A NEW DEBRIDEMENT TECHNIQUE TESTED ON PRESSURE ULCERS

The objective of this study was to determine the efficacy of a new active debridement system. The project is underpinned by evidence relating to wound assessment and differential diagnosis, pressure ulceration and categorisation, debridement and several current key government agendas in relation to essential skin care, pressure ulcer prevention and management.

JACKIE STEPHEN-HAYNES
Professor, Practice Development Unit, Birmingham City University and Consultant Nurse in Tissue Viability, Worcestershire Health and Care NHS Trust.

ROSIE CALLAGHAN
Tissue Viability Specialist Nurse, Nursing Homes and Worcestershire Health and Care NHS Trust.

The NHS faces the challenge of delivering high quality care and improving efficiency, arising from the increasing demand for healthcare resources due to changing demographics. In England, a recent White Paper outlined the government's strategy for addressing these issues, which is centered upon efficiency improvements (Department of Health [DH], 2010a).

Despite the difficulties of extrapolating the true cost of maintaining skin integrity — in terms of prevention, treatment and management — from the literature, the cost of wound care, especially in relation to the impact on patients' quality of life, is significant.

Estimates factoring in 2005/6 prices put the cost at £2.3–£3.1bn per year, which accounts for 3% of the annual NHS expenditure (Posnett and Franks, 2007). The majority of these wounds are chronic in nature and are managed in the community setting by GPs and community nurses (Drew et al, 2007).

Pressure ulcer prevention has risen up the political agenda as a result of a raft of guidance, including National Institute of Health and Clinical Excellence guidelines (NICE, 2005), European Pressure Ulcer Advisory Panel guidelines (EPUAP, 2009) and, more recently, the DH's high impact actions (DH, 2010b) and QIPP (DH, 2010a).

WOUND ASSESSMENT

An accurate and timely wound assessment underpins effective clinical decision-making and enables appropriate objectives to be set, thus reducing morbidity and cost (Posnett et al, 2009).

This is essential for the provision of clinical and cost-effective wound care as it identifies the causative or contributory factors that may delay healing and helps to develop an appropriate management plan (World Union of Wound Healing Societies [WUWHS], 2007).

The management of wounds is complex and frequently complicated due to diverse aetiologies and differential diagnoses, the intricacy of the healing process, the diversity of factors affecting healing and the array of treatment options available.

While clinical decision making is underpinned by holistic assessment, ongoing wound assessment and appropriate evaluations of patient wellbeing (Harding, 2000; Wounds International, 2012) can identify variations in practice and inequalities in the care provided to patients.

The Nursing and Midwifery Council (NMC, 2009) identifies the importance of documentation and communication in helping to improve accountability, demonstrating how decisions related to

patient care are made, supporting the delivery of services and effective clinical judgements, aiding patient care and making continuity of care easier.

Wound bed

An important aspect of wound assessment is the assessment of the wound bed. Greater visibility of the wound bed may be achieved when devitalised tissue is debrided. Non-viable tissue has a variety of clinical presentations, e.g. slough, necrotic tissue or eschar, which differ in their content.

A variety of debridement methods exist and all have their own advantages and limitations, however, the importance of appropriate debridement is widely recognised (Gray et al, 2011).

In any wound, the boundaries may not be clearly defined, with a lack of clarity in wound bed classification (Schultz et al, 2003). This is particularly true when necrotic, devitalised or sloughy tissue is present in the wound bed.

Debridement is important to remove devitalised tissue, which acts as a barrier to healing (Kubo et al, 2001), provides a source of nutrients for bacteria (Leaper, 2002), masks or mimics infection (O'Brien 2002) and prevents the effectiveness of other wound care interventions (Weir et al, 2007).

Debridement is generally accepted as a necessary precondition for the formation of new tissue and an important part of the healing process (Vowden and Vowden, 1999).

The choice of method depends on the general goals of patient care and the aetiology and nature of the wound and eschar present. Other considerations include social and environmental factors, debridement frequency, access to skilled practitioners, complete patient assessment and cost.

