

A large-scale evaluation of managing moderate and highly exuding wounds in the community

KEY WORDS

- ▶ Community Nursing
- ▶ Exudate management
- ▶ KerraMax Care
- ▶ Quality of life
- ▶ Superabsorbent

Exudate management remains one of biggest challenges facing district nursing services. With an ever increasing case load of patients with exuding wounds, it is vital to select dressings that simply go beyond just ‘absorbing high levels of chronic wound fluid’. The selected dressings have to be the best and safest choice for patient comfort as well as the effective treatment of the wound, leading to enhancing the patient’s quality of life. This article reports on the results of 101 patient evaluations conducted in the community setting by district nursing teams in order to assess the suitability of KerraMax™ Care superabsorbent dressings.

The wound dressing market is expanding exponentially together with the burgeoning rise in the cost of wound care to the NHS. Guest et al (2015) estimated the annual cost of managing 2.2 million patients with wounds (2013/2014 prices) was £4.5–5.1 billion with the majority of wounds being managed in the community.

In a retrospective cohort analysis of the records of 2000 patients in The Health Improvement Network (THIN) Database, Guest et al (2015) found that the cost of managing the 39% of wounds that did not heal within the study year was £3.2 billion compared to the £2.1 billion for the 61% that healed. Wound care costs, including consumables and nursing time (Drew et al, 2007), represent up to 4% of the total NHS expenditure (Tennervall and Hjengren, 2005; Posnett and Franks, 2008; Dowsett and Shorney, 2010). Whilst cost is not (and should not be) the main driver when selecting a dressing, nonetheless it is an important factor in a cash strapped NHS.

For district nurses (DNs), factors such as number of visits, travel distance and time (which increase costs) must also be considered. Unlike hospital wards, a DN’s caseload is never considered to be ‘full’; all patients referred are accepted and, therefore, must be seen. With an increasing elderly population, earlier discharge from hospital, increasingly complex morbidity and wounds, together with an ongoing demand for beds, the pressure on DN services has never been greater. It is important, therefore, that

practices are constantly reviewed to ensure that nurses have dressings that enhance care, whilst reducing cost and demand on time and improving the experience for patients. NHS Benchmarking (2016) reported that in the 2016 annual audit of DN activity, 39% of clinical time by the service is spent in wound care.

This article reports on the findings from a large scale evaluation by DNs in a North West NHS Trust, which looked at the clinical effectiveness and safety of superabsorbent dressing KerraMax Care (Crawford Healthcare) and the patient experience of KerraMax Care as a primary dressing in the management of moderate to highly exuding wounds.

SUPERABSORBENT DRESSINGS

If a dressing is not sufficiently absorbent, the skin surrounding the wound may become macerated and leakage can occur, causing malodour, increased pain and distress for the patient (Gardner, 2012); as well as the risk of skin breakdown. Superabsorbent dressings made of superabsorbent polyacrylate polymers (SAPs) have a greater absorption capacity than traditional foam dressings, where fluid handling capacity may be suboptimal, coupled with the ability to bind or retain high levels of fluid by converting it into a gel and locking it away within the dressing. Superabsorbents have the ability to trap unwanted components of exudate, namely bacteria, proteases and inflammatory mediators within the core of the

MARIA A HUGHES
Tissue Viability Lead Specialist
Nurse, Queen’s Nurse,
Wirral Community NHS Foundation Trust

JUNE JONES
Independent Nurse
Consultant, Southport

dressing (Wiegand et al, 2011), reducing matrix metalloproteinase (MMPs) levels (Eming et al, 2008); and reducing potential leaks and risk of maceration (Wiegand and White, 2013). This translates into the ability to reduce dressing change frequency and thus the number of times the wound is disturbed (Stephen-Haynes, 2011). When one considers that dressing change is recognised to be one of the most traumatic and painful times for the patient (Meaume et al, 2004; Woo, 2010), this is a significant factor.

An *in vitro* study by Wiegand et al (2012) found that superabsorbents inhibit microbial growth by entrapping organisms in the gel formed by the uptake of wound exudate. The study showed that superabsorbents achieved a strong reduction in bacteria numbers of *Pseudomonas aeruginos*, *Klebsiella pneumonia* and *Escherichia coli*. Thomas and Westgate (2014) undertook an *in vitro* study of the capability of five superabsorbents to sequester and retain MRSA in full on fist occasion and *Pseudomonas aeruginos*. They noted that Kerramax Care retained greater amounts of MRSA and a comparable amount of *Pseudomonas aeruginos*. This is an increasingly important aspect as our reliance on antibiotics globally needs to reduce.

