Stopping the strikethrough: An audit of patient outcomes on four superabsorbent dressings

KEY WORDS
- Eclypse
- Exudate
- Strikethrough
- Superabsorbent dressings
- Wound management

Aim: To review the literature on exudate and exudate management and present the results of a superabsorbent dressing audit employing patient pain and exudate dairies. Methods: The four dressings used were Zetuvit® Plus, Eclypse®, KerraMax™ and Flivasorb®. Data were collected on the frequency of dressing change and the dressing products involved. Each patient had their dressing change performed and monitored by the tissue viability nurse consultant on days 1, 3 and 7. Absorbency capacity, and the amount of peri-wound skin, maceration, dermatitis, inflammation, irritation and dryness were recorded using TIME assessment. The amount of exudate was recorded by weighing the dressing on removal in a sealed plastic bag; any strikethrough on the dressing was documented. Patient outcomes for pain, sleep, exudate odour, and impact on quality of life were measured. **Results:** There were significant differences in strikethough recorded for the four dressing groups on days 1, 3 and 7 ($P<0.001$ on each) with Zetuvit and KerraMax varying from 75–85%, and Flivasorb from 24–35%. Eclypse had zero strikethrough on each day. The clinicians' versus patients' observations demonstrated that odour was statistically significant but with moderate-to-high correlations between clinicians' and patients' observations. Pain was also reported to be significant, with high correlations on day 1 (r=0.751), day 3 (r=0.787) and day 7 (r=0.833). The exudate versus weight was highly significant and had large correlations on day 1 (r=0.754), day 3 (r=0.758) and day 7 (r=0.745).
Conclusions: The Eclypse dressing showed no strikethrough and high levels of exudate management. Patient acceptability of the Eclypse dressing was high, patients finding it

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Chronic wounds can have a substantial impact on a patient's quality of life (Cutting, 2010) and in the NHS £3.1 billion is spent annually on wound dressings and caring for these patients (Posnett and Franks, 2008). This is estimated to be 3% of total expenditure on health (£89.4 billion) in 2005/06). The management of leg ulcers is estimated to cost £168–198 million (Posnett and Franks, 2008). Management of these complex wounds therefore requires a pragmatic approach to the use of those resources that are most suitable for the clinical circumstances to ensure good patient outcomes.

EXUDATE

Exudate is the fluid that contains growth factors, nutrients, cytokines, matrix metalloproteinases (MMPs) and white blood cells that have leaked out from the capillaries into body tissue around a wound. In acute wounds the exudate encourages and supports wound healing, first, by aiding cell migration of growth factors and providing essential nutrients for the cells, and second, by aiding the removal of dead and damaged t issue by autolysis (World Union of Wound Healing Societies [WUWHS], 2007). Exudate management is one of the key challenges for clinicians involved in complex wound management. Effective management of exudate should shorten wound healing time, optimise resources and reduce the impact on a patient's physical and psychological health status (WUWHS, 2007). Managing wound exudate

successfully is essential, as copious amounts of exudate can lead to a reduction in protein, increase peri-wound maceration and ultimately delay wound healing (Wounds UK, 2013). Frequent dressing changes, leakage from the dressing onto skin or clothes, and malodour can be distressing for patients, families and carers. Many patients experience social isolation and anxiety due to leakage of dressings (Faucher et al, 2012).

SUPERABSORBENT DRESSINGS

Superabsorbent dressings were developed from nappies, incontinence products and feminine hygiene products (Ousey et al, 2013). Superabsorbent dressings contain polyacrylate polymers, or superabsorbent polymers (SAPs), that have the ability to swell to many times their original size and weight, holding large volumes of fluid while maintaining their structure (Ousey et al, 2013). Superabsorbent dressings have the capacity to trap unwanted components of exudate, bacteria, proteases and inflammatory mediators within the core of the dressing (Wiegand et al, 2011), thereby reducing the MMPs. The wound exudate is therefore contained in the core of the dressing without leaking onto the skin, which could cause maceration (Tadej, 2009).