THE PRODUCT

Debrisoft® (Activa Healthcare) is a new product available on prescription, which can assist clinicians with the debridement of both wounds and skin. It consists of soft, polyester fibres, cut at a special angle, which are then secured and knitted together into a sterile pad. This pad is then moistened (with tap water or saline) and applied with light pressure to wounds and skin, assisting with the removal of superficial sloughy tissue or hyperkeratosis (dry flaky skin).

THE STUDY

Aim

The primary aim of this study was to examine whether Debrisoft could assist an experienced group of tissue viability link nurses to undertake an assessment and determine appropriate wound management objectives using a qualitative and quantitative approach.

The secondary aim was to undertake a trust-wide evaluation of an active debridement system, which will be reported at a later date.

Methods

All of the qualified nurses (n=40) had undertaken an accredited tissue viability course and received tissue viability and supplementary debridement training within the last six months.

This project was undertaken over a 12-week period and followed the existing process for evaluation of new products within the healthcare trust, with an agreed audit tool, clinical governance approval and the provision of products by the manufacturer.

Advice was given to the participants regarding wound type, with the nurses asked to undertake debridement of the wound or hyperkeratosis, and to evaluate the effectiveness of the debridement and the condition of the wound bed.

They were also asked to comment on whether the product assisted with their clinical assessment and provision of care. The areas to be evaluated were:

- Rapid debridement
- Improved skin condition
- Enhanced, rapid clinical visual assessment
- Did it assist in assessing and defining clearer wound management objectives?
- Did it reduce time to achieve wound management objectives.?

The nurses were asked to categorise the product's performance as follows:

- Hyperkeratosis/wound remains the same

References

DH (2010a) *The NHS Quality, Innovation, Productivity and Prevention challenge: An introduction for clinicians.* DH, London

DH (2010b) *High Impact Actions for Nursing and Midwifery*. NHS Institute of Innovation and Improvement. Available at: http://www.institute.nhs.uk/building_capability/hia_supporting_info/staying_safe_preventing_falls.html (accessed 30 August, 2012)

Drew P, Posnett J, Rusling L (2007) The cost of wound care for a local population in England. *Int Wound J* 4(2): 149–55

EPUAP (2009) *Pressure Ulcer Prevention: A quick reference guide.* Available at: http://www.epuap.org/guidelines/Final_Quick_Prevention.pdf (accessed 30 August, 2012)

Gray D, Acton C, Chadwick P, et al (2011) Consensus guidance for the use of debridement techniques in the UK. *Wounds UK* Available at: http://www.wounds-uk.com/journal-articles/consensus-guidance-for-the-use-of-debridement-techniques-in-the-uk (accessed 30 August, 2012)

Harding KG (2000) Evidence and wound care: what is it? *J Wound Care* 9(4): 188–90

- Hyperkeratosis/wound fully debrided
- Hyperkeratosis/wound partially debrided.

Results

Rapid debridement

Debrisoft was used for debridement by 25 nurses (62.5%), for hyperkeratosis by four nurses (10%), and for both by 11 nurses (27.5%).

The audit forms allowed for comments in relation to debridement outcomes, which were collected and anonymised. In this section, nurses' comments included:

'Exposed a wound bed that normally takes weeks or a hospital admission'

'Sloughy tissue reduced by 20%'

'Removing slough meant the next stages of wound healing were effectively reached.'

Improved skin condition

In the skin condition evaluation, 38 (95%) nurses said that patients' skin condition improved, while two (5%) said that it remained the same.

Nurses' comments included:

'General skin condition improved and the emollient was more effective'

'Skin condition improved greatly'

'Improves skin condition and appears to slow down the build up of dry skin.'

Enhanced, rapid clinical visual assessment

In the visual assessment of the wound bed, nurses were asked to include photos and comments.

Of the nurses, 32 (80%) reported the positive impact of the clinical visual assessment. Comments included:

'Facilitated a clearer view of which areas were healed and which were unhealed'

'Most of the dead skin came away and I was able to measure the wound accurately'

'Results seen immediately'

'Instant visible results and less visits needed to address the condition.'