It is unequivocal that poor management of wounds leads to high costs for the NHS. However, the cost to patients and their families is immeasurable as chronic unhealed wounds have a negative impact on an individual's quality of life. Poor control of their symptoms, which often include pain, exudate, leaking, embarrassment and malodour (Jones et al, 2008), have the ability to restrict day-to-day living including work, shopping, cooking and socialising with family and friends (Gorecki et al, 2009). For an absorbent dressing to be a useful adjunct in wound care, it needs to address patient issues of pain, exudate and leakage, malodour and comfort as well as being easy to utilise and cost effective (Ousey et al, 2013).

KERRAMAX CARE

KerraMax Care is a superabsorbent dressing indicated for the control and removal of excess exudate in moderate to heavily exuding wounds. It is classed as a protease modulator under England and Wales Drug Tariff due to the dressing's proven handling of MMPs and sequestration of bacteria, which are present in chronic wound

exudate. KerraMax Care can be used as a primary or secondary absorbent layer, for example, over a cavity or where an antimicrobial is used as the primary dressing (Hampton et al, 2011). Its absorption capacity potentially reduces dressing changes with less wound disturbance and improved patient comfort as the dressing stays dry to the touch. Kerramax Care can also be utilised under compression, due to its thin profile and ability to distribute exudate evenly throughout the dressing, which causes the wound fluid to remain locked away even under pressure.

The primary objective of the evaluation was to understand the experiences of DNs regarding the clinical effectiveness and safety of KerraMax Care and patient experience of KerraMax Care as a primary dressing in the management of moderate to highly exuding wounds of various aetiologies. This includes leg ulcers when, as in some cases, it was used under compression bandages.

METHOD

DNs were asked to complete one evaluation form per patient about their experiences of managing wounds with KerraMax Care. The evaluation form consisted of 11 questions (*Box 1*). There were two questions (numbers 5 and 6) that required clinicians to ask patients their views on the dressing. The design of the evaluation form reflected the key drivers in treating and documenting nurse interventions in wound management, thus evaluating KerraMax Care against the key NHS Quality Domains of Care (Darzi, 2008) with high-quality care taking account of:

- ▶▶ Patient safety
- ▶▶ Patient experience
- ▶▶ Effectiveness of care.

RESULTS

A total of ($n=101$) patient evaluations were completed for a period of less than a week to over 5 weeks with KerraMax Care. Whilst ($n=37$) patients required daily dressings, ($n=27$) patients required dressing changes three times a week, ($n=25$) patients necessitating a visit once or twice a week, with ($n=12$) patients dressing change regimen not provided.

The majority of exuding wounds treated during the evaluation period were recorded as ulceration ($n=28$), the split in aetiology is outlined in

Box 1. KerraMax evaluation form	
Q1	How long was the patient treated with KerraMax Care?
Q2	Treatment regimen used? (i.e. daily changes, every other day, weekly etc.)
Q3	Please indicate the aetiology of the ulcer/chronic wound? Circle the best description of exudate? Aetiology: _____ Exudate: Serous (thin and straw coloured) or Purulent (yellow and thicker)
FOR Q4–7: PLEASE CIRCLE THE NUMBER WHICH REFLECTS YOUR OPINION OF KERRAMAX CARE	
Q4	Exudate control? How would you rate KerraMax Care in terms of managing the exudate from the ulcer compared to your previous dressing choice? 0 1 2 3 4 5 6 7 8 9 10 (0: exudate was not managed very well. 10 exudate was managed very well)
Q5	Patient Acceptability of KerraMax Care? Please ask the patient how they rate KerraMax Care in terms of comfort compared to their previous treatment? 0 1 2 3 4 5 6 7 8 9 10 (0: worse. 5: similar. 10: better)
Q6	Convenience? Over the last week, how convenient have you found KerraMax Care for the management of the wound (e.g. time spent dressing the wound, visits to the clinic, etc.)? 0 1 2 3 4 5 6 7 8 9 10 (0: very inconvenient. 10: very convenient)
Q7	Surrounding Skin? Has the condition of surrounding skin changed during treatment with KerraMax Care? 0 1 2 3 4 5 6 7 8 9 10 (0: increased maceration. 10: reduced maceration)
RESULTS	
Q8	Please describe any changes in the wounds appearance over the course of the treatment?
Q9	Overall, how does KerraMax Care meet your expectations for your dressing requirements? (Exceeds/meets/does not meet)
Q10	What dressing would you have used on this patient if you had not tried KerraMax Care?
Q11	Would you be happy to continue using KerraMax Care? If "YES", please specify what in particular you like about KerraMax Care