SAPs are indicated for moderately-to-highly exuding wounds, and are designed to absorb and retain fluid. Their considerable absorption capacity allows extended wear time, thereby reducing the number of dressing changes, and the number of times the wound is disturbed, while protecting the surrounding skin (Stephen-Haynes, 2011).

AIM AND OBJECTIVES

The aim of this audit was to determine the clinical effectiveness of the superabsorbent dressings in 80 wounds in an acute hospital and community setting. The primary objective was to assess the difference between four superabsorbent dressing (Zetuvit Plus, Eclypse, KerraMax and Flivasorb) in absorbing exudate, improving the peri-wound skin and reducing the frequency of dressing change. The secondary objectives were to evaluate:

- Patient perceptions of odour, pain and overall comfort
- Patient perceptions of the dressing's ability to manage the exudate
- Patients' quality of life
- Clinician's versus patients' observations.

METHODS

The tissue viability team was alerted by the nursing staff about patients who had existing leg wounds with copious exudate and who were managed with a superabsorbent dressing. The nursing staff gave the patients a leaflet explaining the audit and discussing what their involvement would entail. Patients were then asked if they wanted to participate. A written consent form was obtained from the patient or a relative. The patients were allocated one of the four superabsorbent dressings sequentially.

The same assessor performed the audit on all patients. Patients' age, sex, nutritional status, medical conditions, wound information, site of the lower leg wounds, and the duration of the wound were recorded. If a patient withdrew from the audit for any reason this was noted.

The audit was registered with the clinical audit department in the hospital where the audit was completed and approved before commencement of the audit.

Patient eligibility criteria were: aged 18 years or older; written, informed consent to participate or witnessed verbal consent or consultee agreement; expectation of being able to comply with a follow-up schedule. Patient exclusion criteria were unwillingness to participate, clinically infected wounds, changes in the patient's condition such that normal treatment was being compromised.

Dressing regimen and assessment

The superabsorbent dressing was used as a primary or secondary dressing depending on the wound type. Data were collected on the frequency of dressing changes and the dressing products used. Every patient had their dressing change performed and monitored by the tissue viability nurse consultant on days 1, 3 and 7. The absorbency capacity, the amount of peri-wound skin, maceration, dermatitis, inflammation, irritation and dryness were evaluated using TIME assessment. The amount of exudate was recorded by weighing the dressing, and any strikethrough on the dressing was noted. Any additional dressing changes and their frequency were recorded.

The exudate characteristics were also recorded (WUWHS, 2007). The TIME framework (Tissue management, Inflammation and infection control, Moisture balance, Epithelial (edge) advancement) was performed on every assessment (European Wound Management Association (EWMA), 2004). All wounds were photographed. Other clinical assessments included wound exudate measurement and odour, and use of the TELER® note-making system by the nurse assessor, the patient and the carers.

The patient questionnaire on pain, sleep patterns and exudate dairies audit form was based on a previous study (Rafter and Oforka, 2014). Patients were encouraged to record their perceptions of pain on dressing change on days 1, 3 and 7 using a numerical pain score (1–10) (Wong and Baker, 1998). This pain scale also included a description of the type of pain as sharp/stabbing, dull/aching, continuous, intermittent or burning. Patients' sleep patterns over the seven days were measured in the patient questionnaire. The type of odour from the wound and impact of the odour on quality of life was recorded.

Cost and protocol

The frequency of dressing change was audited. Patient opinions of superabsorbent dressing odour, leaking and overall comfort were investigated to determine which of the superabsorbent dressings resulted in an improved patient outcome.

Data analysis

Data analysis of the completed audit was carried out by an independent statistician using Microsoft Excel and SPSS version 14. Data were analysed for all continuous variables. The non-parametric Kruskall–Wallis test was used as the data were not normally distributed, except for the Waterlow score, for which one-way ANOVA was used. For categorical data, a chi-squared test was employed. For repeated measures, Friedman was used on continuous variables. An alpha level of 0.05 was used to test for significance.

