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EDITORIAL
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Ten top tips from *Wounds International* in 2014

Suzie Calne
Editor

Wounds International is delighted to announce that we are now averaging over 50 000 visitors to the website each month from 150 different countries. In October and November 2013, we recorded a large jump in our figures, mainly due to the interest created around the International Wound Care Conference held in Kuala Lumpur, Malaysia in October.

It is hugely encouraging and rewarding that so many clinicians are taking an active interest in the content of *Wounds International*. Unsurprisingly, the most popular and often downloaded articles continue to be the practical papers – especially the "Ten Top Tip" series, which focuses on practical aspects of wound management. With this in mind, we plan to dedicate a greater percentage of the journal to this style of article.

Burns care and the vulnerable patient

In this issue, John McRobert and Krissie Stiles have written a "Ten Top Tips" feature on managing burns (page 9). He presented a talk on burns management at the Wounds UK event in Harrogate in November 2013, where the focus was on the role and responsibilities of the tissue viability nurse in managing burns, recognising that – in the UK – managing these wounds will increasingly be the domain of the tissue viability nurse, rather than the specialist burns nurse. John held the attention of the audience throughout his talk and described a number of case studies including some illustrating burns that occurred as a result of non-accidental injury and neglect. The most shocking of all the cases is also highlighted in this issue: a patient in a care home who had been placed in scalding bath water (page 14).

So much can be gained by sharing experiences and reporting clinical cases that are complex or rare and where insight and understanding can help improve patient care.

A picture of a wound speaks a thousand words

Presenting photographic evidence to support the text when writing a case report is critical to the value of the story. Unfortunately, however, the quality of the photographs submitted is frequently disappointing. Healthcare professionals are continually being asked to expand their skill sets and being an expert photographer is not necessarily seen as a frontline requirement for wound management. Nonetheless, photographs are often an important part of ongoing assessment and – now that so many of us have access to digital cameras and mobile devices – the opportunity to record wound progression in this way is becoming ever easier. There are some simple techniques that make a big difference to the quality of digital images of wounds presented by Beth Sperring and Ralph Baker (page 7).

Getting the word out about your service

Another feature of the expanding role of the clinical expert is the need to develop skills in marketing and communications. This need varies between countries and healthcare systems but, increasingly, clinicians are required at some level to help drive the promotion of their services; other healthcare professionals and patients need to know what is available and how to access specialist services. In view of this demand, "Ten Top Tips" for promoting a wound service is also included in this issue (page 15).

The New Year

2014 will see a number of changes and exciting new initiatives from *Wounds International*. These include more international events, webcasts and consensus documents. As always, we welcome new authors and would be delighted to consider papers focusing on innovation, case studies, or technology updates. It is important to share information about practice that has worked well but, equally, we are interested in experiences that have been less positive, but where lessons learned can be shared to maximise benefits to patients.

Suzie Calne
Editor, *Wounds International*

Wound management

***Wounds International's* clinical innovations section presents recent developments in wound care. This issue, we focus on innovations in wound management.**

Implementing evidence-based leg ulcer care in an Azorean healthcare centre

***Authors:* André Soares, Patrícia Pimentel, Filipe Correia, Diogo Borges, José Duarte, Sandra Silva**

The Azores are a Portuguese territory and comprise nine volcanic islands situated in the North Atlantic Ocean. The largest and most populous island in this archipelago is São Miguel, which is famous for its beautiful lakes and green mountains.

For decades, leg ulcer care in the Azores was not evidence-based; community nurses focused their attentions exclusively on the wound instead of the whole patient, ignoring the underlying cause. This situation led to inefficient, or even contradictory, practices and prolonged periods of ulceration.

Since 2008, Ponta Delgada Health Care Centre – which delivers care to 85 000 people, representing 33% of the Azorean population – has invested in training clinicians in the treatment of leg ulceration, as well as acquiring the materials for evidence-based care (dressings, bandages, and portable Dopplers). However, despite this investment, it was decided a new, innovative approach was needed.

In March 2012, a tissue viability team was formed, comprising two tissue viability nurses and a general practitioner. The team implemented a leg ulcer consultation in all 20 treatment rooms of the healthcare centre and 10 home care teams.

The objectives of the leg ulcer consultation were to effectively triage patients with leg ulceration; properly evaluate the patient concerning ulceration aetiology and factors that influence healing and quality of life; adequately implement an evidence-based plan of care according to patient evaluation; prompt referral of the patient for specialist intervention when required; and frequently revaluate the patient and correct the plan of care when necessary.

Regular visits were made by the tissue viability nurses to the community nurses at each setting to offer advice and training in clinical practice. One community nurse was chosen in each healthcare setting as a 'reference nurse' to coordinate the leg ulcer consultation. The integration of the general practitioner into the tissue viability team was essential to establish a referral protocol with the vascular surgery team of Ponta Delgada Hospital and to deliver medical care to patients with no access to GPs.

The reference nurses developed knowledge and skills in triage according to protocol, clinical and wound history taking, physical examination, ankle–brachial pressure index (ABPI) measurement, wound bed preparation, dressing selection, skin care, compression therapy, delivering patient education, referral to other healthcare professionals, recurrence prevention, and leg ulcer consultation outcome statistics.

Best practice protocol was based on the Riverside project in London[1] and the guidelines of the Royal College of Nursing,[2] Registered Nurses Association of Ontario, [3] Scottish Intercollegiate Guidelines Network,[4] Australian Wound Management Association,[5] and numerous scientific papers. Although the role of tissue viability nursing is established in England and Australia, this consultation was the first experience of clinical supervision of leg ulcer care on a large scale in Portugal.

To evaluate the impact of the leg ulcer consultation supervised by the tissue viability team, a descriptive and retrospective study was performed, pre- and post-implementation.

In this study, leg ulceration was defined as all ulcers occurring between the ankle and the knee, and present for 4 weeks or longer. The reference nurses completed a questionnaire for each patient identified. The annual treatment cost per patient was calculated by adding the nursing time and dressing cost from the previous treatment and multiplying it by dressing change frequency per week and then by 52 to find the annual total. Incidence and healing rate was calculated by consulting clinical records of the previous year. After 1 year, results of the previous treatment regimen and the new one were compared.

RESULTS

In the initial study, 78 patients were identified (35.9% male; mean age, 70.9 years). Bilateral ulceration was present in 10.3% (*n*=10) of these patients. In the post-implementation study, 55 patients were treated in the health centre (29.1% male; mean age, 72.7 years). This represented a reduction in leg ulceration of 29%. Bilateral ulceration reduced to only 3.6% (*n*=2) a year after

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implementation of the leg ulcer consultation. By contrast, the leg ulcer incidence increased by 28.2% from 1.27/1 000 (*n*=106) in 2011 to 1.77/1 000 in 2012 (*n*=147).

Although the ABPI is pivotal in determining ulcer aetiology,[6] it was performed only in 6.9% (*n*=6) of patients prior to the implementation of the leg ulcer consultation. After implementation, the percentage of patients with ABPI evaluations performed rose to 66.7% (*n*=38). The percentage of undiagnosed leg ulceration dropped from 39.6% (*n*=34) to 12.3% (*n*=7). The largest increase in aetiology was found in arterial (2.3% to 14%) and mixed ulceration (5.8 to 10.5%). Venous ulceration diagnosis showed little difference (51.2% to 52.6%) between both studies.

Prior to the implementation, only 52.5% (*n*=21) of venous ulcers benefited from compression therapy. After 1 year, the percentage rose to 96.7% (*n*=29). Regarding referral, the percentage of arterial and mixed ulcers referred to the vascular team rose from 28.6% (*n*= 2) to 100% (*n*=13). The referral of patients with venous ulcers of at least 24 weeks' duration rose from 75.0% (*n*=18) to 93.8% (*n*=15).

Before the implementation of the project, dressing change and wound cleansing were carried out using sterile tweezers and saline solution, with great implications on cost but no impact on healing. So, as part of the new project – and as supported by a Cochrane review[7] and other clinical guidelines[4–5] – a clean, rather than sterile, technique was adopted using tap water.

Given the Royal College of Nursing advice that leg ulcer dressings should be "low cost, simple to reduce risk of contact sensitivity and low, or non-adherent",[2] the use of alginate and non-adherent gauze became the first choice of treatment as part of the new project. Likewise, highly absorbent and expensive dressings containing carboxymethylcellulose or polyurethane were used only in highly exuding wounds.

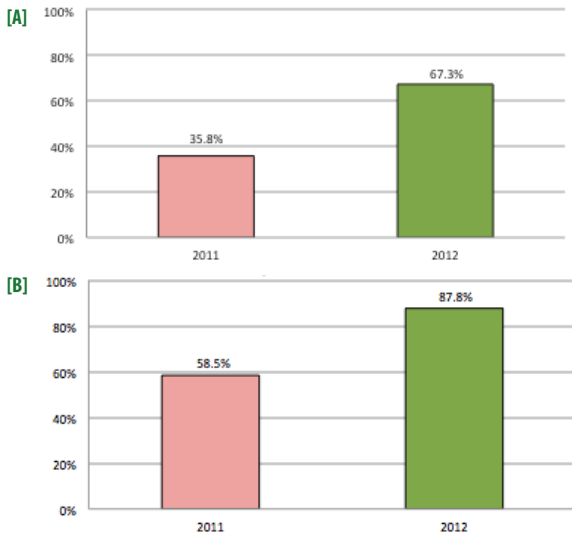

Figure 1. Leg ulcer healing rates at [A] 12 and [B] 24 weeks for 2011 and 2012.

Antimicrobials were used only when clinical signs of local infection were present.

These measures reduced the frequency of dressing change (average of 2.76 to 2.35 dressing changes per patients per week) resulted in the reduction of treatment cost per patient per year from €1143.93 to €777.50. Associated with the reduction of leg ulceration, the total cost of treatment of all patients reduced by nearly half (€86 787.18 to €43 402.99).

