

Wound cleansing: sorely neglected?

Michelle Carr

Abstract

Many authors are questioning the need to cleanse every wound, yet despite limited investigation on the topic, wound cleansing can reach ceremonial proportions and remains an integral element of wound management. Recent systematic reviews have examined physiological elements of wound cleansing and concluded that few practices are able to be definitively supported or refuted. The results of several influential studies that have been inducted into wound cleansing legend are marred by poor methodology, raising questions about their conclusions. While many authors dismiss wound cleansing practices as ritualistic, few studies have considered how nurses actually cleanse wounds. No studies have yet examined the psychological, cultural and socioeconomic aspects of wound cleansing and considered patient expectations and preferences.

This discussion paper examines nursing literature to consider the purpose of wound cleansing, to discover how nurses are actually cleansing wounds, to consider non-physiological elements of wound cleansing and to summarise recently published recommendations. This paper concludes that there is little evidence to guide wound cleansing practices and that there is an urgent need to further examine all aspects of this topic.

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Despite enormous resources being expended on wound cleansing, both in terms of consumables and nursing time, this topic has been sorely neglected in the nursing literature. An explosion in the research and development of wound care products has not been proportionally matched in the inspection of any of the elements of wound cleansing.

It is evident that this aspect of wound management is very much in its infancy, with little comment made in the nursing literature prior to the late 1980s. Subsequent research is limited, at times based on the opinion of experts with no substantiating evidence, quoted as a secondary source or originating from studies with methodological flaws. Articles cited in this paper are commonly more than 5 years old, demonstrating the scarcity of research on this topic.

Summaries of the available evidence have begun to be published in the nursing literature, with a consensus reported

that there is little evidence to support or refute wound cleansing practices and that further study is needed. A neglected aspect of wound cleansing investigation is the importance of patient expectations and preferences.

The concept of holism emphasises the importance of understanding and treating the whole person rather than breaking down, studying and treating only the component parts. Thus, this paper will not only examine the physiological components of wound cleansing, but will also consider the psychological elements of cleansing.

While the wound cleansing process can reach ceremonial proportions, basic parameters of the topic have yet to be set. For example, there is some discrepancy in the definition of the term wound cleansing. Towler¹ states that wound cleansing “refers to the application of fluid to aid the removal of exudate, debris, slough or contaminants, but not the use of dressings or mechanical debridement”. The Joanna Briggs Institute (JBI) best practice information sheet entitled *Solutions, techniques and pressure in wound cleansing*² states that, for the purpose of that information sheet, wound cleansing is defined as “the use of fluids to remove loosely adherent debris and necrotic tissue from the wound surface”. However, Fletcher³ reports that cleansing has “two main components: washing, to remove loose wound and dressing debris, and debridement, to remove adherent necrotic or sloughy material”. Thus debridement is seen by some as part of wound cleansing; others believe it to be distinct from

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cleansing. An agreed definition is required if protocols are to be established to guide practice.

The purpose of wound cleansing

Preparing the wound for application of a dressing is one of the visible tasks performed in a series of steps to tend to a wound. Two primary functions are seen to be achieved by wound cleansing; physiological and psychological.

Physiological

The physiological aim of wound cleansing is to remove any material that may delay healing to create an environment that enhances wound restoration. This includes materials within the wound that may become a foci for infection such as foreign materials, remnants of previous dressing products, necrotic or sloughy tissue or excess exudate⁴. Wound cleansing may also be performed to allow visualisation and thorough assessment of the wound bed.

Traumatic wounds, by the nature of their origin, are often polluted with organic and inorganic foreign bodies which will need to be removed in order to reduce the focus of infection and to allow the assessment of the wound⁵. However, there is little support for cleansing clean epithelialising and granulating wounds. Hampton⁶ contends there is little value in cleaning a wound that is healing, as there is little to be cleaned away from the wound and the cleaning process could damage new cells.