RESULTS

Each group comprised 20 patients. The Zetuvit Plus group included 13 females and 7 males; Eclypse 13 females and 7 males; KerraMax 14 females and 6 males; and Flivasorb 10 females and 10 males. The baseline demographics showed no significant differences between the four groups with respect to age (P=0.83), Waterlow score (P=0.14), Malnutrition Universal Screening Tool (MUST) score (P=1.0) or body mass index (BMI) (P=0.73). The mean age was 78 years, MUST 0, BMI 32 kg/m^2 and the median of the Waterlow score was 18.6.

The duration of the wounds varied from 1 week to 8 years (*Figure 1*). There was no significant difference between groups in the duration of wounds (P=0.61). *Figure 2* shows the location of wounds in each of the dressing groups.

Strikethrough

There were significant differences in strikethrough between the groups on days 1, 3 and 7 (P<0.001

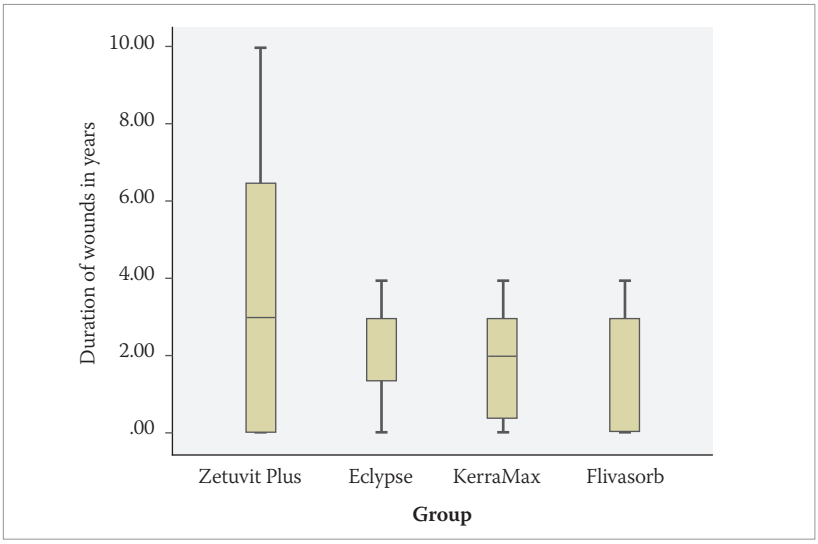

Figure 1. Box plot of durations of wounds.

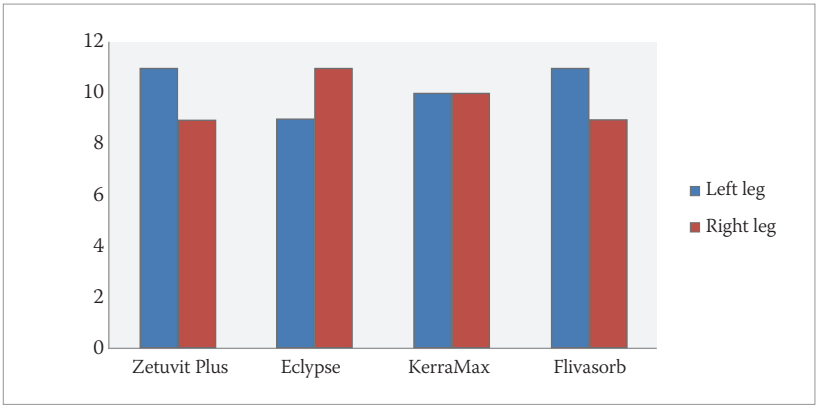

Figure 2. The location of the wounds.

within each group), with Zetuvit and KerraMax varying between 75–85%, and Flivasorb between 24–35%. Eclypse had zero strikethrough on each day (*Figure 3*).