Related to the efficacy of the treatment, healing rate at 12 weeks increased from 35.8% (38/106) in 2011 to 67.3% (99/147) in 2012, and at 24 weeks increased from 58.5% (62/106) in 2011 to 87.8% (137/147) in 2012 [*Figure 1*].

DISCUSSION

The implementation of the leg ulcer consultation supervised by the tissue viability team proved to be an invaluable strategy in improving outcomes and reducing costs at the Ponta Delgada Health Care Centre. The positive results motivated the Azorean health secretary to authorise the dissemination of the leg ulcer consultation to all São Miguel healthcare centres, servicing some 137 830 people. It will be the first time a group of healthcare centres in Portugal will deliver a coordinated answer to the problem of leg ulcers.

The increase in leg ulcer incidence can be explained by the improvement of quality of care delivered that might have motivated leg ulcer patients to choose being treated in the healthcare centre rather then self-care or a private institution. Nevertheless, now that treatment protocols have been standardised and improved, the focus needs to be on implementing optimum prevention strategies, particularly for those patients at risk of recurrence. ■

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Ten Top Tips...
Taking high-quality digital images of wounds

Author:
Beth Sperring

Author:
Ralph Baker

"Use a picture. It's worth a thousand words."

This adage was used in a newspaper article in 1911.[1] The statement is also applicable in wound care, as an image allows for assessment and mapping of a wound.

Clinical images potentially enhance the assessment of the patient, their wound and their environment.[2]

When providing care at a distance, via telehealth or telemedicine, wound images are frequently taken to assist in diagnosis and treatment of the patient. These photos are often taken by unskilled photographers, including nurses, relatives, or even the patient themselves. The quality of images will vary, but the aim is always to use the images in association with the patient's wound and medical history; using written descriptions to evaluate the wound, plan treatment options and monitor progress.[3,4]

Attention should always be on the patient, ensuring that they are well informed, comfortable and aware of the processes.[5] Privacy must be maintained.[6]

Managing wound images and patient information involves issues of consent, confidentiality, privacy and security.[7] Images in this article are used with the written permission of the patient. Addressing these issues involves all health services and professionals. Secured messaging systems must be used when sharing images and the healthcare professional should be aware of, and ensure compliance with, policies, regulations, and acts that govern practice.[8,9]

This article provides 10 top tips for the unskilled photographer[10,11] with the aim of helping to produce clear, crisp images of wounds that will be clinically informative.

1 USE A DIGITAL CAMERA OWNED BY YOUR PLACE OF WORK

The camera should have the following specifications:

- Simple to use – "point and shoot"
- SD memory card – at least 4GB, two cards will ensure sufficient memory
- Macro function (identified by the flower icon; *Figure 1*) – switches the camera into a close focus mode. This feature is present on most compact digital cameras

Figure 1. Macro function – identified by the flower icon highlighted here – switches the camera into a close-focus mode, allowing more detailed images of the wound to be taken.

2 SET THE TIME AND DATE ON THE CAMERA

This is important as the camera records the date of an image, which is the date shown in any database system used to store images.

3 GET THE LIGHT RIGHT

Ensure the camera flash is set to "on"– not "auto" or "off" [*Figure 2*].

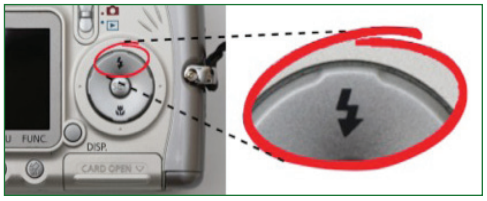

Figure 2. The flash function should be set to "auto".

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"Wound images provide a visual reference, not matched by memory or the written word."

4 TAKE THE FIRST PHOTOGRAPH OF PATIENT DATA

The first photograph should display the patient's demographics, including patient name/identification number, date of birth, location, and a brief clinical history. Store this photograph with the patient's other images to help identify images for quality improvement audits.

5 MAKE THE WOUND THE ONLY FOCUS

Remove clutter from the background and use a white drape behind subject or limb [*Figure 3*].

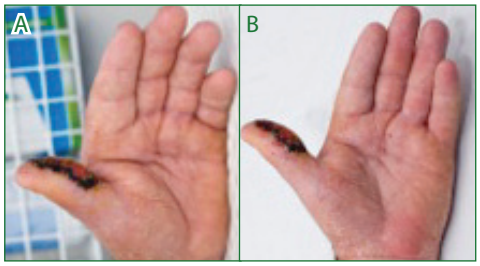


Figure 3. [A] Do not photograph the wounds with clutter in the background. [B] A white drape should be placed behind the wound to allow clear visualisation.

6 STANDARDISE THE VIEWS TAKEN OF THE WOUND

Check any previous photographs taken of that wound to ensure you take similar views, magnification and angles. This will assist when reviewing images over a period of time.

7 GET THE ANGLE RIGHT TO TAKE A PROPORTIONAL IMAGE

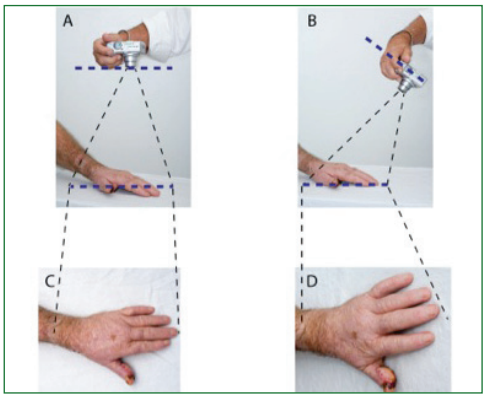
When taking a photograph, ensure the camera body is parallel to the subject [*Figure 4A*]. This results in a photograph that presents accurate proportions of the subject [*Figure 4C*]. If the camera body is not parallel to the subject [*Figure 4B*], the proportions of the subject will be distorted [*Figure 4D*], making assessment of the size and extent of the wound in the image difficult.

8 ESTABLISH THE WOUND LOCATION FOR THE VIEWER

The first photograph should show the location of the wound in relation to the body.

9 CLOSE-UP IMAGES ESTABLISH DETAIL FOR THE VIEWER

Figure 4. [A] Correct position for the camera body to be held in order to take [C] a proportional view of the subject. [B] Holding the camera body at an angle to the subject results in [D] a distorted image.



Take a close up photograph using the macro setting (as described in top tip 1; *Figure 1*). Place a ruler near the wound to give an accurate indication of wound size [*Figure 5*].

An L-shaped ruler is preferred, however, a standard ruler also works well. Check that the photograph is in focus on the screen before leaving the patient; blurred photographs should be discarded as they can be misleading.

Figure 5. A close-up image including scale.

10 SECURELY SAVE AND STORE THE IMAGES

Upload the images to a secure location or database at the end of the consultation and delete the images from the camera. The most secure method of removing images is to reformat the DS memory card via the camera menu.

CONCLUSION

Wound images provide a visual reference, not matched by memory or the written word.[12] These simple guidelines will assist the unskilled photographer to achieve clear, crisp wound images. The use of a digital camera facilitates the taking and storing of images for an improved diagnosis and treatment, when care at a distance is necessary. ■

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Ten Top Tips...
The management of burn wounds

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Author:
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Many people will experience a burn injury in their lifetime. Burn injuries range from the most severe – requiring high levels of critical care and surgical intervention – to simple burns, for which self-treatment may suffice.

Burn injuries pose a considerable burden to heathcare resources across the globe.[1] In the UK, the figures are considerable, with 250 000 patients presenting in primary care, and a further 175 000 presenting to A&E annually. Approximately 40% of patients who require hospital admission are admitted to non-specialist units.[2]

Healthcare professionals with varying degrees of experience in wound care manage a significant number of minor burns in the community. This article is aimed at healthcare professionals who do not regularly come into contact with burn wounds and highlights some of the key principles in burns assessment and management.

1 PROMPT FIRST AID IS ESSENTIAL

The intense early inflammation associated with untreated burns can cause progression of depth over 48 hours, so prompt first aid can limit the extent of the primary burn injury.[3]

Cool the burn for a single block of 20 minutes under cool running water.[4] If cooling is commenced within 3 hours of injury, it can significantly reduce pain and oedema, decrease cell damage by slowing cell metabolism in hypoxic tissue, decrease inflammatory response, stabilise vasculature and ultimately improve wound healing and reduce scaring.[5]

Cool running water dissipates heat better than a cold compress. Cold water or ice should be avoided as they can cause vasoconstriction, deepening the burn or causing frostbite. Likewise, be wary of hypothermia while cooling burns by observing the maxim "cool the burn, warm the patient". Prolonged cooling of extensive burn wounds (>20% total body surface area [TBSA] in adults; >10%TBSA in children) can cause hypothermia.[6] Cooling should be suspended if hypothermia is suspected.

2 REMEMBER ANALGESIA

Depending on depth, burns can be exceedingly painful. Analgesia will be required for the patient's comfort, and during treatment to enable superficial debridement and accurate assessment. Ongoing analgesia may be required to ensure pain-free dressing change.[7] Furthermore, some evidence suggests that emotional stress may slow down wound healing and compliance with physiotherapy,[8] therefore good pain management is critical.

Opioid analgesics are the backbone of analgesia for the burn patient, providing a range of potencies and administration options. The more simple analgesics, such as paracetamol, that have antipyretic and opioid-sparing properties should be considered for every patient. The dynamic evolution of the patient's pain – from the initial burn injury to eventual healing – should be reflected by a similarly dynamic and flexible therapeutic plan that, when planned in conjunction with the patient, covers background, procedural, breakthrough, and postoperative pain.[9]

3 EFFECTIVE CLEANSING

Maintaining a clean burn wound is important. Remove debris and – for burn blisters greater than the size of the patient's little fingernail – deroof blisters.[10] This process allows assessment of the burn wound bed and prevents uncontrolled rupture of the blister, decreases the risk of blister infection, relieves pain in tense blisters, and reduces restriction of movement of joints.[11]

In cases where the patient has scalp burns, or if the affected area is very hairy, shave

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"Assessing the burn is key in clinical decision-making, and in the decision to refer."

the hair 2 cm–5 cm around the burnt area. This allows for more accurate assessment of the extent of the wound, and helps avoid complications like folliculitis.