While it is advisable to remove foreign bodies or devitalised tissue, whether it is possible or even desirable to remove the wound's microbial flora is a more complex issue⁷. Normal wound repair requires bactericidal activity, nutrients and growth factors present in the inflammatory wound exudate; removing these substances in a healthy granulating wound will not assist the wound to heal⁸. If the resident bacteria do not initiate a host response and act as part of the host defence mechanism by preventing other bacteria taking hold, there is little reason to remove them^{3,4}.

All open skin wounds are inhabited with bacteria, with levels of bacterial involvement described as contamination, colonisation and infection. Contamination is the presence of bacteria on the wound surface that are not actively multiplying; colonisation occurs when bacteria have adhered to the tissues and are actively multiplying but elicit no host response, and infection occurs when bacteria invade healthy tissue and overwhelm the host's immune response⁹. Whether the bacteria progress from contaminating to infecting is determined by several factors, including the amount of bacteria per gram of tissue and the ability of the host to

mount an effective immune response¹⁰. Wound infection delays wound closure, disrupts wound tensile strength, increases hospital length of stay and costs, and escalates the patient's risk of bacteraemia, sepsis, multisystem organ failure and death¹¹.

It is unclear what role wound cleansing has in helping reduce the bioburden and thereby preventing such calamitous outcomes. Pudner⁸ hypothesises that "cleaning an infected wound may remove some of the pathogenic organisms sitting on the surface of the wound, but it will have little effect on the organisms within the wound bed and the surrounding tissue". While this is a logical assumption, it does not appear to be evidence-based.

Wysocki¹⁰ and Hampton⁶ discuss the emerging concept of the biofilm that can be formed within chronic wounds. Biofilms are a complex community of bacteria within a slimy coating that allows the bacteria to be protected against the host's defences, antiseptics and antibiotics. Formation is common on devitalised tissue and infected medical devices (for example, orthopaedic devices) and can be tenacious and very difficult to dislodge. The effectiveness of removing these biofilms and tenacious slough by the application of a

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wound cleansing fluid has not been established. Mechanical debridement or the application of appropriate dressings that promote autolytic debridement may be more successful in this circumstance.

The concept of questioning whether every wound needs cleansing is increasingly highlighted in the literature. Most authors caution the nurse to determine if the wound actually needs cleaning before undertaking the task and believe that this is the most ritualised aspect of wound cleansing^{4,6,12,13}. As early as Thomlinson's (1987) study, the necessity of cleansing all wounds was being challenged¹⁴. Young¹⁵ reports that "it is an obvious facet of nursing in which great emphasis is placed on the acquisition of technical skill, while little thought is given to the research and rationale behind it". Hampton⁶ states that the patient must be protected against clinical infection but that hand washing and not wound cleansing is the single most important part of that prevention.

Unnecessary or inappropriate cleansing can traumatise or remove newly produced delicate tissues, reduce the surface temperature of the wound and remove exudate, which itself may have bacteriocidal properties, thus delaying wound healing¹⁶. Any detrimental effects caused by the act of cleansing must therefore be considered along with the benefits. Glide⁷ reports that "if cleaning the wound cannot be justified in terms of improving the wound environment, then it is probably best left alone". However, this statement does not acknowledge the psychological impact wound cleansing can produce.

Psychological

Patients may derive significant psychological benefits from undergoing wound cleansing as an expectation of the 'proper' way of tending wounds and enhancing feelings of cleanliness and wellbeing. Because patient situations are uniquely based on cultural, geographical and socioeconomic circumstances, it is vital to remember that wounds do not exist in isolation, but rather are part of the person and their environment. Any treatment of that wound must be made after an holistic assessment and recognition of the patients' wishes. Fletcher³ states that "anecdotal evidence suggests that some patients and nursing staff feel cheated by a swift dressing change and that there may be a perception that 'the task' has not been performed properly without a thorough cleanse of the wound".