The capacity to handle exudate was measured at days 1, 3 and 7. The dressing and exudate were weighed and the original weight of the dressing subtracted. The highest exudate for Zetuvit Plus was 160 g, for Eclypse 985 g, for KerraMax 670 g and for Flivasorb 650 g (*Figure 4*). The volume of exudate showed no significant difference between the four dressings groups. Dressing changes took place on average every 48 hours. In the KerraMax and Flivasorb group, the gap between dressing changes was never longer than 72 hours.

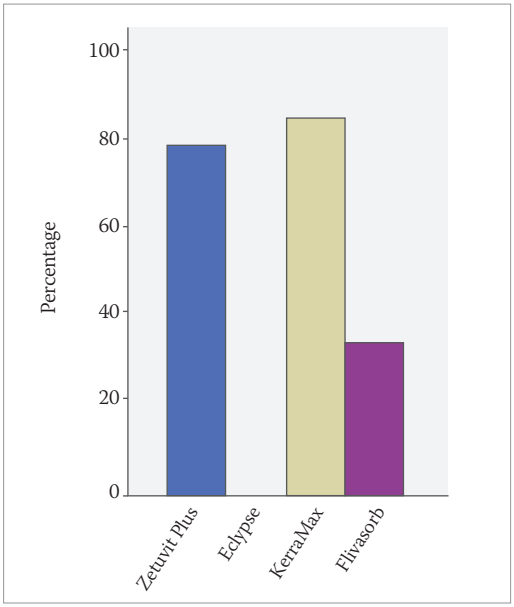

Figure 3. Strikethrough on dressing change on day 7.

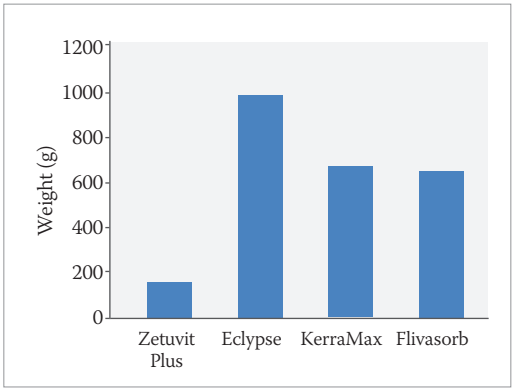

Figure 4. Fluid-handling capacity of the dressings.

Clinicians' observations

As assessed by clinicians on day 1, there were no significant differences between the four groups for volume of exudate (P=0.95), odour (P=0.63), pain (P=0.49), frequency of dressing change (P=0.83), weight of dressing (P=0.85), or depth of wound (P=0.70). Similarly, there were no significant differences at day 3 or day 7 for any of the clinician-measured variables. From days 1 to 7 there was no significant change in level of exudate or odour, as assessed by the clinicians.

The number of patients who had compression applied over the superabsorbent dressing is shown in *Table 1*. In general, most patients who had compression bandages used KerraMax, followed by those using Flivasorb. Patients used a variety of dressings (*Table 2*). There were no significant differences in the depth of patients' wounds (*Table 3*).

Patients' outcomes

The patients' diaries provided a valuable insight into the experience of pain and quality of life in the use of superabsorbent dressings. For patients on day 1, there were no significant differences between level of pain, type of pain, hours of sleep, and impact of odour in the four groups. Wound odour was significantly greater (P<0.001) with Zetuvit Plus and Flivasorb than with Eclypse or KerraMax (P<0.001). There were no significant differences in these variables at day 3 or day 7 with the sole exception of hours of sleep on day 3 (P=0.034); this is likely to be a type I error and there are five pairwise comparisons.

Pain as assessed by patients decreased overall (P=0.033) but there was no significant change in hours of sleep or odour. The impact on the patients' quality of life improved (P=0.029) but while it increased from days 1 to 3 it decreased by day 7.