Aetiology	Number of responses
Leg ulcer	20
Cellulitis	2
Trauma	9
Lymphoedema	1
Diabetic foot ulcer	2
Ulcer (not specified location)	6
Other wound types	15
Not specified	46
	101

(Table 1; n=20 leg ulcer, n=2 diabetic foot ulcer, and n=6 unclassified ulcer). The exudate level was recorded as serous (thin and straw coloured n=64), purulent (yellow and thick n=20), or the question skipped (n=17). It was noted that all the wounds treated in this evaluation were moderate to heavily exuding wounds and KerraMax Care was utilised as the primary dressing.

Clinicians were asked to rate KerraMax Care in terms of managing exudate from the wound/ulcer (from 0 to 10, with 0 reflecting poor exudate management and 10 good management), compared with poor exudate management reported with previous dressing choices. There were (n=72) nurses who scored KerraMax Care between 8 and 10 for exudate management with a mean score of 7.6 and a median score of 8 (Figure 1) indicative of high satisfaction with dressing versus previous dressing selection when exudate management was suboptimal. Previous dressing choice(s) was answered by (n=87) DNs, and skipped by (n=14). The results are shown in (Table 2), evaluators could state multiple dressings based on previous regimen.

DNs recorded any change in the condition of patients' surrounding skin, using a scale of 0 to 10, with 0 denoting that there was increased maceration with KerraMax Care and 10 that the maceration reduced. This is important when one considers that macerated skin is at risk of breakdown and a source of patient discomfort. A mean score of 6.8, median of 7 was recorded (Figure 2).

Patients were asked by the DNs to rate KerraMax Care in terms of comfort and convenience (again from 0 to 10), with a mean score of 7.2 (median 7.5)

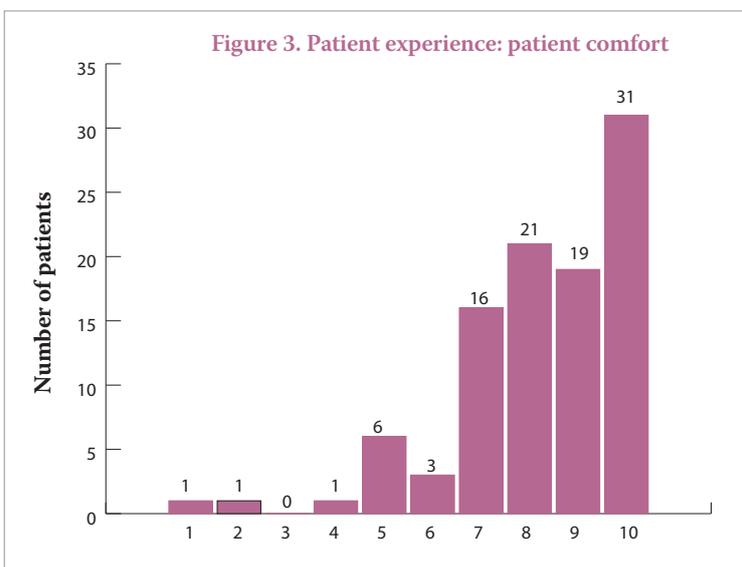
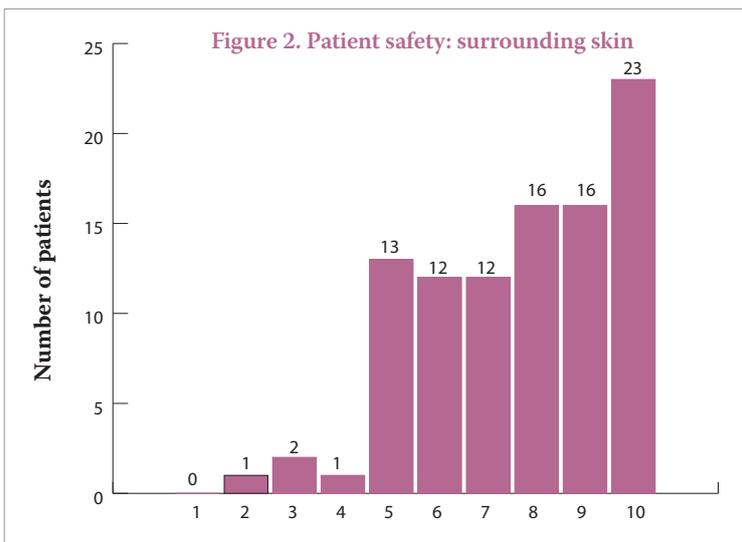
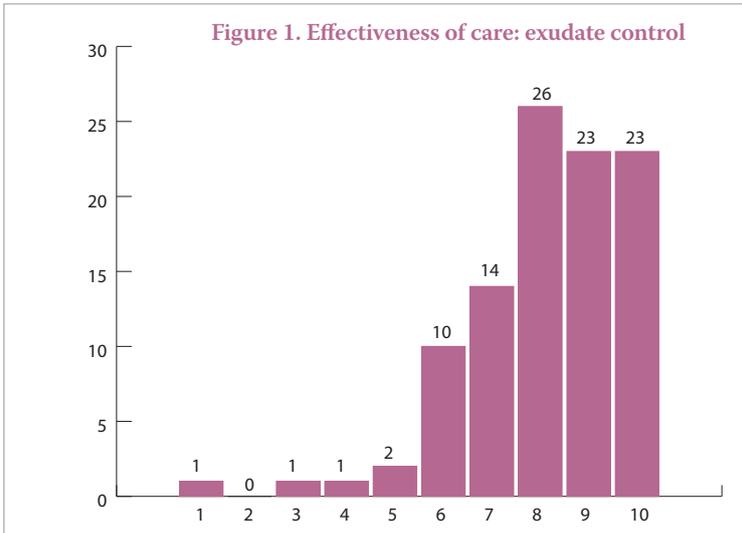