While it is unacceptable to cleanse a wound just because professionals expect it as part of the wound management regime, the decision to cleanse a wound should be influenced by patient expectations and wishes. For example, Fernandez,

Griffiths & Ussia¹⁷ report that, in post-operative patients, showering did not demonstrate significant differences in the rate of infection. However, it was reported to enhance a feeling of cleanliness and wellbeing derived from the hygiene and motivation of showering. Similarly, other authors report that, in certain circumstances such as chronic leg ulcers, excised pilonidal sinuses, malodorous and heavily exuding wounds, cleansing may have psychological benefit for the patient by assisting them in becoming socially clean and improving patients' self esteem¹⁸.

For some, participating in wound cleansing may also reinstate feelings of self-determination and normality after being in the unfamiliar sick role following the sustaining of a wound. Showering allows the patient, if appropriate, "to remove their own dressing and shower themselves, which gives them greater control and autonomy. Patients may also apply their own dressings following showering, thus involving them directly in their care and maintaining independence"¹⁹.

Griffiths, Fernandez & Ussia²⁰ undertook a study examining the outcomes of wounds irrigated with tap water versus normal saline in the community setting. They stated an interesting outcome was that those patients whose wounds were showered before they were selected for the study, stated that they preferred this method of cleansing to irrigation. For many, showering every day is quite normal and tending to their wound in the shower may contribute to reducing feelings of abnormality and result in less focusing on their wounds.

The spread of mass media has also had a profound influence on attitudes and expectations of health provision and conveys a whole variety of information which individuals would not have otherwise acquired. For example, television shows based on fictional medical dramas have exposed viewers to health delivery as interpreted by the producers in the context of a dramatisation with television ratings in mind. This may or may not necessarily be what is appropriate in reality. Some patients may also have a comprehensive understanding of the concept of infection, antiseptics and hygiene and detailed expectations of the care they should receive. There have been no studies examining the patients' expectations of wound cleansing techniques and solutions.

It should also be acknowledged that any patient expectation studies performed may only be applicable to certain parts of the population. Each culture has a healing system that mirrors the beliefs of its members²¹. In Morison's¹⁶ discussion of wound cleansing agents, she reports that "ancient cleansing agents such as lizards' dung, pigeons' blood and boiling oil have fortunately gone out of fashion". This, however,

may not be the case in all human cultures. While they are extreme examples, many population sub-groups may have particular beliefs about wound cleansing that are acceptable and important to them. What might be seen to be normal and commonsense human sentiments and practices are inescapably influenced by social factors. There have been no studies examining cultural influences on wound cleansing expectations nor on the effects of receiving or being denied these practices.

Wound cleansing may also have a negative psychological impact on patients. The lack of research and direction ensures that a wide and varied collection of practices prevail. Patients are treated according to the practitioner's personal, informal clinical policies based on their own knowledge of health practices and clinical experience²². These 'rules of thumb' differ from practitioner to practitioner, account for much of the variation in clinical practice and constitute formidable barriers to change. Any variation in wound cleansing practices may be confusing for the patients and may cause anxiety when they move between health care settings or are cared for by different nursing staff.

Current wound cleansing practices

Numerous narrative articles make broad statements that wound cleansing practices are ritualistic and outdated and urge nurses to abandon them to ensure optimal outcomes for their patients. A closer scrutiny of the sweeping statements damning wound cleansing practices gives rise to two important questions – how are nurses currently cleansing wounds and what does the literature recommend as best practice? An examination of nursing literature does little to answer either of these questions.

Research recording what nurses actually do when they clean wounds is all but absent and thus it is mainly anecdotal evidence that is used as the foundation to make any comment about current practices. Three studies were identified that examined the wound cleansing practices of nurses.