Split by groups, the level of pain was reduced in the Zetuvit Plus and KerraMax groups, and rose

Table 1. Use of compression bandages by dressing group

Group	Frequency	Percentage
Zetuvit Plus	2	10
Eclypse	1	5
KerraMax	9	45
Flivasorb	7	35

slightly in the Eclypse and Flivasorb groups but was not statistically significant.

For the number of hours of sleep there was no significant change from day 1 to day 7 in any of the dressing groups. Odour decreased in the Flivasorb group, but rose slightly in the Eclypse and KerraMax groups, with no significant change in the Zetuvit Plus group. Overall, comfort was statistically higher in the Eclypse group by day 7 compared with day 1 but there was no similar change in the other groups.

Clinicians' versus patients' observations

Odour was significant, but there were moderate-to-high correlations between clinicians' and patients' observations. There were also significant/high correlations for pain on day 1 (r=0.751), day 3 (r=0.787) and day 7 (r=0.833). Exudate versus weight on day 1 (r=0.754), day 3 (r=0.758) and day 7 (r=0.745) was highly significant and had large correlations (*Figure 5*).

DISCUSSION

The analysis has demonstrated that age, BMI and Waterlow and MUST scores were similar. The BMI indicated that 70% of this sample fell into the obese category. Public Health England (2014) has found that Lincolnshire is the county with

Table 2. Primary dressings used by group

Group	Dressing	Frequency	Percentage
Zetuvit Plus	Atrauman	4	20
	Cutimed Sorbact	4	20
	Aquacel Extra	9	45
	Medihoney	1	5
	Sorbsan	2	10
	Total	20	100
Eclypse	No dressing used	1	5
	Atrauman	1	5
	Atrauman and Aquacel Extra	1	5
	Cutimed Sorbact	7	35
	Cutimed Sorbact and Aquacel Extra	3	15
	Aquacel Extra	7	35
	Total	20	100
KerraMax	Atrauman	2	10
	Atrauman and Aquacel Extra	2	10
	Cutimed Sorbact	4	20
	Cutimed Sorbact, Aquacel Extra	3	15
	Aquacel Extra	9	45
	Total	20	100
Flivasorb	Atrauman	7	35
	Cutimed Sorbact	5	25
	Aquacel Extra	6	30
	Aquacel Extra, Atrauman	2	10
	Total	20	100

Table 3. Depth of wounds by dressing group

Group	Wound depth	Frequency (percentage)
Zetuvit Plus	Superficial	12 (60%)
	Partial thickness	3 (15%)
	Full thickness	5 (25%)
	Total	20 (100%)
Eclypse	Superficial	9 (45%)
	Partial thickness	2 (10%)
	Full thickness	9 (45%)
	Total	20 (100%)
KerraMax	Superficial	8 (40%)
	Partial thickness	10 (50%)
	Full thickness	2 (10%)
	Total	20 (100%)
Flivasorb	Superficial	8 (40%)
	Partial thickness	8 (40%)
	Full thickness	4 (20%)
	Total	20 (100%)