One nurse used Debrisoft to debride and remove a haematoma and commented:

'Gently peeled away skin layer over the haematoma exposing it then lifted it out. This would have taken 1–2 weeks with gels.'

Assistance to assess and define clearer wound management objectives

Of the respondents, 34 (85%) identified that following debridement they were able to identify clearer wound management objectives, due to the removal of debris, slough or hyperkeratosis from the wound bed or surrounding skin, allowing for clearer visibility of the wound bed. Six out of 40 (15%) said there was no improvement.

Nurses' comments included:

'Objectives the same, but scale of the problem was more easy to identify'

'It makes the wound bed more visible, moved an impermeable layer of slough'

'Wound bed cleaner and also skin condition improved greatly.'

Reduced time to achieve wound management objectives

The time taken to undertake debridement using Debrisoft was 0–2 minutes in eight patients (20%); 3–5 minutes in 21 patients (52.5%) and 6–10 minutes in nine patients (22.5%).

Nurses' comments included:

'Instant visible results, less visits needed to address condition'

'Wounds that had proven difficult to heal not only debrided, but showed signs of healing days later.'

OVERALL PERFORMANCE

The overall performance of the product was rated as 'Very good' by 24 (60%) nurses, 'Good' by 10 nurses (25%), 'Fairly good' by five nurses (12.5%) and 'Poor' by one nurse (2.5%).

References

Kubo M, Van der Water L, Plantefaber LC, et al (2001) Fibrinogen and fibrin are anti-adhesive for keratinocytes: a mechanism for fibrin eschar and slough during wound repair. *J Invest Dermatol* 117(6): 1369–81

Leaper D (2002) Surgical debridement. Available at: www.worldwidewounds.com/2002/december/Leaper/Sharp-Debridement.html (accessed 30 August, 2012)

NICE (2005) *The Prevention and Treatment of Pressure Ulcers.* Available at: http://www.nice.org.uk/nicemedia/pdf/CG029publicinfo.pdf (accessed 30 August, 2012)

NMC (2009) *Record Keeping.* NMC, London

O'Brien M (2002) Exploring methods of wound debridement. *Br J Comm Nurs* 10(12): 14

Figure 1–2: The wound in Case Study 1, before (top) and after the use of Debrisoft to debride the wound.

CASE STUDIES

Case study 1

Mrs A was a mobile and independent 74-year-old woman who experienced a cerebrovascular accident but continued to use her existing method of re-positioning, resulting in the development of a category 3 pressure ulcer to her right heel.

The ulcer encompassed the whole heel area and was 9cm in length and 6cm in width.

Following a period of rehabilitation in hospital, she was discharged to a nursing home with a necrotic heel ulcer. Mrs A was no longer mobile and felt more comfortable in bed, with only a few hours a day sat in her chair.

The correct type of pressure-relieving equipment was in place in the care home, however, several attempts at debridement with conventional methods, such as hydrogels, were unsuccessful — while they initially appeared to debride the necrosis by softening it, within a week the necrosis had became hard again and would increase in size.

A pain assessment was undertaken using a numerical pain assessment tool. This should always form part of a holistic wound assessment and the need to establish Mrs A's level of pain was important as Debrisoft's application involves touching the wound bed, which could potentially increase pain.

The team reviewed the options available to debride the wound, including techniques used in the past, and the appropriateness of Debrisoft was checked by studying manufacturer's instructions.

It was decided that in this case there were no contraindications and the product could be used to remove the slough and necrosis, enabling the next stage of wound healing — granulation of the wound bed.

Debrisoft worked effectively, removing the soft necrosis and sloughy tissue and appearing to stimulate the wound bed, as well as promoting signs of healing that had not been present previously.

Following debridement, epithelialisation could be seen at the wound margin within one week. Debridement also allowed for greater visibility of the wound bed.

A dressing regimen using a Hydrofiber® (ConvaTec) dressing with an absorbent pad and bandage was put in place following the debridement. The wound started to granulate well with healthy tissue and epithelial cells could be seen at the wound margins.