Firstly, Davies (1999)²³ presented the results of a survey completed by 25 nurses to evaluate practices and knowledge of wound cleansing. His questionnaire asked – how frequently do you clean a wound, what solution do you normally use to clean a wound and how do you apply the solution? Although only a small sample size, the results revealed a range of answers to each question, with several practices contradicting what Davies states is available evidence-based suggestions for practice. For example, 15% of respondents continued to use antiseptic (chlorhexidine gluconate or Betadine) to clean wounds and 55% use cotton wool. The Surgical Material

Testing Laboratory recommends that fibre shedding gauze and cotton wool should not be used to clean wounds as it may impair healing^{5,22}.

Secondly, Russell (1993)²⁴ conducted a survey of 220 nurses in one hospital and found 75.6% of the sample used cotton wool to cleanse wounds and 46.6% used antiseptics. Lastly, McIlwrath & Johnson (1997)²⁵ explored the wound care knowledge of medical and surgical wards and a community health centre within the same health district. They found that 20% of hospital nursing staff and 12% of community health nursing staff were using antiseptics inappropriately.

Fletcher³ reports that “the persistent use of cotton wool in wound cleansing is a clear example of ritualistic practice” and that “even now many standard dressing packs still contain cotton wool balls”. However, the use of antiseptics and cotton wool as described by the survey's respondents may be merely convenience rather than ritual. It is possible that these products have simply not been removed from the shelves and replaced with more appropriate solutions or products. Removing the products from circulation would decrease accessibility and nurses would perhaps use what is at hand instead. These studies were undertaken many years ago and should be repeated to ascertain what nurses actually do in the contemporary setting.

Evidence-based wound cleansing practices

The literature on wound cleansing is at times contradictory and requires critical evaluation for validity and clinical relevance. For example, Krasner (1992)²⁶ reports that “you can't just pull off the old dressing and apply a new one”. Conversely, other literature published both before and after that article state that routine wound cleansing is totally unnecessary^{16, 27}. Recently, meta analyses have appeared examining available literature to determine what, if any, evidence is available to support or refute wound cleansing practices. The latest publication is an information sheet which was collated and distributed by the JBI in 2006. However, the second sentence of that review cautions that “there is an urgent need to support these findings with rigorous research as some of the conclusions are based on single studies with a limited sample size”².

Early literature published on the topic of wound cleansing were mainly narratives, with other aspects of wound management applied to wound cleansing. Studies that subsequently emerged did not have adequate strength and methodological integrity to provide useful clinical guidance to health care professionals. “Some evidence may be misleading if the practitioner is inexperienced in the critical analysis

of research, making the implementation of evidence-based practice difficult to achieve"²⁸. The dissemination of research findings remains difficult due to the large population of individuals that deliver care, the small number of these individuals that have access to nursing research and the ability to critique this literature and translate the research into practice. The numerous and conflicting viewpoints make it difficult for the practising nurse to know which method, if any, is correct.

Several seminal papers and studies are reverently quoted in nursing literature but their research has never been replicated nor expanded. A prime example is Thomlinson's¹⁴ (1987) study which assessed the value of cleaning wounds with cotton wool balls held either by forceps, sterile gloved hands or ungloved hands disinfected with Hibisol (a chlorhexidine and alcohol handwash). Thomlinson also examined how to move the swab across the wound, that is, either one sweep towards the discharge, swabbing away from the suture line, or rubbing towards the discharge. This is the only published article examining how the swab should be moved across a wound and has been used relentlessly as the basis for discussion on wound swabbing.

Thomlinson's conclusion that no wound swabbing technique "gave a significantly better clean and all techniques resulted in redistribution rather than reduction of pathological organisms" is the quote most used by subsequent authors. However, from the wording of the article, it is not clear whether this statement is in reference to the manner in which to hold the cotton wool or the directions in which to move the cotton wool across the wound. Importantly though, the primary finding of this study that "it is safe to clean superficial wounds using cotton wool balls held by the fingertips when hands are cleaned with Hibisol", has not been similarly inducted into wound cleansing legend.