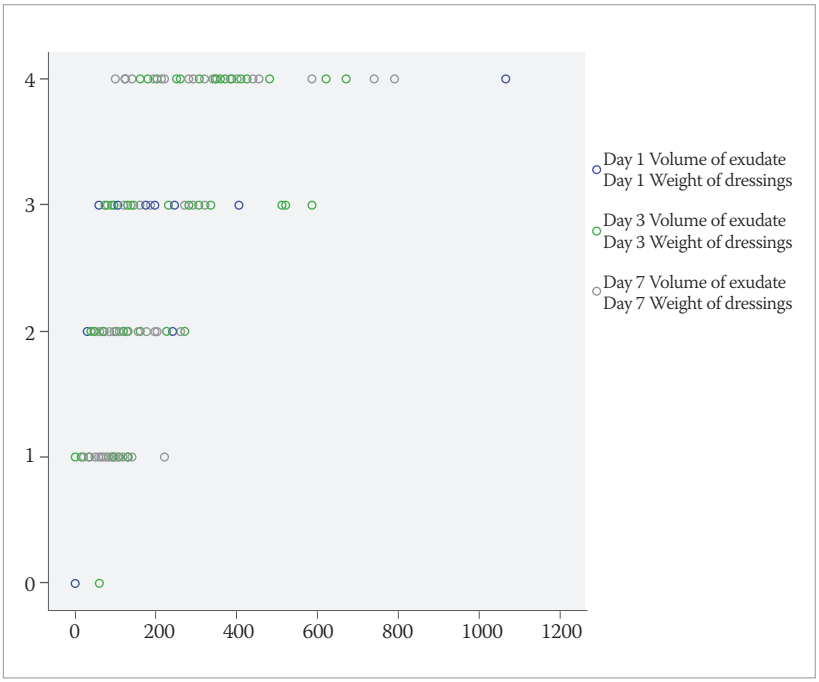

Figure 5. The exudate volume versus the weight of dressing.

the greatest rate of obesity in the East Midlands. According to the latest statistics, 68.2% of county residents are considered overweight or obese.

There were significant differences between the strikethrough of the dressings. Zetuvit Plus and KerraMax had higher strikethrough than Flivasorb, and Eclypse showed no strikethrough. The construction of Zetuvit Plus and KerraMax means that they have no water-resistant backing to prevent strikethrough. Flivasorb has a breathable outer layer to prevent leakage. Eclypse has a water-resistant backing to prevent strikethrough with a high moisture vapour transfer rate, and this appears to account for the absence of strikethrough. Leakage and strikethrough can lead to bacteria breaching the wound and can increase the risk of infection as it acts as a portal for pathogens (Wounds UK, 2013).

Some superabsorbent dressings can lock the exudate into the dressing. This exudate fluid may contain bacteria and proteases which can be harmful to the wound. Wiegand and White (2013) demonstrated that the Eclypse dressing completely inhibited protease enzymes and collagenase and therefore was effective in the treatment of chronic wounds. Wiegand et al (2011) and Alexander (2009) demonstrated in vitro that Flivasorb's absorption capacity was more than twice that of standard absorbent dressings tested, and that Flivasorb released up to 88% more absorbed fluid than standard dressings.

Superabsorbent dressings have been designed to absorb exudate and allow moisture loss through evaporation. They have been developed with the aim of increasing their fluid handling properties, which is designed for longer wear time and can reduce maceration, thereby reducing the frequency of dressing changes (Wick, 2012).

There is a paucity of literature on superabsorbent dressings and only one audit has investigated the weight of exudate from a clinician's view (Jones and Barraud, 2013). In this audit, clinicians considered the fluid handling capacity of the superabsorbent dressings. A group of 21 experienced clinicians comprising tissue viability nurses, vascular and leg ulcer nurse specialists, a diabetic podiatrist, and plastics nurses completed a short questionnaire on the management of large wounds. Six clinicians stated that 200 ml of exudate was acceptable before the dressing was changed; 13 said they would not want the capacity to go beyond this. Clinicians in this evaluation agreed that the weight of the dressing would become too heavy, bulky and uncomfortable. This issue was not reported by the patients in the current audit. This audit has revealed that Eclypse boot had the highest capacity of exudate management, and this was obtained when the patient was wearing the Eclypse Boot which is not available in the other superabsorbent dressings.

Superabsorbent dressings have been recommended for use under compression bandages. Faucher et al (2012) investigated exudate management with the Flivasorb dressing under compression. There was a reduction in peri-wound skin maceration, inflammation and irritation, as well as improvement in the wound bed.

Patient outcomes

The patients' diaries provided a valuable insight into pain experience and quality of life when using superabsorbent dressings.