A study of burn cleansing by Hayek et al[12] found an almost 50/50 split in burns units that used either tap water or sterile saline. However, the units reported using only sterile saline in outpatients and for smaller burns. Broadly, burn wounds should be cleaned using an aseptic, non-touch technique.[13]

4 ACCURATE ASSESSMENT

Assessing the burn is key in clinical decision-making, and in the decision to refer (see also Top Tip #7). Size and depth are the two factors by which burn wounds are primarily classified:

Size. A range of methods for estimating the extent of a burn are available. Burns extent is recorded as a percentage of TBSA. Lund and Browder's[14] method charts the percentage of body area burned using a chart that sections the body into portions for easier calculation of extent. The palmar method takes the palmar surface of the patient's hand as being equivalent to 1% of total body surface area (TBSA), enabling the clinician to estimate the extent of the burn wound.[15] The "Rule of Nines" method is advocated by the British Burn Association's Emergency Management of the Severe Burn Course. This method is a good, quick way of estimating medium to large burns in adults. The body is divided into areas of 9%, and the total burn area can be calculated. It is not accurate in children.[16]

Depth. It is important to keep in mind that a single episode of wounding may include regions of varying depth. In summary, burn depth can be classified as follows:

- ***Superficial burns*** [*Figure 1A*] involve only the epidermal layer and are highly painful. Healing is rapid and uncomplicated. Superficial areas should not be included if using burn size to determine fluid resuscitation.[17]
- ***Superficial partial thickness burns*** [*Figure 1B*] extend through the epidermis downward into the papillary, or superficial, layer of the dermis. These wounds become erythematous because the dermal tissue becomes inflamed. When pressure is applied to the reddened area, the area will blanch, but demonstrate a brisk or rapid capillary refill upon release of the pressure, which is a hallmark of the superficial partial-thickness burn. Thin-walled, fluid-filled blisters will develop within minutes of the injury.[18] This burn type will heal without surgical intervention. Dressings should be changed every 2–3 days to allow for regular reassessment. If initially assessed in a burns unit, these wounds can be treated in the community.
- ***Deep dermal burns*** present as blotchy, cherry red skin loss.[19] Blanching may not be seen on assessment as a result of capillary damage.[17] Deep dermal burns take a long time to heal and may require skin grafting.[20] Once assessed in a burns unit these wounds can be cared for in the community by district or practice nurses. Patients will need regular reviews by the burns service. The deeper dermal damage means this burn type may take several months to fully heal.
- ***Full thickness burns*** [*Figure 1C*] can have a dry, white, waxy, brown, or black appearance. Wounds are insensate due to nerve damage and rarely heal without surgical intervention.[21] Full thickness burns will need to be assessed by a plastic surgeon as soon as possible so

Figure 1. Examples of [A] superficial, [B] partial thickness, and [C] full thickness burns.

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"Clinicians should become familiar with their local policies and procedures on referral to their regional burns service."

any surgical intervention can be planned promptly. Early skin grafting has been shown to result in faster wound healing and a reduction in wound infection.[22]

5 DRESSING SELECTION FOR BURN WOUNDS

The following dressings should be considered when managing burns:

- Use cling film if transferring to a burns unit as a temporary dressing. This or any other dressing should not be applied onto a chemical injury until the chemical component has been sufficiently irrigated as guided by wound pH. It should be remembered that cling film should be only one layer thick and never used on face burns (also see Top Tip #10).
- For facial burns use liquid / soft paraffin or saline soaked gauze. All facial burns must be seen by a burns unit.[23]
- Atraumatic, low-tack dressings may be used. Non-stick silicone / lipo-colloid mesh dressings can be used as a primary layer, with secondary padding and joint to joint bandaging. Distal to proximal figure-of-eight bandaging will aid circulation and reduce oedema.[24] Tight bandaging should be avoided on limb burns, in case of oedema and swelling.
- For smaller burns non-stick foams are ideal dressings as they are easy to apply, easy to remove, maintain a moist wound healing environment and are available in a range of shapes and sizes.
- Topical creams, such as silver sulfadiazine, should be avoided.[25] Silver sulfadiazine should only be used if the wound has been assessed by a burns service as the creams can change the colour of wound tissue, making subjective depth assessment difficult.[26]
- Increased capillary permeability in the first 48–72 hours following a burn injury means increased exudate,[27] so these wounds should initially be dressed with a highly-absorbent dressing. Using the appropriate primary dressing as mentioned above will prevent dressing adhering to the wound. Dressings should be changed after 48 hours as strikethrough is likely.[28]
- Prolonged use of hydrogel dressings, especially in children and older people with larger burn areas, can cause hypothermia and should be avoided.[6]

6 ELEVATE TO REDUCE OEDEMA

Oedema occurs most commonly in the first 48 hours following burn injury. Oedema interferes with tissue perfusion and wound healing by increasing the diffusion distance between capillaries and cells.[29] Thus, where possible, the wounded area should be elevated to reduce swelling.

Slings should be avoided as these may restrict patient movement, pillows can be used when sitting or laying down. Principles of reduction should be adhered to including movement, compression, elevation or positioning of limbs for gravity assisted flow of oedema from limbs. The potential splining effect of slings will not control oedema, it will only channel fluid to an immobile area.[30]

7 KNOW WHEN AND WHERE TO REFER

The London and South East of England Burn Network (LSEBN) have developed the below referral criteria.[25] The LSEBN criteria are based on international evidence and expert opinion, but clinicians should become familiar with their local policies and procedures on referral to their regional burns service. Consider telemedicine if available, which allows pictures to be sent securely for expert review and treatment advice.[31] Referral should be sought in the following cases:

Adults:

- >3% TBSA partial thickness burn
- All deep dermal and full thickness burns
- All burns associated with electrical shock
- All burns associated with chemical burn
- All burns associated with non-accidental injury (see Top Tip #9)
- All burns to face, hands, perineum, feet
- All burns circumferential to limbs or trunk or neck
- All burns with inhalation injury
- All burns not healed within two weeks

Children:

- >1% TBSA partial thickness burn
- All deep dermal and full thickness, circumferential burns and burns involving the face, hands, soles of feet, perineum
- All burns associated with smoke inhalation, electrical shock or trauma
- Severe metabolic disturbance
- Burn wound infection
- All children "unwell with a burn"
- Unhealed burns after 2 weeks
- Neonatal burns of any size
- All children with burns and child protection concerns (see Top Tip #9)

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Other:
- All burns with other injury
- All burns with significant comorbidity or pregnancy
- All infected burns
- Any other case that causes concern, discuss with local burn service.

8 RECOGNISE THE IMPORTANCE OF FOLLOW-UP

Burns are dynamic wounds and can deepen in the first 72 hours, as demonstrated in seminal work by Jackson.[32] This is especially true of the partial thickness and deep dermal burns, where the tissue has the potential to heal or alternatively to progress to full thickness depth.[29] There are number of local (e.g. increased inflammation and impaired blood flow), systemic (e.g. hypovolaemia), and environmental (e.g. inappropriate wound management) factors that can lead to burn wound progression.[32]

Due to the dynamic nature of burn wounds, a follow-up review within 48 hours of the original injury is advised.[28] At this stage, the true depth of the burn should be apparent.

Analgesic requirements should be reviewed. As the burn wound heals, the nerve regeneration may cause an increase in wound pain and, therefore, an increase in analgesic requirements.[33] Patients' experience of poor pain management can lead to non-concordance with therapy and heightened anxiety regarding dressing changes, which will delay healing and, as a result, increase the likelihood of scarring.

The review should include assessment of the appropriateness of the dressing. A good burns dressing, as suggested by Alsbjorn et al,[26] and supported by Selig et al, should:[34]
- Maintain a moist wound environment
- Be non-adherent, absorbent, and maintain close contact with the wound
- Be easy to apply and remove
- Be painless on application and removal
- Protect against infection

Any burn wound not healed within 2 weeks should be referred to a specialist burns service for review.[25]

Post-burn wound care is essential to burns management and involves:
- Daily application of skin moisturiser for dry, flaky skin. This helps the often present pruritus.[26]
- Protection of healed areas from the sun with use of sun block for 6–12 months to prevent further thermal damage or pigmentation changes to the affected area.[28]
- Scar management by way of pressure garments or silicone to alleviate physical discomfort and functional limitation.
- Psychological support to deal with trauma of burn injury and living with disfigurement.

9 NON-ACCIDENTAL BURN INJURIES

Non-accidental burn injuries can present in any patient, but a high level of suspicion should be maintained by the clinician when assessing burns in small children[35] [*Figure 2*], older people, and vulnerable adult patients.

Consider non-accidental injury if:
- The mechanism or pattern of injury described does not match the injury sustained.
- There is a delay in presentation.
- There is inconsistency in history.
- There are signs of other trauma.
- There are certain patterns of injury (cigarette marks or bilateral "sock" or "shoe" scalds).
- Well-defined demarcation lines/ lack of splash marks.

Adults are also at risk of non-accidental injury, especially the elderly and other vulnerable people. Carers and clinicians should take a few minutes to really look at the injury and ask themselves if the injury matches the story. Where it does not, this can alert them to the possibility of potential neglect or abuse.

Figure 3 shows a patient who was hoisted into a bath. Carers stated that the patient screamed as soon as her skin touched the water. However, the buttocks have been fully submerged and the white waxy appearance and deeper cherry red areas to the buttocks and thighs suggest deeper and longer submersion.