A closer examination of the study shows that it is influenced by methodological deficits (inadequate selection and description of the sample, procedure and study design) and therefore draws questionable conclusions. Critical interpretation of the resultant data is impossible as there are no tables listing the data nor description of what statistical analysis was performed. Despite these critical limitations, this study continues to be quoted as the underpinning for swabbing techniques. Nearly 20 years later, there are no studies that have replicated this work. In the last sentence of that paper, Thomlinson¹⁴ states that this is an area that requires further research and should "we be physically cleaning discharging wounds at all?"

While accepting that this work has many shortcomings, it would be inappropriate to dismiss this ground-breaking study as having no merit. It was instrumental in raising the awareness of wound cleansing and stimulating debate on the topic, but the assumption of the results as being the basis for evidence-based practice should not have occurred. This study should have been replicated and extended long ago, with stricter methodology and adequate sample sizes. There is the danger of the adoption of research, if it is quoted often enough, becoming a new ritual.

Medical student Thompson²⁹ published a report in 1999 examining studies to determine whether iodine solution or sterile saline provided lower infection rates than tap water when cleansing lacerations. Thompson reported that, of the 179 papers examined, only five were deemed of sufficient quality and relevance for inclusion in the analysis. The findings were presented in a table with key features of each. The conclusion was three sentences long, stating that infection rates remained at 5-10% regardless of the intervention and that the cheapest and most easily obtained solution should be used; thus tap water was the treatment of choice for cleaning recent wounds prior to closure. This review was published in a medical journal, which may not have been readily accessible to nurses.

The first systematic review of wound cleansing to be published in the nursing literature was by Fernandez, Griffiths & Ussia¹⁷ in 2001. The results of this study were presented with a much larger discussion than that offered in Thompson's report. The outcome criteria included infection and healing rates. In 2001 Fernandez *et al.* undertook a systematic review of randomised and quasi-randomised controlled trials (RCTs) testing protocols for the cleansing of acute and chronic wounds with particular attention to solution and techniques used. Of the 34 studies identified, only nine were deemed suitable for inclusion in the analysis. They then published a review in the Cochrane Library in 2002³⁰ and an updated version in 2005³¹, assessing the effects of water compared with other solutions for wound cleansing. The 2002 report contained two RCTs and four quasi-randomised trials (QRTs) that met the selection criteria. In preparation for the 2005 review, five further studies were identified, but only three met the inclusion criteria. The 2005 report identified that there "is insufficient evidence to support or undermine the routine use of tap water for wound cleansing"³¹.

The latest publication on wound cleansing, the JBI information sheet entitled *Solutions, techniques and pressure in wound cleansing*² lists 12 recommendations based on the best available evidence. This publication and the preceding 2003 and 2004 JBI best practice information sheets on the topic

were based on the collective work of Fernandez, Griffiths & Ussia's previous publications. The 2006 JBI review highlights the paucity of quality research available. When examining solutions to use to cleanse wounds, 14 RCTs were eligible for inclusion. Only six RCTs and three comparative studies were of sufficient quality to be considered when examining techniques of wound cleansing. A mere three RCTs and one comparative trial were available to guide practice on the optimal pressure with which to cleanse wounds.

Of the 12 recommendations offered in the 2006 JBI review, only two are rated as Grade A evidence, which is defined as "effectiveness established to a degree that merits application". Two recommendations were rated as Grade E evidence which is defined as "effectiveness not established". The remaining eight recommendations were rated Grade B, C or D which corresponds to effectiveness established to a degree that suggests "application", "warrants consideration" or "limited effectiveness" respectively.

Normal saline and potable tap water

Fletcher³ contends that most authors state that "normal saline should be the solution of choice because it is isotonic, it is relatively inexpensive, available in a variety of volumes and presentations and is widely available in hospital and community settings". The use of normal saline being preferable to potable tap water in cleaning all wounds has not been upheld in the latest JBI review. The focus of five JBI (2006) recommendations for wound cleansing solutions with Grade A, B and C evidence concludes that potable water is suitable for cleansing simple lacerations in children, lacerations and post-operative wounds in adults and chronic wounds. However, acceptance of the use of tap water as a wound cleansing agent may be delayed in some arenas as it may be seen to contrast with the concept of sterile dressing changes. Commentary by two senior nurses in the *Nursing Times* journal stated that they would have serious concerns about the use of tap water as it directly contradicts what they had been taught about wound care³².

