Negative Pressure Wound Therapy (NPWT) - A Process for Procurement

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Aim

Many clinicians consider NPWT as an acceptable treatment in wound care, but historically, its use may have been restricted to the most complex wounds because of funding.

With lower price alternative systems becoming available, there is an opportunity to offer this therapy to more patients. An increasing number of Trusts are including this therapy within their Wound Care Formulary, with the result that clinicians are often involved in the evaluation process. There are a number of clinical and cost parameters which need to be considered, and it is important that clinicians are confident that this treatment produces acceptable outcomes in a range of wound types and a variety of settings.

To date there is no research which compares the performance of one system with another. As a result clinicians often use the available non-comparative evidence and the experience of their own evaluations. This in itself has limitations in that the number of patients may be restricted, or there is not access to the wide range of wounds or clinical settings.

The process described in this project is an ongoing programme where clinicians who are required to evaluate NPWT, are offered the opportunity of a report on the outcomes of their experience. They may also access the data from a wider evaluation, which will give them a broader range of information. This can then be submitted as part of a procurement process where qualitative and quantitative data may be requested.

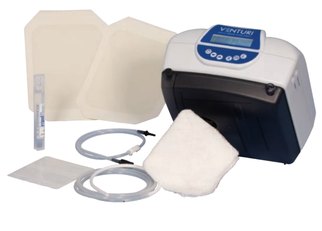
Method

This project has enabled clinicians from a variety of clinical settings to participate in a structured non comparative product evaluation on one of the newer NPWT devices*. They worked within a simple protocol and recorded data at each dressing change, until the end of the evaluation period or the therapy was discontinued for clinical reasons.

The NPWT device* was evaluated on 50 patients, with data on 30 patients available to date. A number of evaluations sites were used in the UK over a six month period. A protocol was submitted to NRES, but as a product evaluation the process was deemed as not requiring ethical approval. Participants were required to submit the process through their local research governance arrangements.

Patient identity was protected within the data capture, and clinicians had to confirm in writing that their consent and that of their employer had been given before the evaluation could commence.

The NPWT device* was used on a range of wound types. Specific parameters were measured including reduction in devitalised tissue, reduction in wound size, exudate management, pain during the application and also during the treatment. Acceptability to the clinicians was also demonstrated.



Results

The results to date show that a wide range of patients were treated within the product evaluation, many with complex medical conditions and challenging wounds.

A review of all of the patients demonstrates that:-

- 47% were male (n=14): 53% female (n=16)
- The age ranged from 29 years to 87 years (median 70 years)
- 73% of patients had existing medical conditions which may influence healing
- 27% of patients were taking antibiotics for a wound related infection at the initial assessment
- 50% of patients reported pain in the wound at the initial assessment but only 40% were taking analgesia for wound related pain
- The minimum pressure recorded during use of the NPWT device* were 60mmHg, maximum 110mmHg and median 80mmHg

Aetiology and Duration

Data on four different wound aetiologies have been recorded so far. (pressure ulcers, leg ulcers, surgical wounds, and diabetic foot ulcers (dfu).These were sub-divided further according to their grade/ underlying aetiology etc. (Table 1). Further information describes the exudate level at start of evaluation (Table 2), reason for NPWT (Table 3) and treatment location (Table 4).

Aetiology	Subset	Wound Duration (prior to NPWT) (range)	Wound Duration (prior to NPWT) (median)	Treatment Duration with NPWT (range)	Treatment Duration with NPWT
Pressure ulcer N=12	Grade 4 (10 patients) Grade 3 (1 patient) Grade 2 (1 patient)	6 - 104+ weeks (No data in 3 patients)	28 weeks	6 - 25 days	10 days
Surgical wound N=16	New (4 patients) Dehisced (10 patients) Other (2 patients)	1 - 8 weeks	2 weeks	3 - 24 days	14 days
DFU	Neuropathic (1 patient)	No data	No data	3 days	3 days
Leg ulcer	Venous (1 patient)	8 weeks	8 weeks	14 days	14 days

TABLE 1

	High	Moderate	Low
Surgical	9 patients	6 patients	0
Pressure Ulcer	3 patients	8 patients	1 patient
DFU	0	1 patient	0
Leg Ulcer	0	1 patient	0

(No data for 1 patient) TABLE 2

	Wound Healing	Exudate Management	Other
Surgical	7 patients	8 patients	0
Pressure Ulcer	10 patients	2 patients	0
DFU	0	1 patient	0
Leg Ulcer	0	1 patient	0

(No data for 1 patient) TABLE 3

	Hospital	Community
Surgical	56	25
Pressure Ulcer	15	40
DFU	1	0
Leg Ulcer	0	4

TABLE 4

Outcomes

The outcomes of the evaluation are reported on by wound aetiology and are as follows:-

Patient information on discomfort during the application of NPWT was recorded. At each dressing change patients were asked whether they had been comfortable during the therapy, and whether the pump disturbed them during the night, whilst therapy was being recorded. Patients who were mobile were also assessed as to whether the device was acceptable. This is recorded in Table 5.