Table 2. Previous dressings used

Dressing	Number of responses
Aquacel Foam/Aquacel Foam Non Adhesive/Aquacel Foam Adhesive	18
Aquacel Lite	3
Aquacel	7
Xupad	46
Opsite	2
Cosmopore	1
Allevyn Gentle/Allevyn/Allevyn Adhesive	6
Eclipse	17
Zetuvit (Plus or E)	8
Flivasorb	1
Other	5
	114

for the former and a mean score of 7.5 (median 8) for the latter (Figure 3 and Figure 4 respectively).

In terms of comfort ($n=72$) patients scored KerraMax Care between 8 and 10 indicating a very high positive patient experience. When patients are positive about a dressing this translates to less stress and anxiety which in turn reduces pain and improves not only healing but also concordance. Convenience is a key measure as the use of KerraMax Care can positively impact the lives of the patient through reduction in dressing changes.

Clinicians commented on reduced maceration ($n=19$) and a reduction in exudate ($n=13$) as the main benefits seen clinically with KerraMax Care. However improvements in healing in terms of increase in granulation tissue or reduction in wound size ($n=19$) were also noted. When DNs were asked if KerraMax Care met their expectations for dressing requirements, 66% felt that it did, whilst 32% stated that it exceeded their expectations. The majority of DNs (98%) would be happy to continue using KerraMax Care as their superabsorbent of choice, citing patient comfort, high absorption, improved concordance and reduced visits as the main reasons.

DISCUSSION

This product evaluation was designed to evaluate the patient safety, patient experience and effectiveness of KerraMax Care to enable clinicians to match dressing selection to the wound. Jones and Barraud (2014) noted that KerraMax Care was effective at managing exudate, reducing maceration of surrounding skin whilst increasing patient comfort and convenience ($n=54$). Because KerraMax Care wicks fluid horizontally it is able to manage even purulent, viscous exudate as noted in this evaluation with 20 wounds, where the exudate was described as purulent and, therefore, more viscous, KerraMax Care was able to absorb and lock away the exudate.

The most commonly treated wounds in the UK are leg ulcers (Guest et al, 2015), which have a profoundly negative impact on a patient's mobility and quality of life. Likewise, this evaluation revealed that the majority of wounds managed by DNs in this North West NHS Trust were due to ulceration, where the management of exudate can often be a challenge for both the clinician and the patient. Clinically, KerraMax Care has been found to be effective under compression as the dressing has a thin profile and distributes exudate evenly throughout the dressing. Healthcare professionals know that uncontrolled exudate, with its concomitant malodour, excoriated and macerated skin, is an increased burden for patients living day to day with a wound. It is important to note the need to reduce the frequency of dressing changes as this translates to less wound disturbance, decreased pain for the patient as well as a reduction in cost of consumables and nursing time (Romanelli et al, 2010).