Antiseptics

Two and a half millennia ago, "Hippocrates recommended washing wounds in tepid water, with only very dirty wounds to be washed with much diluted vinegar"¹⁶. In the mid 19th century, the discovery of antiseptics by Lister, coupled with Pasteur's germ theory of disease, led to an awareness of hygiene in preventing disease and infection and to antiseptics becoming popular as a wound cleansing choice.

Late in the 20th century, the indiscriminate use of antiseptics in wound cleansing was challenged due to an understanding

of the detrimental effect they may have on the healing tissue. Young (1995)¹⁵ reported that "the literature unanimously rejects topical antiseptics as routine cleansing agents because of their ineffectiveness and cytotoxicity". Recent publications have, however, begun to question this broad dismissal of antiseptics as a wound cleansing agent, with Oliver (1997)¹² reporting that the evidence is less than compelling. Much of the experimental evidence clearly demonstrating the adverse effects of antiseptics on cells was obtained *in vitro*, while there have been no clinical trials that have consistently proven their effectiveness or toxicity on open wounds³³.

Fletcher³ states that the general consensus is that antiseptics are not justified in the majority of cases, but that they may have some benefit on heavily colonised or infected wounds. The JBI best practice information sheet (2006)² recommendation states with Grade B evidence that irrigating contaminated wounds with 1% povidone-iodine reduces infection rates, while soaking with 1% povidone-iodine did not reduce the bacterial count. No comment was made on the effect of using antiseptics on clean granulating wounds.

New dressing technology has recently allowed the formulation and delivery of certain antiseptics to be used in the reduction of bacterial bioburden and cleansing of heavily colonised or infected wounds. These dressings are "often aimed at creating a slow, sustained release of antiseptic agent over time, which enables lower effective concentrations to be used with greater efficacy"³⁴. And, further, that this may improve their use and acceptance. Interactive antimicrobial dressings, for example cadexomer iodine and nanocrystalline silver dressings, are broad spectrum antimicrobials that reduce bacterial counts on wounds and enhance the healing process.

Showering

The JBI best practice information sheet (2006)² produced two recommendations in relation to showering as a technique of fluid delivery and wound cleansing. With Grade A evidence, it was noted that showering did not impact on the infection or healing rates of post-operative wounds. It was noted in two RCTs that patients in the showering group felt a sense of health and well-being derived from the hygiene and motivation of showering. Once the wound edges are sealed, bathing and showering are not thought to increase the risk of infection of post-operative wounds³⁵. The second recommendation was offered with Grade C evidence that showering for cleaning ulcers and other chronic wounds should be undertaken with caution.

Other authors comment on the logic of using normal saline to cleanse wounds after having already showered with the

dressings off. "Often a patient is bathed to remove faecal contamination from a wound and is then subjected to wound cleansing using an aseptic technique and sterile saline. Realistically, will the saline remove any debris that the bath could not?"¹⁵. In addition, patients with "certain wounds, such as pilonidal sinuses, consider showering an essential part of their progression towards full recovery and therefore routine wound irrigation may be unnecessary"¹⁸. However, care needs to be taken to ensure that showers are adequately cleaned following use to reduce the risk of self or cross contamination.

Pressure

The one recommendation in the JBI best practice information sheet (2006)² for the amount of irrigating pressure required to reduce inflammation and infection, was identified as 13 pounds per square inch (psi). This was concluded from a single study comparing the infection and inflammation rates of wounds irrigated with a bulb syringe or delivered by a 12cc syringe with a 22 gauge needle. It was noted that the criteria for infection were subjective.