10 CLINICAL CONSIDERATIONS FOR SPECIFIC BURN TYPES

Electrical burns
- An electrocution injury can cause deep cutaneous burns, cardiac arrhythmias, limb loss, and serious systemic effects.[35]
- Domestic (low) versus industrial (high) voltage injury:
  - Low voltage electrical injuries will cause localised, deep burns and may initiate arrhythmias.
  - High voltage injury will cause severe tissue damage, penetrating through fat, muscle, and bone. Resulting muscle

" Non-accidental burn injuries can present in any patient, but a high level of suspicion should be maintained by the clinician when assessing burns in small children, older people, and vulnerable adult patients."

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"Burn wounds, like all other types of wound that clinicians come across in daily practice, need accurate assessment, effective analgesia and effective treatment, with specialist referral when required with appropriate follow-up."

Figure 2. A non-accidental burn in a young child. Note the well demarcated nature of the burn and the lack of splash marks.

Figure 3. A non-accidental burn in an adult. The history of injury was inconsistent with the clinical presentation.

necrosis puts the patient at risk of rhabdomyolysis, leading to acute kidney injury. These patients are at higher risk of compartment syndrome and the irreversible damage to tissues may lead to limb amputation.

- Look for "entry" and "exit" sites (may not always have both), as these are associated with severe deep-tissue damage.
- Assess the patient's electrocardiography (ECG) rhythm. If the initial ECG is normal and there is no history of loss of consciousness, then no further ECG monitoring is needed. Otherwise, 24-hour ECG monitoring is required.[35]

Chemical burns

- Chemical burns continue to cause cutaneous damage until completely removed.
- Copious irrigation with water, away from healthy tissue to avoid further contamination. Adequacy of irrigation is guided by regular pH testing of the wound. Special attention must be paid to ocular chemical burns ensuring immediate irrigation with water (or if not available, normal saline), remembering to flip the lids and irrigating the fornices to remove any material that may be retaining chemicals.
- Do not wrap chemical burn wounds in polyethylene wrap (cling film) as it will contain the chemical, causing further tissue damage.
- Alkalis cause deep, penetrating burns and will require prolonged irrigation. The aim of water irrigation is to achieve a pH of 7.
- Certain chemicals may cause systemic effects or have a definitive antidote – contact TOXBASE (www.npis.org/toxbase.html) for guidance on management.
- The extent of chemical burn injuries can be limited by prompt and copious irrigation guided by pH testing strips.[36]

CONCLUSION

Burns can be complex, life-threatening wounds. Even relatively minor burns can have significant physical effects and require prolonged specialist treatment from specialist burn teams. Burns services are equipped not only to care for patients but also to provide help, guidance, and expertise to clinical staff looking after patients outside specialist environments. With good communication and information sharing, patients with non-complex burn wounds can be cared for in a more general environment with positive outcomes.

Burn wounds, like all other types of wound that clinicians encounter in daily practice, need accurate assessment, effective analgesia and treatment, and – if required – specialist referral and appropriate follow-up. ■

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Ten Top Tips...
Promoting your wound care centre

Author:
Nicole Walker

In many countries, health care is largely provided by private sector businesses. Elsewhere, traditionally state-run health services are currently undergoing a shift – not least due the burden of providing care for aging populations – towards the provision of specific health services by the private sector (see, for example, physiotherapy and podiatry in the UK).[1]

Whether in an existing private health provider environment, or part of a system that is evolving towards it, clinicians can play an important role in promoting their service. Engaging with both other healthcare professionals (i.e. referrers) and patients directly, the clinician in the private sector is a key player in helping drive the promotion of their specialism and ensuring a steady stream of referrals and patients. In view of this demand, the author – Director of PR and Marketing at Wound Care Advantage, a company based in Los Angeles, California, that specialises in managing wound care clinics and hospitals across the USA – provides ten top tips for promoting a wound care service.

1 START WITH A PLAN

In most wound centres the basic building block of treatment is a detailed patient care plan outlining a personalised care plan and treatment goals. This same concept should be the foundation of marketing a wound care clinic: when it comes to marketing campaigns, strategic planning is as important as the execution. Some elements of the marketing plan may be able to be achieved in-house, while others may be outsourced.

2 USE GRAPHICS AND PRINT MATERIALS

Graphics and print materials remain a valuable source of information for both patients and referring physicians. Surveys of healthcare professionals reveal that 95% of specialist clinics use printed handouts for their patients. To supplement the handout, 82% refer their patients to credible websites.[2]

A strong brand identity that integrates creative graphics and readable print materials establishes trust and professionalism with potential patients and referring primary care clinicians. The basic materials you should have in your centre include: patient guides, inpatient rack cards, appointment cards, and treatment-specific brochures.

3 CREATE A REFERRING PARTNER MANAGEMENT PROGRAMME

Getting patients through the door of a wound centre can be challenging, especially if primary care clinicians are hesitant to refer patients. Spending time to build strong relationships with referring clinicians is one of the most effective ways to increase overall volume of a centre.

It is important to reassure these clinicians that wound care is a specialty and not a replacement for primary care. Marketing pieces should clearly communicate that once healed, patients will return to their primary care clinician. This helps to build a strong programme where the individuals that are referring are partners, not competitors.

4 STRONG PR GOES FAR BEYOND THE PRESS RELEASE

Behind every company there is a story of the road they have travelled and this story can be used as a foundation for personalisation of a centre. Reporters do not want fluff; they want to see real results, people, and numbers. Meaning comes from what is said about the centre, not what the centre says about itself. Wound centres should show, not tell.

In addition to personalising the story and focusing on results, it is also important to build relationships at the local level. Networking

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"There has never been a better time for wound centres to be actively networking on social media sites. However, common sense must be used... Be conscious of patient privacy, local governance, and ensure that your wound centre has an ongoing process for maintaining your social media pages."

and building strong relationships within the industry, sub-industries and media is key. Public relations should never be just the press release. Writing and distributing the release is important, but centres must focus on the key components of the message that will ultimately reach the public.

5 VIDEO IS PERFECT FOR WOUND CENTRE MARKETING

The visual, easy-to-consume components of video marketing make it ideal for promoting wound centres. According to the Pew Research Centre,[3] 72% of US Internet users say that they have searched for health information online. Video is slowly becoming an expectation for many patients who prefer images and graphics to traditional text information. Wound centres should take full advantage of video for patient outreach and advocacy.

With advancements in HD video, it is easier and cheaper to create videos about your wound care team and programmes than ever before.

6 LIST BUILDING

With the massive explosion of patient data it is important to collect contact information of your patients for marketing purposes. However, the patients must opt-in to marketing to avoid problems with spam and adhere to patient privacy laws. Patients with chronic wounds often have recurring wounds, meaning they are likely going to be repeat patients. Clinic staff should seek professional advice when it comes to patient list building, to maintain a strong relationship with both current and former patients. Email addresses can be used for email blasts and driving patients and caregivers to a centre's social media channels to help them feel connected.

7 HAVE A PLAN FOR SOCIAL MEDIA

There has never been a better time for wound centres to be actively networking on social media sites. However, common sense must be used whenever you are communicating online. Be conscious of patient privacy, local governance, and ensure that your wound centre has an ongoing process for maintaining your social media pages.

Each social media platform can provide your wound centre with different marketing opportunities. Wound centres should develop their own presence on social media sites, regardless of their hospital system's pages.

Facebook is great for telling your story and interacting with your potential patient base on a local level, while Twitter is an excellent way to find people in your area and drive them to your Facebook page. Google+ has value for search engine optimisation purposes to get patients to your wound centre's website.

8 ENCOURAGE PATIENT REVIEWS

Today, patients look to the Internet before choosing their healthcare service providers. They want verification from the community that a provider is honest and capable. Online reviews provide a two-way window for both doctors and patients to keep an eye on practice strengths and areas that could be improved.

Many clinicians fear online patient reviews, but even a negative review is an opportunity to publicly respond and show that you care. Last year, *Forbes Magazine*[4] covered this topic, stating that clinicians should embrace reviews and actually encourage them. However, if the majority of online reviews are negative you need to invest more time figuring out why patients are not satisfied with your care.

9 CREATE A BLOG AND UPDATE IT WEEKLY

Blogs are a great way of keeping wound care patients informed of the services that your centre offers. A blog is a valuable resource to educate your audience about how nonhealing wounds start and how they can be healed with advanced treatments. Blogs are also a great vehicle for posting case studies, graphics, videos, and other vital marketing information. Blogging is an effective way to use context-heavy keywords to create content for your social media channels and increase your website's search engine presence. In general, aim for one engaging post per week.

10 WHEN IN DOUBT, HIRE AN EXPERT

Marketing a wound clinic is hard work that encompasses many components and hours. Ensuring that clinicians are engaged in this important process should not be at the expense of their clinical commitments. Outsourcing marketing efforts to experts can be helpful. For many centres, this may be the most efficient route as it allows your centre to focus on what it does best, which is heal wounds and care for patients. ■

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Expert commentary

Jacqui Fletcher, Fellow, NICE; Clinical Strategy Director, Welsh Wound Innovation Centre, Wales, UK

Setting up a wound centre is a daunting task for any clinician. The move from the familiar, comfortable way of working (which may not necessarily be the most efficient or effective) to a streamlined mechanism of service delivery with clear goals and measurable outcomes raises many challenges.

Perhaps the most obvious challenge is being certain that there is a need for the service; all too frequently, new services are developed without thought being given to the population size or density, or the logistics of how the service will be accessed. No wound healing centre can deliver great outcomes if it does not have patients. Therefore, relationship building, advertising, and setting clear referral criteria are crucial, both to success and also to measuring what has been achieved.