	Discomfort during procedure	Discomfort during therapy	Unable to mobilise with device	Disturbed by pump noise
Surgical	10%	1%	0%	5%
Pressure Ulcer	0%	0%	0%	7%
DFU	0%	0%	0%	0%
Leg Ulcer	0%	0%	0%	0%

TABLE 5
Patient Acceptability (expressed at % of total number of patients within specific aetiology)

NPWT is used by a range of clinicians with differing skills. It is also important that the dressing can be applied and changed by the minimum number of staff to minimise the cost of care. Consequently acceptability to the clinician was recorded (Table 6).

	Application of dressing	Removal of dressing	Use of pump	Number of staff required
Surgical	77% easy	98% easy	100% easy	68% only 1 clinician
Pressure Ulcer	93% easy	96% easy	98% easy	95% only 1 clinician
DFU	Not reported (numbers small)			
Leg Ulcer	Not reported (numbers small)			

TABLE 6
Clinician Acceptability (ease of use summary expressed at % of total number of patients within specific aetiology)

Wound Outcomes

Wound outcome was measured as a total reduction in wound size across all wounds of the same aetiology, a % reduction in devitalised tissue and a % increase in granulation and epithelial tissue.

Data was recorded on further wound complications such as cavities, fistulae, undermining/ tunnelling of the wound, pain and infection. The median pain score at the start and end of the evaluation was also identified. These are reported by aetiology on surgical wounds and pressure ulcers. Because of the low number of patients with dfu and leg ulcers, this data has not been demonstrated.

Surgical Wounds

Charts illustrate the overall assessment from initial to final demonstrating % improvements in the following:-

Fig. 1: Wound size

Fig. 2: Reduction of devitalised Tissue

Fig. 3: Increase of granulation and epithelial tissue

The incidence of wound complications pre and post NPWT is illustrated in Fig. 4.

Fig. 1

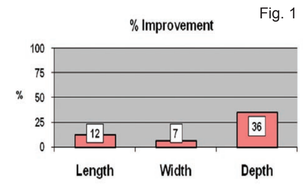


Fig. 2

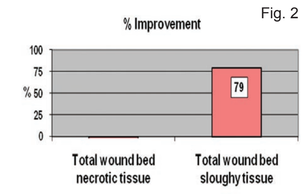


Fig. 4

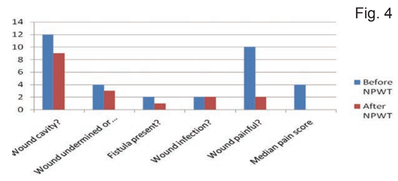
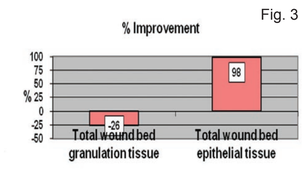


Fig. 3



Pressure Ulcers

Charts illustrate the overall assessment from initial to final demonstrating % improvements in the following:-

Fig. 5: Wound size

Fig. 6: Reduction of devitalised Tissue

Fig. 7: Increase of granulation and epithelial tissue

The incidence of wound complications pre and post NPWT is illustrated in Fig. 8.

Fig. 5

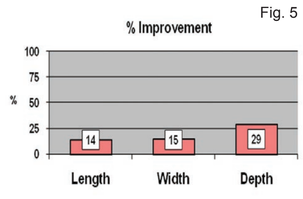


Fig. 6

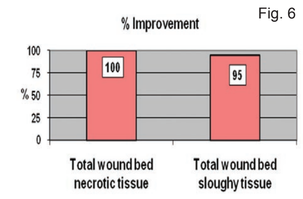


Fig. 8

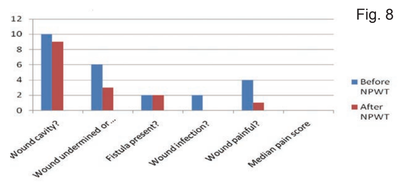
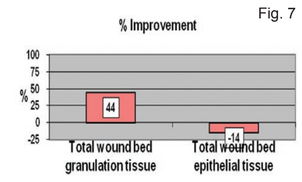


Fig. 7



Comparative Costs Per Dressing Change

Within the duration of the product evaluation the number of consumables and additional products was recorded. This can then be used to demonstrate the average cost of a dressing change within this project. The cost of the pump is not included in this (Table 7).

Aetiology	Average cost per dressing change
Surgical	£33.64
Pressure Ulcer	£25.25
DFU	£30.50
Leg Ulcer	£24.38

TABLE 7

Conclusion

A large quantity of information on product use, clinical outcomes and cost has been generated through this process. Although this is not a scientific evaluation but a structured product evaluation,the clinicians involved in the process have been able to use the information for procurement purposes, and to enable them to make an informed decision on patient care.

The advantages of collating the data in this was for those organisations commissioning this therapy, are that they have some idea on expected outcomes and costs.

*Evaluation device – Venturi™ (Talley Group Ltd)

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