Case study 2

Mrs B was a 82-year-old woman who lived in a nursing home and had a medical history of diabetes, Parkinson's disease and heart failure. She had taken to bed with a chest infection and despite the appropriate use of pressure-reducing equipment, had developed a sacral pressure ulcer.

This was measured as 4cm by 3cm with a necrotic area, which the nursing home staff had started to debride using a hydrogel. However, this technique was proving slow in softening the necrosis and was changed to a honey dressing following advice from the tissue viability nurse.

The honey dressing softened the ulcerated necrosis, but the skin over this area

References

Posnett J, Franks P (2007)The costs of skin breakdown and ulceration in the UK. In: *Skin Breakdown: The Silent Epidemic*. The Smith & Nephew Foundation: 6–12

Posnett J, Gottrup F, Lundgren H, Saal G (2009) The resource impact of wounds on health care providers in Europe. *J Wound Care* 18(4): 154–61

Schultz G, Sibbald G, Falanga V, et al (2003) Wound bed preparation: a systematic approach to wound management. *Wound Repair Regen* 11(2): 1–28

Vowden K, Vowden P (1999) Wound debridement, Part 2: Sharp techniques. *J Wound Care* 8(6): 291–94

Weir D, Scarborough P, Niezgoda JA (2007) Wound debridement. In: Krasner DL, Rodeheaver GT, Sibbald RG (eds). *Chronic Wound Care: A Clinical Source Book for Healthcare professionals*. 4th edn. HMP Communications, Malvern: 343–55

WUWHS (2007) *Diagnostics and Wounds. A consensus document*. MEP Ltd, London

Wounds International (2012) *Optimising Well-being in People Living with a Wound*. Wounds International. Available at: http://www.woundsinternational.com/clinical-guidelines/international-consensus-optimising-wellbeing-in-people-living-with-a-wound (accessed 30 August, 2010)

Figures 3–4: The wound in Case Study 2 before (top) and after the use of Debrisoft on the sacral pressure ulcer.

remained intact. The nursing home staff were concerned about the time it was taking to remove the necrosis, which was a focus for infection, and were unsure of the extent of this damage.

Following debridement with Debrisoft, the roof from this ulcer was lifted exposing a cavity and enabling accurate wound assessment using a probe to ascertain any bone involvement. Following this assessment, the team were able to pack the cavity with an alginate dressing and use a foam as a secondary dressing.

The use of Debrisoft enabled us to reduce the time it would normally have taken us to debride this wound.

DISCUSSION

This audit has identified that appropriate rapid debridement allows for clearer visualisation of the wound.

This is particularly important in relation to the categorisation of pressure ulceration, where prompt and accurate action is required to enable clinicians to prevent further deterioration of the wound and prevent infection. The speed of healing is also important as it can patients' quality of life. However, in order to achieve prompt healing, the wound first needs to be debrided quickly and effectively.

This study showed that 85% of the clinicians found the overall performance of the Debrisoft to be good or very good. The study showed that clinicians found this product easy to use and in some instances, where appropriate, the client was able to use this product themselves.

Debrisoft enabled clinicians to debride a wound that would normally have taken 2–3 weeks with other methods.

The categorisation of pressure ulcers (EPUAP/NPUAP, 2009) relies on clinicians being able to identify structures within the wound bed and may be obscured by the presence of necrotic tissue. Therefore, rapid debridement is an important aspect of wound management.

This study has demonstrated that this effective quick debridement method can help clinicians visualise the wound bed and develop appropriate plans of care quicker than with other conventional methods, thereby speeding up the healing process

CONCLUSION

The competence of the individual undertaking the debridement is crucial and is a key consideration along with availability of the necessary equipment and provision of the optimal environment. Patient choice and involvement are also paramount in the debridement process.

While the focus should be on appropriate debridement methods to achieve timely optimal pain free removal of non-viable tissue, these results clearly demonstrate that the primary aims of the study were achieved. Debrisoft has the additional benefit of ease of use — meaning no specialist training is required — as well as allowing for prompt assessment and clearer wound management objectives.

While in wound healing there are always different perspectives, debridement can assist in achieving the overall goal of wound healing. WUK