Around the globe, healthcare resources are becoming more and more constrained as the population ages and develops increasing levels of disease, such as diabetes, and lifestyle problems, such as obesity, all of which increase the likelihood of developing and living with wounds. Wound healing service delivery needs to reflect that people are developing chronic wounds at a younger age and have to manage their health care around the competing demands of family and work. The care and management of these patients needs to deliver outcomes within short time frames, or – when this is not possible – discuss with the patient and their primary provider (and, if relevant, funder of care) suitable treatment pathways for achieving realistic goals. This becomes much easier when care is focussed and delivered by a single, committed team.

Throughout the world, patients continue to have wounds without ever having a proper assessment or tailored management plan. Wound care may be delivered by well-meaning clinicians who are actually not skilled in wound management. It stands to reason that centralising wound care in a well-resourced, private facility that delivers evidence-based care can improve patient outcomes, reduce costs and resource usage, as well as improve quality of life for patients (and staff who find positive outcomes rewarding!).

Nicola Walker's Ten Top Tips brings a PR industry perspective on establishing a wound care centre that is effective in recruiting patients and sharing its successes. Clinicians working in these centres have an important role to play in this process: their expertise and the positive outcomes they achieve become the core of the message that will draw in new patients and encourage referrals from colleagues in other services. An example of striving for excellence in service delivery from the UK, is the recently published guidelines for practice on Optimising Venous Leg Ulcer Services in a Changing NHS.[1] *This document offers a framework to guide clinicians who have identified the need to develop a new service or to improve an existing one. Whether delivering care in the public or private sector, high-quality, efficient care – both financially and from a patient perspective – is key.*

Fully engaging in the service delivery process can be challenging, and it should be acknowledged that there are many creative, innovative, and knowledgeable clinicians working within systems that constrain their ability to deliver the care they know would be best for their patients as they compete against higher profile diseases, different agendas, cost constraints, red tape, and the need to "tick boxes".

Not all patients want, or are able, to attend a wound healing centre, but for those who do, these centres may offer a beacon of hope. They can provide patients with wounds the chance to work with a team of multidisciplinary clinicians all focused on wound healing, and who have the freedom to do just that! ■

"Not all patients want, or are able, to attend a wound healing centre, but for those who do, these centres may offer a beacon of hope. They can provide patients with wounds the chance to work with a team of multidisciplinary clinicians all focused on wound healing, and who have the freedom to do just that!"

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TECHNOLOGY UPDATE:

Biatain® Silicone dressings: A case series evaluation

Authors:
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A multicentre case series was performed as a product evaluation of two new silicone wound dressings, Biatain® Silicone and Biatain® Silicone Lite (Coloplast A/S, Humlebaek, Denmark). This addressed the dressings' overall usability (focusing on comfort for the patients and dressing handling for the healthcare practitioners) in a total of 39 patients who fulfilled the evaluation criteria. All investigators rated Biatain Silicone better than previously used products. The case series found that Biatain Silicone offers patients a comfortable treatment option with optimal exudate management for all evaluated wound types, and the dressings were very easy to apply and remove and stayed in place during wear.

Author details and acknowledgements can be found on the final page of this article.

Chronic wounds often produce copious amounts of exudate, which can have a significant impact on patients' quality of life and place increased demands of healthcare resources.[1,2] Excess moisture from exudate can damage the periwound skin, leading to maceration. This can increase the risk of infection and friction-related damage, with the potential for wound enlargement and delayed healing.[3] The increased proteolytic activity of chronic wound exudate can further inhibit healing by damaging the wound bed and surrounding skin.[4]

Absorbent dressings are the main option for managing exudate at wound level. Numerous dressings exist and these can vary in their fluid handling capabilities. Characteristics of an ideal wound dressing include maintaining moisture balance while effectively removing excess fluid from the wound bed.[2] Effective exudate management can reduce time to healing, prevent exudate-related problems such as periwound maceration and infection, reduce dressing change frequency and improve patient's quality of life.[2,5–7]

Biatain® Silicone and Biatain® Silicone Lite (Coloplast A/S, Humlebaek, Denmark) are two new wound dressings that combine the absorbent foam technology of Biatain foam dressings[8] with a soft silicone adhesive. They can be used on a broad range of exuding wounds.

In this article, the authors report the findings of a case series performed as a product evaluation in which both patients and healthcare practitioners (HCPs) assessed the dressings, by means of questionnaires, to determine the usability (focusing on comfort for the patients and dressing handling for the HCPs) of these two Biatain Silicone dressings.

METHOD

Test dressings

Biatain® Silicone and Biatain® Silicone Lite are new silicone wound dressings for moist wound healing and exudate management. Biatain Silicone is a flexible absorbent multi-layered foam dressing with a soft silicone adhesive. It is designed to expand and conform to the wound bed to facilitate absorption of exudate [*Figure 1*].

Biatain Silicone Lite is a thinner, more flexible version of the dressing, which can provide a closer anatomical fit to the wound and body for increased mobility.

Study design

The product evaluation took place in seven clinics or hospitals in the following countries: France, Italy, Spain and the UK. Approximately

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Silicone

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- With the new design of Biatain Silicone we introduce a perforated, soft silicone adhesive wound contact layer, which delivers a secure fit without compromising superior absorption.
- The unique Biatain foam conforms closely to wound bed ensuring superior absorption and an optimal moist wound healing environment.
- Safe and easy application due to 3-piece non-touch opening.
- Biatain Silicone is a foam dressing that can be used on all types of exuding wounds.

Biatain Silicone
– superior absorption with soft adhesion for general purposes

Superior Absorption®

Coloplast

"The study was initiated with a questionnaire that focused on the handling of the dressing (Biatain® Silicone; Biatain® Silicone Lite) and was completed with an evaluation addressing overall dressing performance."

Figure 1. Biatain® Silicone showing the characteristic conformable 'bubble' after absorption of exudate.

10 participants were recruited from each country (mean six patients per site).

The study was initiated with a questionnaire that focused on the handling of the dressing and was completed with an evaluation addressing overall dressing performance. The study ran for two weeks or six dressing changes after first application of Biatain Silicone (12.5 × 12.5 cm) or Biatain Silicone Lite (12.5 × 12.5 cm) dressings [*Figure 2*]. The questionnaires included questions on:

- **Patient history**
- **Inclusion characteristics**
- **Wound assessment**
- **Experience with the dressings (all questions apart from one were for the HCPs):**
  - ***"To what extent was the dressing easy to apply?"***
  - ***"To what extend was the dressing capable of handling the amount of exudate (ability to absorb)?"***
  - ***"How do you experience the dressing's ability to absorb exudate compared to the patient's previously used dressing?"***
  - ***"How well did the dressings stay in place during the product evaluation?"***
  - ***"How do you rate the dressing's ability to conform to the wound bed during use?"***
  - ***"To what extent was the dressing easy to remove?"***
  - ***"How was the dressing to wear?" (This question was for the patients.)***

Questions on experience with the dressings and those in the closing evaluation were answered on five-point rating scales (e.g. very good – good – average – poor – very poor).

Photos were taken on Day 1 and at completion of the product evaluation (as well as at each dressing change for some participants).

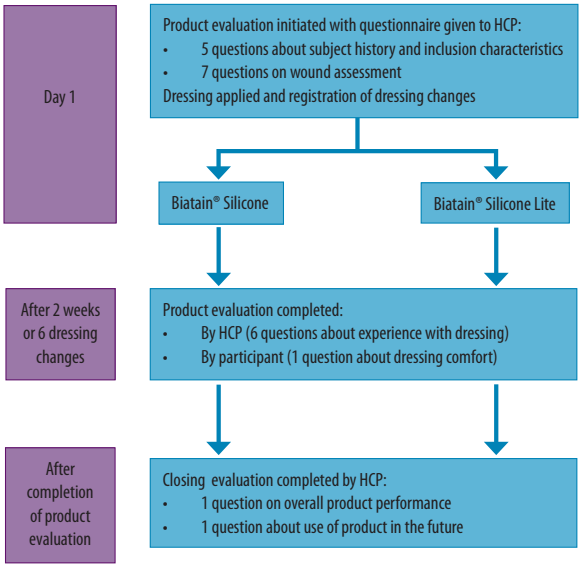


Figure 2. Study design schema. HCP, healthcare practitioner.

Study endpoints

The primary study endpoint was to investigate the HCPs' experience with the handling of the dressing. The secondary endpoint was to understand the participants' experience with wearing the dressing.

Study population

Individuals aged 18–85 years with various wound aetiologies including leg ulcers, pressure ulcers, diabetic foot ulcers or donor site wounds were recruited to the study. The exclusion criteria were wound infection, treatment with radiotherapy or chemotherapy (current or in previous 2 months), and systemic or local (in the periwound area) treatment with steroids (current or in previous month).

RESULTS

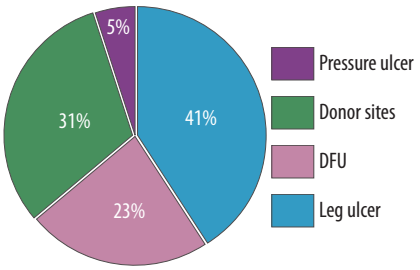
Patient demographics and disposition

Between 29 April and 1 August 2013, a total of 43 participants meeting the eligibility criteria were recruited to the study. Of these 43 participants, four discontinued, three due to adverse events (of which one was deemed related to the dressing) and one due to non-completion of the questionnaire. Therefore, the study population consisted of 39 participants: 21 female and 18 male, mean age 69 (range 23–89) years old.