The other three studies identified in the JBI best practice information sheet² investigated far lower pressures of between 0.05psi and 8psi. These did not show any statistically significant difference in infection and complication rates or, in one trial, a reduction in bacterial counts. There was no comment made on the consistency with which the pressure of 13psi is reproducible with delivery by a syringe and needle, and therefore may be unreliable and user dependent. The consequences of irrigation may include splatter and splashback, providing potential danger for nursing staff and possibly leading to cross infection.

Swabbing

The JBI best practice information sheet (2006)² states that there are no RCTs to support or refute the common practices of swabbing and scrubbing as wound cleansing techniques. Narrative reports discussing swabbing were located in the nursing literature advising of the importance of a structured swabbing method; however, these recommendations are not acknowledged as being based on any research.

Barr³⁶ reports on how to achieve appropriate cleansing while scrubbing a wound by using circular motions, gradually increasing in size, always moving away from the centre. She cautions that "at no time should the sponge or gauze be brought back to the centre as this would contaminate the cleansed area". Trevelyan³⁷ also agrees that "when cleansing a wound it is important always to work outwards away from the wound". The extent to which bacteria are removed

during the swabbing and what impact this has on infection or healing rates are not clear.

Conclusion

Wound cleansing is one of the visible steps in the process of tending to wounds; however, there is a paucity of research identifying how nurses actually cleanse wounds and few recommendations are available to guide best practice. It would appear that traditions, individual interpretations, institutional bias, workplace culture and the availability of products could all contribute to the multitude of techniques and solutions used to cleanse a wound. These influences have yet to be fully explored.

There is general agreement by most authors that each wound should be individually assessed and wound cleansing considered in relation to a particular wound rather than in general terms. An holistic model would direct that patient expectations and preferences be incorporated into the wound cleansing plan, but these influences have yet to be examined by nursing scholars. Fletcher³ asserts that there is no single correct way to clean a wound or the surrounding skin, although there are a number of important considerations. Does the wound really need cleaning, what is the safest method that causes no ill effects and what is acceptable to the patient? Until there is further study fully exploring this topic, clinicians will have to be guided by these considerations.

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Kerraboot®

Promotes Wound Healing in delayed or non-healing wounds



Journal of Community Nursing



Figure 1: Multiple, superficial, chronic non-healing ulcers of four years duration in an 84 year old patient



Figure 2: Ulcer at day 21 following management with Kerraboot®. Granulation tissue is visible and the skin appears healthy and strong.

Female, aged 84, multiple superficial chronic non-healing ulcers, 4 years duration, mixed arterial/venous aetiology, 9 hospital ulcer related admissions (mean 6+ weeks), high exudate levels, angina, arthritis, MRSA positive, insulin dependant diabetes, multiple previous dressing regimes attempted including foam, honey, and paste. Walker A. Kerraboot Case Study. Journal of Community Nursing. Feb 2006 20:2

Journal of Tissue Viability



“Using Kerraboot meant that Mrs. H did not have to undergo an amputation and the ulcer healed at a faster rate than expected. Patient comfort at dressing change was greatly improved and....a complex, time consuming process became a relatively simple procedure.....worthy of further research” Butterfly S. A novel approach for lower limb ulcers – Kerraboot. Journal of Tissue Viability Nov 2005 ; 15:4 (28-30)

Randomized Control Trial, Kerraboot vs Standard (Advanced) Wound-Care. “Despite the Kerraboot arm being heavier (100.46 vs. 94.39) and with larger ulcers at the baseline (1.66 vs. 1.33) there was a comparable decrease in mean ulcer size in both treatment groups. It should be noted that the only ulcers to heal in the standard care group were newly established ulcers, whereas Kerraboot healed both newly formed ulcers and those that had failed to heal with previous standard care...despite more sloughing reported at entry in Kerraboot group...overall healing profile favored the Kerraboot group, when complete healing and the amount of granulation were taken into consideration” (Conference Poster Kings College Hospital, London, UK. Results later published in Practical Diabetes International)



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