Saturated dressings can become malodourous and act as a physical reminder to the patient of their wound (International Consensus, 2012). This can lead to very low self-esteem, social isolation and loneliness in patients (Herber at al, 2007; Jones et al, 2008). It was interesting to discover that odour observed by patients was significant in the Zetuvit Plus and Flivasorb but lower in Eclypse and KerraMax.

Effective management of patients' pain is fundamental to the quality of care, and is frequently dependent on the professional's ability and knowledge of the impact of these factors on the patient. While some practitioners are aware of the issues associated with wound pain, nurses often fail to manage pain effectively at dressing changes (Hollinworth, 2001). It was demonstrated that the level of pain was reduced with Zetuvit Plus and KerraMax, but increased slightly in Eclypse and Flivasorb. These findings may be because Zetuvit Plus and KerraMax have no water-resistant backing whereas Eclypse and Flivasorb do.

A lack of sleep has implications for a person's wellbeing, quality of life and ability to perform normal activities of living. Sleep has been demonstrated to be essential for restoration and recovery of the body (Baldwin et al, 2001; Katz and McHorney 2002; Reid et al, 2006; Hamilton et al,

2007). Pain, stress or anxiety related to pain has been discovered to delay wound healing (Upton and Solowiej, 2010; Woo, 2010; Ebrecht et al, 2004; Cole-King and Harding, 2001; McGuire et al, 2006). This audit demonstrated that there was no significant change from day 1 to day 7 in the number of hours of sleep in any of the dressing groups.

Patient comfort and acceptability are important factors in enabling patients to comply with a care pathway. Patient comfort overall was higher in the Eclypse dressing group than in the other groups.

Interestingly, the clinician versus patient observations of odour, pain, and exudate volume versus weight were significant, with moderate correlations. Atkin et al (2015) reported in an evaluation on foam dressings that the priorities of the patient and clinicians differed greatly. In this audit the patients' and clinicians' experiences were moderately correlated.

CONCLUSIONS

Superabsorbent dressings have been widely used to manage high levels of exudate. This audit of superabsorbent dressings has provided an insight into the exudate management of four dressings. The use of patient dairies provided a valuable insight into the quality of life of patients living with highly exuding wounds on the lower leg. Patient outcomes were measured on pain, sleep, exudate, odour, and impact on quality of life. The findings indicate that the Eclypse dressing had no strikethrough and high levels of exudate management. Patient acceptability of the Eclypse dressing was high and patients found it comfortable overall.

The results of this audit may be used to develop a best practice guideline for patients requiring a superabsorbent dressing. The clinician needs to consider all factors when choosing a superabsorbent dressing, to enable the choice of the right product for the right patient at the right time to achieve safe, cost-effective wound healing. WUK

REFERENCES

Atkin L, Stephenson J, Bateman S (2015) Foam dressing: a review of the literature and evaluation of fluid- handling capacity of four lead foam dressings. *Wounds UK* 11(1):75–81

Alexander S (2009) Malignant fungating wounds: key symptoms and psychosocial issues. *J Wound Care* 18(8):325–9.

Baldwin CM, Griffith KA, Nieto J, O'Connor GT, Walsleben JA, Redline S (2001) The association of sleep-disordered breathing and sleep symptoms with quality of life in the Sleep Heart Health Study. *Sleep* 24:96–105

Cole-King A, Harding KG (2001) Psychological factors and delayed healing in chronic wounds. *Psychosom Med* 63:216–20

Cutting K (2010) Wound dressings: 21st century performance requirements. *J Wound Care* 19(Suppl): 4–9

Ebrecht M, Hextall J, Kirtley LG, Taylor A, Dyson M, Weinman J (2004) Perceived stress and cortisol levels predict speed of wound healing in healthy male adults. *Psychoneuroendocrinology* 29:798–809

European Wound Management Association (2004) Wound bed preparation in practice. Position document. MEP Ltd, London

Faucher N, Safar H, Baret M, Phillippe A, Farid R (2012) Superabsorbent dressing for copiously exudating wounds. *Br J Nurs* (Tissue Viability Supplement), 21, 12, S22-28.