Patient treatment history

Of the 39 participants in the study population, 16 had leg ulcers, 12 had donor site wounds, nine had diabetic foot ulcers and two had pressure ulcers [*Figure 3*]. At study inclusion, alginate/Hydrofiber® and foam dressings

Figure 3. Distribution of wound types at study inclusion.



were the preferred choices (in nine and ten participants, respectively) [*Figure 4*]. Alginate/Hydrofiber® dressings were the most commonly used in participants with leg ulcers, while foam dressings were most common among those with diabetic foot ulcers. Among participants with pressure ulcers, treatments were equally split between alginate/Hydrofiber and foam dressings. Among participants with donor site wounds, no dressing was applied at study inclusion.

Wound assessments

At study entry, 81% of leg ulcers and 100% of pressure ulcers had been present for >6 months and 78% of diabetic foot ulcers had been present for 4–6 months.

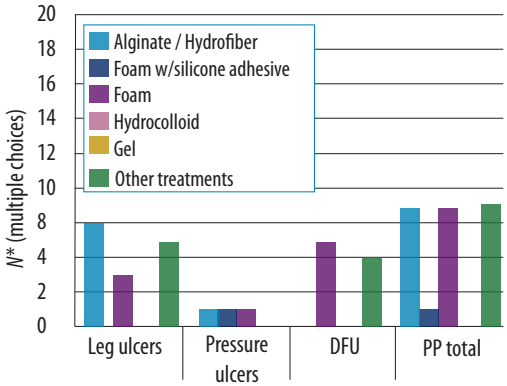
The number of dressing changes for the dressings used at study inclusion were two per week for pressure ulcers (*n*=2), two to three per week for leg ulcers (*n*=16) and an average of three per week for diabetic foot ulcers (*n*=9).

Exudate levels were assessed according to level (low, moderate or high), with high and moderate levels of exudate requiring more frequent dressing changes. Overall, 67% had moderately exuding wounds (69%, 78% and 67% among leg ulcers, diabetic foot ulcers and donor site wounds, respectively). Twenty percent of all participants had low-exuding wounds (50% among pressure ulcers) and 13% had high-exuding wounds (50% among pressure ulcers) [*Figure 5*].

The state of the surrounding skin was assessed in all participants (*n*=39) and was normal in 14, fragile in 14, irritated in nine, macerated in eight and painful in two participants (note that multiple choices for each case were allowed).

Upon entry into the product evaluation, 74% of cases received the standard Biatain Silicone product. The distribution according to wound type was Biatain Silicone among 75% of leg ulcers, 50% of pressure ulcers, 44% of diabetic foot ulcers and 100% of donor site wounds, while the remaining received Biatain

Figure 4. Dressings used at study inclusion. *Multiple choices were allowed. †"Other treatments" were antimicrobial dressing, honey dressing, gauze and film.



Silicone Lite. During the study, participants received Biatain Silicone dressings (Standard or Lite) for two weeks or six dressing changes. Overall, the mean wear time was 4.1 (range 1–11) days with a majority of dressing changes being routine dressing changes.

HCP experience with the Biatain Silicone dressings

When asked, "To what extent was the dressing easy to apply?" the HCPs rated the application as very easy or easy to apply in 92% of the cases, while in 8% of cases it was rated as average. No one rated the application as difficult or very difficult [*Figure 6*].

Evaluation of the dressings' ability to absorb exudate showed that in 90% of the cases, the HCPs found them to be very good or good [*Figure 7*]. When comparing with previously

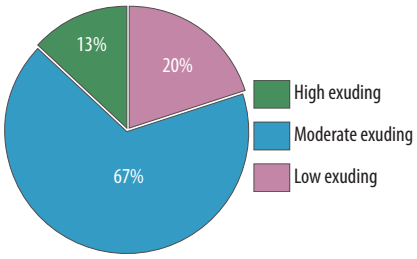


Figure 5. Distribution of wound exudate levels at study inclusion.

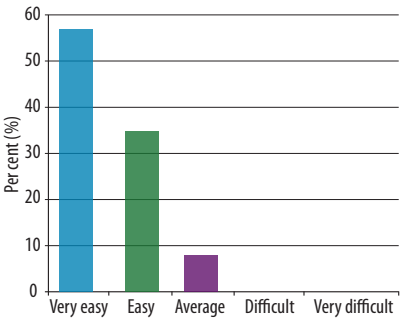


Figure 6. Ease of product application.

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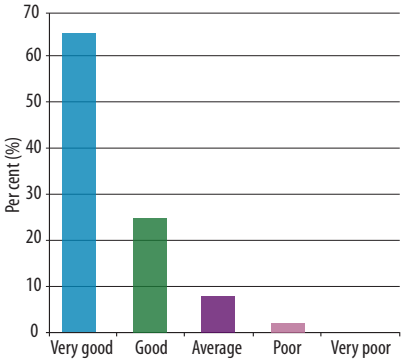
Figure 7. Ability of product to handle (absorb) exudate.



used dressings, 77% of responders (*n*=27) rated the Biatain products as much better or better at absorbing exudate (note that the donor site wounds had no previous dressings, thus were considered non-responders). Twelve percent of the responders rated the Biatain products as the same, while 8% rated them as worse than previously used dressings [*Figure 8*].

Response to the question, "How well did the dressings stay in place during the product evaluation?" was "very good" or "good" in 87% of the cases, with no HCP rating them as poor or very poor. The ability of the dressings to conform to the wound bed was considered very good or good in 92% of the cases, with none rating them as poor or very poor. All HCPs rated the products very easy or easy to remove.

For the closing evaluation, forms were received from six of the seven sites. In this questionnaire, HCPs were asked of the overall performance of the Biatain products in comparison with previously used dressings. HCPs from sites treating donor site wounds (*n*=12) could not respond as these wounds were all new, but for the remaining HCPs treating leg ulcers and diabetic foot ulcers (*n*=25), all rated the performance as better than that of previous dressings [*Figure 9*]. In response to the question, "Would you use Biatain Silicone again?", all six HCPs said "yes".

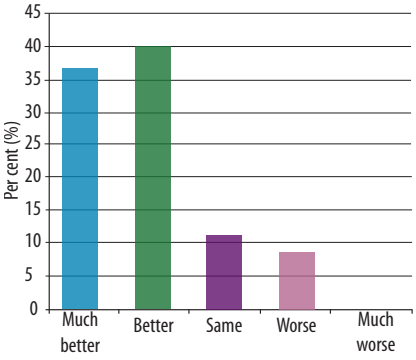


Figure 8. Ability to absorb exudate compared with previously used dressings.

Reasons given as to why the HCPs would use the Biatain products again included:

- **"Excellent results, it sticks well, no pain at removal, short healing time"**
- **"Good comfort for the patients with optimal exudate management. Optimal periwound skin management in almost all cases treated"**
- **"The dressing handles donor site wound exudate very well. First dressing change could be done after five days, and the dressing was not saturated. After only two changes (less than 15 days) wounds in donor sites were healed. Cosmetic features of the scar were satisfactory. Dressing is very easy to use (to apply and to remove). Patients refer very, very low level in pain in change dressing"**
- **"Very conformable. Patients liked it"**

Patient experience with the Biatain Silicone dressings

When asked, "How was the dressing to wear?", 62% of participants responded that the Biatain Silicone (Standard or Lite) product was "very comfortable" (highest rating on the five-point scale). Overall, 87% rated the Biatain Silicone dressings as very comfortable or comfortable, and one participant rated them as uncomfortable. No one rated them as "very uncomfortable" (lowest rating).

Adverse events

Adverse events occurred in three of the recruited patients (these were not included in the final study population as a result of discontinuation or death). Two adverse events were serious adverse events owing to hospitalisation (one case died); these were not considered related to the study product.

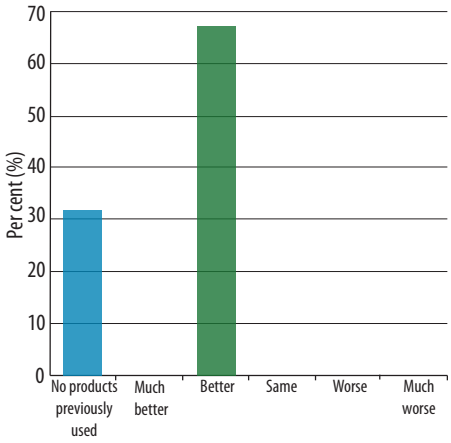


Figure 9. Comparison of the performance of Biatain Silicone dressings with previously used dressings.

In the third case, adverse events (described as rise of exudate, erythema, and rise of pain) were considered related to the dressing.

DISCUSSION

In this study, a total of 39 patients were treated with Biatain Silicone or Biatain Silicone Lite for two weeks or six dressing changes. To evaluate these products, patients and HCPs were given questionnaires to determine their experiences with the products. Overall, all the HCPs felt that these products performed better than previously used dressings [*Figure 9*] and that they would use them again. The majority of the patients (87%) considered the product to be very comfortable or comfortable to wear, and only one rated it as uncomfortable. The HCP also rated the dressing worse than the previous dressing on this particular patient. The patient was a 75-year-old lady who had a mixed arterial/venous leg ulcer and was dressed with a Biatain Silicone Lite dressing. On consideration, the standard Biatain Silicone dressing might have been a better choice as it is better suited for moderate- to high-exuding wounds.

Overall, the HCPs rated the Biatain Silicone dressings better than previously used products. From the case study findings, the authors conclude that these dressings offer patients a comfortable treatment option with optimal exudate management for all evaluated wound types. In addition, they were very easy to apply and remove and stayed in place during wear.

