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The use of gauze-based Negative Pressure Wound Therapy with paediatric patients: positive clinical outcomes and reduced costs

Introduction

Alder Hey Children's NHS Foundation Trust has 1-2 patients being treated with Negative Pressure Wound Therapy (NPWT) at any one time. Until recently the current method of financing this treatment was daily rental with our current supplier of devices and a foam filler. This poster will describe a switch to Smith & Nephew (UK, Hull) RENASYS© device and a gauze filler. The clinical results to date will be presented along with the predicted cost savings.

Method

A retrospective analysis of cost and treatment days from April 07 – April 08 indicated a total cost of £18k for 216 therapy days with our incumbent supplier. Over the last 2 years the choice of providers of NPWT has risen from only 1 company to 5 in the UK. As a result it was decided that the Trust would look at alternative providers. During a five month period the trust treated 5 patients with gauze based NPWT. Alongside the clinical evaluation a cost comparison was undertaken to inform the final decision.

Results

A cohort of 5 patients was recruited to evaluate the Smith & Nephew NPWT system. A variety of different wound types were treated, with involvement of theatre staff, ward staff, consultants and the Tissue Viability Nurse.

Wound types involved in the evaluation
- Sacral pressure ulcer
- Trauma Groin/Perineum
- Trauma Perineum
- Arm reconstruction
- Ankle degloving

Outcome
- Wound bed prepared prior to a skin flap
- NPWT continued until granulation tissue level with surrounding skin
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- Used over Matriderm™ – good graft take
- Wound bed prepared prior to grafting

All wounds progressed towards healing and the 3 consultants involved were happy to use Smith & Nephew NPWT for future requirements.

Cost savings were calculated and are shown in the table, these are based on actual costs per patient using Smith & Nephew vs. current costs with KCI assuming the same number of dressing changes and canister changes per patient.

Patient	Wound	Treatment Days	S&N cost	Current user cost	S&N SAVING
1	Pressure ulcer	56	£1,743	£3,397	£1,654
2	Groin/Perineum	41	£1,382	£2,487	£1,105
3	Perineum	30	£1,011	£1,820	£809
4	Arm reconstruction	5	£169	£303	£134
5	Ankle degloving	7	£236	£425	£189
Total		**139**	**£4,541**	**£8,431**	**£3,890 (46%)**

As a result of the evaluation it was decided to purchase 2 RENASYS GO devices. The benefits of this were seen as;
- Save on carriage charges for same-day delivery (currently pay £100 each time)
- Avoid administrative burden and errors for supplies & wards of logging daily rentals and cross-checking invoices
- No further rental expenditure
- Minimal storage space and on-site when needed
- Serviced every 6 months under 2 year warranty

Discussion

Smith & Nephew represented an affordable alternative to our current supplier, with no compromise in healing rates or clinical efficacy[1]. The system involves a number of different drains which enable clinicians to treat a wider variety of wounds than have previously been suitable for NPWT (for example deep sinus wounds). The system offers both gauze and foam wound fillers and defaults to a lower pressure than the current system. McCord[2] suggest that low pressure still enabled wound healing and did not prolong the duration of therapy required to achieve wound closure. This was reflected in our clinical evaluation.

Conclusion

The trust stands to save approximately £11k per annum year on year excluding the initial purchase outlay for the devices. The new RENASYS system and the range of drains available for use with the gauze filler have allowed us to treat wounds with tunneled and undermined areas that would have been difficult to treat with a foam filler alone. It is our conclusion that lower pressures may have advantages in paediatric care, including reduced pain for the patient and as a result dressing changes on the ward as opposed to in a theatre environment may be possible. This will be monitored over time.

Patient 3: 9-year-old boy admitted following a fall onto a metal spike

Image 1: Initially KCI used. However unable to dress the 9cm tunnelled area therefore swapped to gauze-based NPWT - flat drain inserted into cavity.

Image 2: After 48 hours gauze NPWT. Tunnel visible

Image 3: At discontinuation

References

1. Campbell P, Smith G, Smith J. (2008) Retrospective clinical evaluation of gauze-based negative pressure wound therapy. Int Wound J 5: 280-6.
2. McCord S, Bindi J *et al* 2007 Negative pressure therapy is effective to manage a variety of wounds in infants and children Wound Rep Reg 15: 296–301

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