The NHS Improvement Plan: Putting People at the Heart of Public Services*. HMSO, London

Department of Health (2005) *Supporting People in Long-term Conditions*. HMSO, London

Donnelly J, Shaw J (2000) Developing a multidisciplinary complex wound care service. *Br J Nurs* **9(19 Suppl): S50–1, S53, S55**

Douglas V (2001) Living with a chronic leg ulcer: an insight into patients' experiences and feelings. *J Wound Care* **10**: 355–60

Ebbeskog B, Emami A (2005) Elderly patients' experiences of dressing changes on venous leg ulcers: more than just a docile patient. *J Clin Nurs* **14**: 1223–31

Effective Health Care Bulletin (1997) *Compression Therapy for Venous Leg Ulcers*. August **3**(4). NHS Centre for Reviews and Dissemination, University of York, York

Edwards LM, Moffatt CJ, Franks PJ (2002) An exploration of patients' understanding of leg ulceration. *J Wound Care* **11**: 35–9

Ellison DA, Hayes L, Tracey A, McCollum CN (2002) Evaluating cost and efficacy of leg ulcer care provided in two large health authorities. *J Wound Care* **11**: 47–51

Fletcher J (2006) No more excuses: jobs and reputations are on the line. *Br J Nurs* **15**: S3

Fowler AL, Mitchell DC (1998) Assessment of the vascular status of the diabetic foot. *Diabetic Foot* **1**: 105–7

Fox M (2006) Community-based diabetic foot teams: are they the way forward? *Diabetic Foot* **9**: 4–6

Frykberg RG (1998) The team approach in diabetic foot management. *Adv Wound Care* **11**: 71–6

Furlong W (2001) Venous disease treatment and compliance: the nursing role. *Br J Nurs* 10(11): S25–35

Garber SL, Rintala DH, Holmes SA, Rodriquez GP, Friedman J (2002) A structured educational model to improve pressure ulcer prevention knowledge in veterans with spinal cord dysfunction. *J Rehab Res Devel* **39**: 575–87

Greenhalgh T (2000) Change and the individual: adult learning theory. *Br J Gen Pract* **50**: 767

Gunnewicht B, Dunford C (2004) *Fundamental Aspects of Tissue Viability Nursing*. MA Healthcare Ltd, Wiltshire

Harding KG (1998) The future of wound healing. In: Leaper DJ, Harding KG, eds. *Wounds: Biology and Management*. Oxford University Press, Oxford: 191

Harrow Primary Care Trust (2003) *Evaluating the Effectiveness of a Community Leg Ulcer Clinic*. Clinical Governance Office, Harrow PCT

Hillingdon Primary Care Trust (2004) *Wound Management Audit*. Clinical Governance Office, Hillingdon PCT

Hillingdon Primary Care Trust (2005) *Proposal and Cost Benefit Analysis of Nurse-Led Community Complex Wound Clinic. Stage I and II*. Clinical Governance Office, Hillingdon PCT

Hillingdon Primary Care Trust (2006) *Audit: Client Evaluation of the Complex Wound Clinic*. Clinical Governance Office, Hillingdon PCT

Hillingdon Primary Care Trust (2007) *Audit: Evaluation of the Effectiveness of the Complex Wound Clinic*. Clinical Governance Office, Hillingdon PCT

Hopkins A (2004) Disrupted lives: investigating coping strategies for non-healing ulcers. *Br J Nurs* **13**: 556–62

Inlow S, Orsted H, Sibbald RG (2000) Best practices for the prevention, diagnosis and treatment of diabetic foot ulcers. *Ostomy Wound Manage* **46**: 55–71

Kjaer ML, Sorensen LT, Karlsmark T, Mainz J, Gottrup F (2005) Evaluation of the quality of venous leg ulcer care given in a multidisciplinary specialist centre. *J Wound Care* **14**: 145

Ley P (1988) *Communicating with Patients: Improving Communication, Satisfaction and Compliance*. Croom Helm, London

Lindsay E (2001) Compliance with science: benefits of developing community leg clubs. *Br J Nurs* **10** (Suppl): 66–74

McCann M, Ovens L, Louison P, Elliot V (2006) Mixed lymphovenous oedema with leg ulceration: a case study. *J Community Nurs* **11**: S16–19

Morrison M, Moffatt C (1994) *A Colour Guide to the Assessment and Management of Leg Ulcers*. 2nd edn. Mosby, London

Moffat C, Dorman MC (1995) Recurrence of leg ulcers within a community ulcer service. *J Wound Care* **4**: 57–61

Nash T, Bellew JW, Cunningham M, McCulloch J (2005) Identifying cause for advancement to amputation in patients with diabetes: the role of medical care and patient compliance. *Wounds Compendium Clin Res Pract* **17**: 32–36

National Institute for Clinical Excellence (NICE) (2004) *Type II Diabetes: Prevention and Management of Foot Problems*. NICE, London

Personal Social Services Research Unit (2004) *Unit Costs of Health and Social Care*. PSSRU, University of Kent, Kent

Ribu L, Wahl A (2004) Living with diabetic foot ulcers: a life of fear, restrictions and pain. *Ostomy Wound Manage* **50**: 57–67

Rich A, McLachlan L (2003) How living with a leg ulcer affects people's daily life: a nurse-led study. *J Wound Care* **12**: 51–4

Rich A, Lawton S, Dalziel K, Macsweeney S, Tennant W, Beech A (2001) Developing a one-stop clinic for leg ulcer patients. *Prof Nurse* 16(5): 1096–100

Taylor P (1996) Assisting patients to comply with leg ulcer treatments. *Br J Nurs* **5**: 1355–8

Thambiaya K (1996) Evaluation of a leg ulcer clinic. *Nurs Stand* **10**: 58–62

Tingle J (2007) Recurring themes in NHS complaints. *Br J Nurs* **16**: 265

University of Kent (2006) Research and Enterprise Report 2005–2006. *Dissatisfaction Within the NHS*. www.kent.ac.uk/research/reports/report05-06 Last accessed June 2006

Valdes AM, Angderson C, Giner JJ (1999) A multidisciplinary, therapy-based approach for efficient and effective wound healing: a retrospective study. *Ostomy Wound Manage* **45**: 30–6

Vowden K (2005) Complex wound or complex patient? Strategies for treatment. *Br J Community Nurs* **10**: S6–10

Walshe C (1995) Living with a venous leg ulcer: a descriptive study of patients' experiences. *J Adv Nurs* **22**: 1092–100