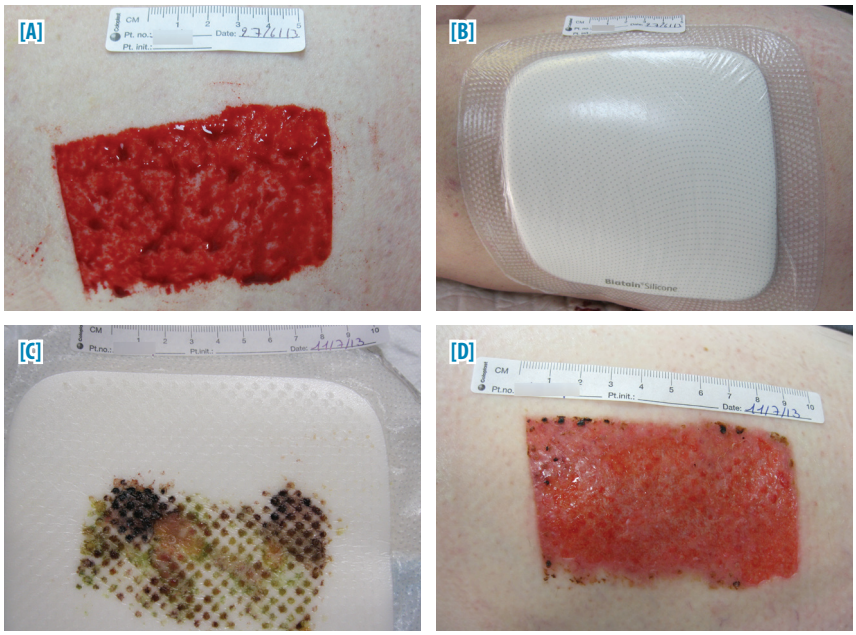
CASE REPORTS

The study evaluated the usability of the Biatain Silicone products; questions on clinical parameters such as wound progress and changes in condition of periwound skin were not included in the questionnaire. However, as photos were taken, we have included three case study examples using data included in the participants' healthcare records, and these are described below.

Case study 1 – donor site wound

This was a 66-year-old woman with a high-exuding donor site [*Figure 10A*]. After grafting, Biatain Silicone dressing was applied [*Figure 10B*]. The dressing showed very good absorption of exudate [*Figure 10C*]; this was worn for three days (mean wear time was 3.75 days). All dressing changes were routine and pain free. The dressing was easy to remove and did not leave any fibres in the wound bed. After two weeks of treatment the wound was improved with evidence of 30% granulation tissue and 70% epithelialisation [*Figure 10D*]. The dressing was very easy to apply, conformed well to the wound bed and stayed in place during wear time. The patient found the dressing very comfortable.

Figure 10. Case study 1 – donor site wound. [A] Donor site at baseline, [B] after application of Biatain® Silicone, [C] dressing after 3 days wear and [D] donor site after 2 weeks of treatment.



Case study 2 – diabetic foot ulcer

This was a 45-year-old man with a moderately exuding diabetic foot ulcer [*Figure 11A*]. The duration of the ulcer was six months and the periwound skin was fragile with signs of skin

Figure 11. Case study 2 – diabetic foot ulcer (DFU). [A] DFU at baseline, [B] Biatain® Silicone Lite dressing in situ, [C] dressing on removal, [D] DFU after 2 weeks of treatment.

"The majority of healthcare practitioners were highly impressed with the Biatain® Silicone dressings in terms of ease of application, ability to absorb exudate, ability to stay in place, ability to conform to the wound bed and ease of removal."

irritation, including inflammation, redness and raised edges. Ulcer size was 41 × 9 mm at inclusion. During this study the patient received Biatain Silicone Lite dressing [*Figure 11B*]. He found the dressing very comfortable to use. The dressing showed good absorption of exudate [*Figure 11C*]; this was worn for two days and all dressings changes were routine. After six dressing changes, the wound showed evidence of reduced inflammation and redness of the surrounding skin had improved [*Figure 11D*]. The dressing was very easy to apply and stayed in place during wear time. The dressing conformability was very good and the dressing was very easy to remove. At the final evaluation, the patient said he would like to continue using this dressing.

Case study 3 – leg ulcer

This was a 76-year-old woman with a moderately exuding mixed venous/arterial leg ulcer. The wound duration was 10 weeks and it measured 37 × 28 mm at baseline [*Figure 12A*]. The base of the ulcer showed the partial presence of fibrin and the periwound skin was normal. The patient received Biatain Silicone [*Figure 12B*] and graduated, multilayer compression bandaging. All dressing changes during the study period were routine. After two weeks of treatment the wound showed good progress with a reduction in size from 37 x 28mm to 34 x 25mm and the wound bed was 100% granulating. At three weeks the wound had further reduced in size to 28 x 18mm [*Figure 12C*]. The wound continued to heal after the conclusion of the study and was completely healed at seven weeks. The dressing was very easy to apply and remove, had good absorption capacity [*Figure 12D*] and conformed very well to the wound bed. The patient found the dressing very comfortable.

Figure 12. Case study 3 – leg ulcer. [A] Wound at baseline, [B] after application of Biatain® Silicone, [C] after three weeks of treatment, with evidence of wound healing and [D] dressing removal.

CONCLUSION

In this case series study based on a product evaluation of Biatain Silicone and Biatain Silicone Lite dressings, the primary endpoint (understanding HCPs' experience with handling the product) and secondary endpoint (understanding patient experience of wearing the dressing) were achieved.

The seven HCPs assessing a total of 39 study participants with leg ulcers, pressure ulcers, diabetic foot ulcers or donor site wounds all found that the overall performance of the Biatain products was better than that of previously used dressings (which were mainly alginate/Hydrofiber and foam). The majority of HCPs were highly impressed with the Biatain Silicone dressings in terms of ease of application, ability to absorb exudate, ability to stay in place, ability to conform to the wound bed and ease of removal. In addition, the patient experience was shown to be good with 87% responding that they found the dressing very comfortable or comfortable to wear. All HCPs stated that they would use the Biatain Silicone dressings again. ■

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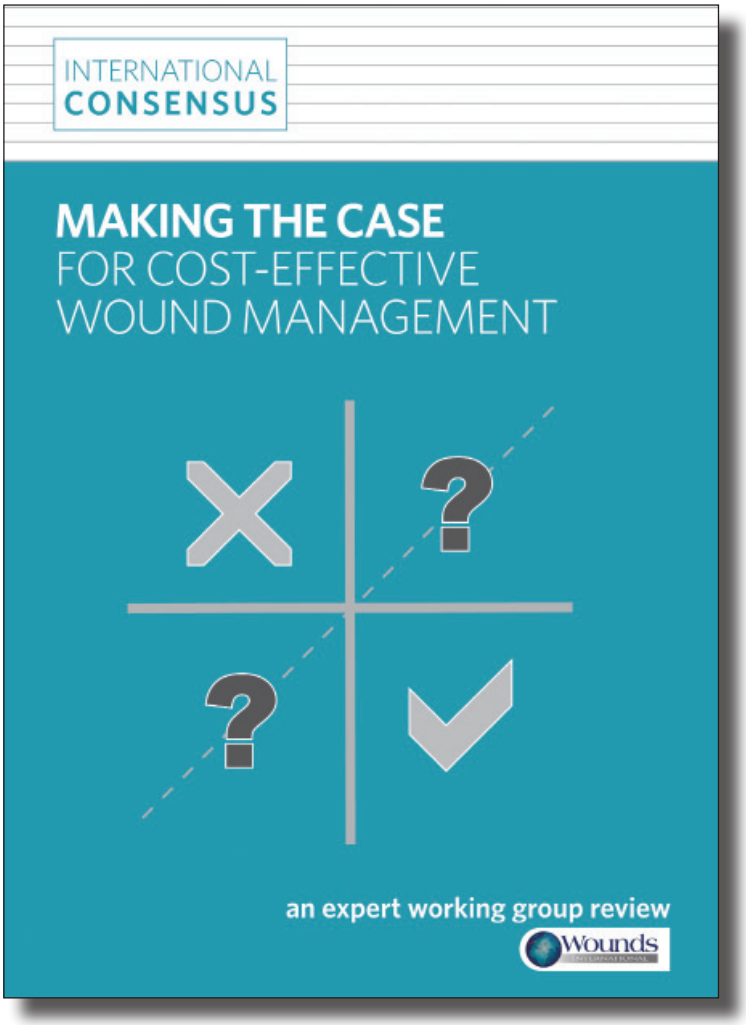

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Book review

A Closer Look At Silver: A Clinical Information Tool (CIT) To Help You Choose The Right Silver Wound Dressing For Your Patient!

Author:
Zena Moore

The cost-effective, efficient management of individuals with wounds is a key factor in providing quality wound management services. Whereas this espoused principle may seem relatively straightforward, in reality it is not. A lack of evidence to support dressing use, along with a lack of sustained availability of the right dressing for the right patient, often means treatment regimen selection is difficult[1]. *A Closer Look at Silver* reviews a clinical information tool (CIT) to provide clear guidance and advice for clinical practice.

Since the first use of silver in wound management, the number of products containing silver has risen sharply. Product variety, though welcomed, can cause confusion, especially if there is a lack of clarity regarding the relative merits of one product over another[2]. The authors here tackle this problem at the outset, clearly articulating silver's mode of action and how it works as a bioactive agent against harmful micro-organisms. The key message is that all silver products are not the same; silver exists in several forms, such as silver nitrate, silver chloride, and silver oxysalts. Silver is either ionic (carries a positive electrical charge) or non-ionic and to become biocidal (able to destroy micro-organisms) it must be in ionic form. However, not all silver products have the same bioactivity (the ability to exert an adverse effect on micro-organisms)[3].

The authors suggest there are advantages to using products that contain silver compounds with a higher reactivity and oxidation state as in these situations the dressing itself can contain a lower silver content yet still provide an effective biocidal effect. The advantages relate to production costs (less silver = less cost), toxicity (less silver = less risk), and an overall gentler product action (more neutral pH).

Understanding how silver dressings work makes product selection easier. However, an understanding of the importance of assessment, wound bed preparation, and an ability to articulate the key objectives in wound management are also central to success[4]. The speed of biocidal activity is one key factor influencing product selection and a useful table is included in the CIT to aid decision making.

A unique element of this CIT is the guidance on how to ensure the right products are available in the clinical setting.