Hamilton NA, Gallagher MW, Preacher KJ, Stevens N, Nelson CA, Karlson C, McCurdy D (2007) Insomnia and well-being. *J Consult Clin Psychol* 75(6): 939–46

Herber OR, Schnepp W, Rieger MA (2007) A systematic review on the impact of leg ulceration on patients' quality of life. *Health Qual Life Outcomes* 5(44)

Hollinworth H (2001) Pain relief. *Nursing Times* 97(28):63–6

International Consensus (2012) Optimising wellbeing in people living with a wound. An expert working group review. Wounds International, London. www.woundsinternational.com/media/issues/554/files/content_10309.pdf (accessed 11.10.2015)

Jones J, Barraud J (2013) Superabsorbent dressings: have we reached maximum capacity? *Journal of Community Nursing* 27 (4):66–72

Jones JE, Robinson J, Barr W (2008) Impact of exudate and odour from chronic venous ulceration. *Nurs Stand* 22(45):53–8

Katz DA, McHorney CA (2002) The relationship between insomnia and health-related quality of life in patients with chronic illness. *J Fam Pract* 51(3):229–35

McGuire L, Heffner K, Glaser R et al (2006) Pain and wound healing in surgical patients. *Ann Behav Med* 31:165–72

Ousey K, Atkin L, White R (2013) Superabsorbent wound dressing: A literature review. *Wounds UK* 9(3):52–60

Posnett J, Franks PJ (2008) The burden of chronic wounds in the UK. *Nursing Times* 104(3):44–5

Public Health England (2014) Lincolnshire County Health Profile, 2014. 12 August. www.apho.org.uk/resource/view.aspx?RID=142189 (accessed 11.10.2015)

Rafter L, Oforka E (2014) Standard versus polymeric membrane finger dressing and outcomes following pain diaries. *Wounds UK* 10(2):40–9

Reid KJ, Martinovich Z, Finkel S, Statsinger J, Golden R, Harter K, Zee PC (2006) Sleep: a marker of physical and mental health in the elderly. *Am J Geriatr Psychiatry* 14(10):860–6

Stephen-Haynes J (2011) Managing exudate and key requirements of absorbent dressings. *Br J Community Nurs* 16(3):S44–9

Tadej M (2009) The use of Flivasorb in highly exuding wounds. *Br J Nurs* 18(15):S38–42

Upton D, Solowiej K (2010) Pain and stress as contributors to delayed wound healing. *Wound Practice and Research* 18(3):114–22

Wiegand C, Abel M, Ruth P, Hipler UC (2011) Superabsorbent polymer-containing wound dressings have a beneficial effect on wound healing by reducing PMN elastase concentration and inhibiting microbial growth. *J Mater Sci Mater Med* 22(11):2583–90

Wiegand C, White RJ (2013) Binding and inhibition of protease enzymes, including MMPs, by a superabsorbent dressing in vitro. *J Wound Care* 22(5):221–7

Wick G (2012) Meeting CQUIN targets: effective dressing selection. *Wound Essentials* 7(2). www.wounds-uk.com/pdf/content_10644.pdf (accessed 11.10.2015)

Woo K (2010) Wound related pain: anxiety stress and wound healing. *Wounds UK* 6(4):92–8

Wong D, Baker C (1998) Pain in children: comparison of assessment scales. *Pediatric Nurse*, 14(1):9–17

World Union of Wound Healing Societies (2007) *Wound Exudate and the Role of Dressings: A Consensus Document.* Principles of best practice. http://www.woundsinternational.com/pdf/content_42.pdf (accessed 11.10.2015)

Wounds UK (2013) *Effective Exudate Management.* Best practice statement. http://www.wounds-uk.com/pdf/content_10816.pdf (accessed 11.10.2015)

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