CONCLUSION

This evaluation of the patient safety, patient experience and effectiveness of KerraMax Care in the management of moderate to heavily exuding wounds of various aetiologies has demonstrated that KerraMax Care can offer DNs a useful addition to their toolbox of dressings. Patients and DNs confirmed that KerraMax Care has the ability to enhance care by improving comfort, controlling exudate and leakage, thus preventing maceration and surrounding skin problems. Whilst a reduction in visits is not the reality for all patients, a reduction for even a small number of patients has the ability to reduce the increasing pressures on the DN services.



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REFERENCES

- Darzi (2008) *High Quality Care For All – NHS Next Stage Review Final Report*. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/228836/7432.pdf (accessed 22.08.2017)
- Dowsett C, Shorney R (2010) *High Impact Actions for Preventing Pressure Ulcers in the Health Service*. <https://www.hsj.co.uk/topics/nursing/high-impact-actions-for-preventing-pressure-ulcers/5021559.article#.UvDQNbbPaUc> (accessed 22.08.2017)
- Drew P, Posnett J, Rusling L et al (2007) The cost of wound care for a local population in England. *Int Wound J* 4(2): 149–55
- Eming S, Smola H, Hartmann B et al (2008) The inhibition of matrix metalloproteinase activity in chronic wounds by a polyacrylate superabsorber. *Biomaterials* 29(19):2932–40
- Gardner S (2012) *Managing High Exudate Wounds - How to Guide*. Available at: http://www.wounds-uk.com/pdf/content_10474.pdf (accessed 22.08.2017)
- Gorecki K, Brown JM, Nelson EA et al (2009) European Quality of Life Pressure Ulcer Project group. Impact of pressure ulcers on quality of life in older patients: a systematic review. *J Am Geriatric Soc* 57 (7): 1175–83
- Guest JF, Ayoub N, McIlwraith T et al (2015) Health economic burden that wounds impose on the National Health Service in the UK. *BMJ Open* 5 (12):e009283 doi:10.1136/bmjopen-2015-009283
- Hampton S, Coulborn A, Tadej M, Bree-Aslan C (2011) Using a superabsorbent dressing and antimicrobial for a venous ulcer. *Br J Nurs* 20(15):S38–43
- Jones J, Barraud J (2014) *An Evaluation of KerraMax Care in the Management of Moderate to Heavily Exuding Wounds*. Available at: https://www.crawfordhealthcare.com/images/docs/6_-BJCN_2014_An_evaluation_of_KerraMax_Care_in_the_management_of_moderate_to_heavily_exuding_wounds.pdf (accessed 29.08.2017)
- Jones JE, Robinson J, Barr W, Carlisle C (2008) Impact of exudate and odour from chronic venous leg ulceration. *Nurs Stand* 22(45):53–61
- NHS Benchmarking (2016) *Community Services*. Available at: <https://www.nhsbenchmarking.nhs.uk/projects/community-service> (accessed 22.08.2017)
- Meaume S, Telom I, Lazareth I et al (2004) The importance of pain reduction through dressing selection in routine wound management: the MAPP study. *J Wound Care* 13(10):409–13
- Ousey K, Atkin L, White R (2013) Superabsorbent wound dressings: a literature review. *Wounds UK* 9(3):52–60
- Posnett J, Franks P (2008) The burden of chronic wounds in the UK. *Nurs Times* 104(3):44–5
- Romanelli M, Vowden K, Weir D (2010) Exudate Management Made Easy. Available at: http://www.woundsinternational.com/media/issues/272/files/content_8812.pdf (accessed 22.08.2017)
- Stephen-Haynes J (2011) Managing exudate and the requirements of absorbent dressings. *British Journal of Community Nursing* 16(3):S44–9
- Tennervall GR, Hjerrigren J (2005) Annual cost of treatment for venous leg ulcers in Sweden and the United Kingdom. *Wound Repair Regen* 13(1): 13–8
- 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, Abel M, Ruth P, Hipler UC (2012) *Comparison of the antimicrobial effect of two superabsorbent polymer-containing wound dressings in vitro*. Presented at: Wounds UK Conference, Harrogate, 12–14 Nov
- Wiegand C, White RJ (2013) Binding and inhibition of protease enzymes including MMPs by a superabsorbent dressing in vitro. *J Wound Care* 22(5):221–9
- Woo K (2010) Wound-related pain: anxiety, stress and wound healing. *Wounds UK* 6(4):92–8