Editors: Heather Orsted, Carla Spina, Edie Attrell, Chester Ho, Lindsay Kalan, David Keast

Publisher: Exciton

Available at: http://bit.ly/19MICHq

This guidance includes advice on evaluating relevant dressings and the methods available for communicating evaluation outcomes to the appropriate purchasing individuals.

Finally, the importance of clinician education is stressed. This is critical in ensuring adherence to patient safety standards.

Wound management occupies a significant part of health care delivery today and is likely to increase in the future due to predicted changes in population demographics. Silver is one important treatment modality, however, due to the vast array of silver products available, there is some confusion among clinicians surrounding which product to use and when. This CIT addresses this by providing clear guidance and is, therefore, of particular importance to practicing clinicians and will assist in decision making when combined with accurate and ongoing patient and wound assessment. ■

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REVIEWER DETAILS

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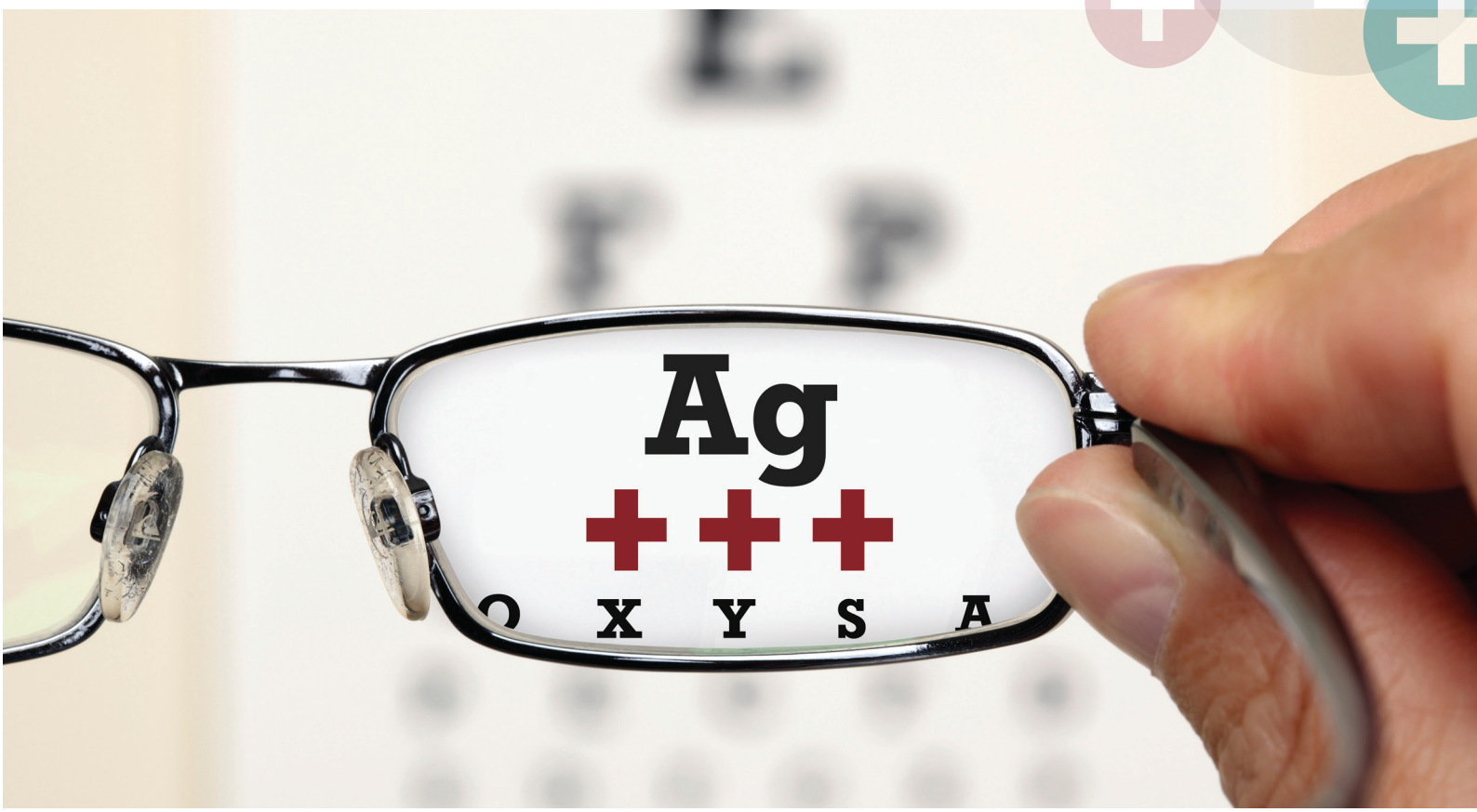

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Wound digest

This digest summarises some of the key papers published on issues related to wound management

SELECTED PAPERS OF INTEREST

1 W.A.R. scores in patients with chronic leg ulcers: Results of a multicentre study

Readability	✓	✓	✓		
Relevance to daily practice	✓	✓	✓	✓	
Novelty factor	✓	✓	✓	✓	

- **Differentiating between individuals with "problematic colonised wounds", "wounds at increased risk of infection" and "wound infection" is of crucial importance to both the patient and the clinician, in order to identify and put in place a sufficient and effective treatment regimen.**
- **The authors conducted a multicentre study to assess a patient's risk of wound infection by using the wounds-at-risk (W.A.R.) score, which is a clinical test designed by interdisciplinary experts. Point values are assigned to individual patients with a score of ≥3 indicating that antimicrobial treatment is required.**
- **A total of 10 dermatological wound clinics in Germany were chosen for the study with 970 patients comprising the dataset (553 women, 417 men). The mean age was 69.8 years, ranging from 10 to 100 years of age and the mean duration of the leg ulcer was 41.1 months. The mean wound size was 42.8cm^2.**
- **The authors' study was the first to evaluate clinical data using W.A.R. scores and it was found that 26.9% of patients displayed overall scores of <3 points, while 73.1% had scores of ≥3 points.**
- **The findings taken from this study show that W.A.R. scores enable the clinician to better identify those at increased risk of wound infections. Even clinicians with less experience can use the tool to easily and quickly identify risk.**

Jockenhöfer F, Gollnick H, Herberger K et al (2014) W.A.R. scores in patients with chronic leg ulcers: Results of a multicentre study. *J Wound Care* 23(1) 5–12

2 Gunshot wounds and blast injuries to the face are associated with significant morbidity and mortality: Results of an 11-year multi-institutional study of 720 patients

Readability	✓	✓	✓	✓	
Relevance to daily practice	✓	✓	✓		
Novelty factor	✓	✓	✓	✓	

- **The wounds created due to gunshot and blast injuries to the face (GSWBIF) are complex and the authors highlighted that there has previously been little research undertaken in this field, despite relatively high morbidity and mortality rates.**
- **Between January 1 2000 and December 31 2010, the authors carried out a multicentre retrospective cohort analysis of individuals with GSWBIF. The purpose was to identify and describe the factors associated with adverse outcomes.**
- **During the 11-year study period, some 720 patients with GSWBIF were treated by the authors – 539 were men, 181 were women and the median age was 29 years – and 185 patients died (26%). Of these, 146 died within 48 hours.**
- **As well as 26% mortality in the study group, 38% of those patients who were hospitalised for a longer period than 48 hours had complications (n=184) with the authors suggesting this was likely related to the admission physiology and the injury severity.**
- **These types of injuries require a multidisciplinary approach, as well as significant resource allocation. It was concluded that due to the high mortality and morbidity rates associated with GSWBIF, there is a necessity for the development of effective guidelines and a uniform approach to the treatment of this patient group.**

Shackford SR, Kahl JE, Calvo RY et al (2014) Gunshot wounds and blast injuries to the face are associated with significant morbidity and mortality: Results of an 11-year multi-institutional study of 720 patients. *J Trauma Acute Care Surg* [Epub ahead of print]

3 Antibiotics and antiseptics for venous leg ulcers (Review)

Readability	✓	✓	✓	✓	
Relevance to daily practice	✓	✓	✓	✓	
Novelty factor	✓	✓	✓	✓	

- **The authors set out to determine the effects of the two main strategies used to prevent and treat clinical infection in venous leg ulcers, namely, systemic antibiotics and topical antibiotics or antiseptics.**
- **A review was carried out of the Cochrane Wounds Group Specialised Register, the Cochrane Central Register of Controlled Trials, Ovid MEDLINE, Ovid EMBASE, and EBSCO CINAHL databases with the selection criteria being randomised controlled trials (RCTs) that focused on venous**

leg ulceration and that evaluated at least one systemic antibiotic, topical antibiotic or topical antiseptic. In terms of data collection, a standardised data extraction form was used to collate information on patient characteristics, interventions and outcomes.

- A total of 45 RCTs were included in the review, which covered 4486 individuals. Ulcer infection status at baseline and at follow-up was found to vary across the RCTs chosen, while few of these trials proved to contain a reliable estimate relating to healing times.
- During their review, the authors found some evidence to suggest cadexomer iodine is effective in terms of topical preparations, while the literature does not support the routine use of honey- or silver-based products. Meanwhile, they conclude that further research is warranted to ascertain the effectiveness of particular antibacterial agents. The assertion is that clinicians must be mindful of increased concerns about bacterial resistance when using antibacterial treatments.

O'Meara S, Al-Kurdi D, Ologun Y et al (2014) Antibiotics and antiseptics for venous leg ulcers (Review). *Cochrane Database Syst Rev* 10(1): CD003557

4 Analysis of MRI for acute Charcot foot diagnosis

Readability	✓	✓	✓	✓	
Relevance to daily practice	✓	✓	✓	✓	
Novelty factor	✓	✓	✓	✓	

- This retrospective, observational, cohort study over a 12-year period, reviewed the management of all acute Charcot foot (ACF) cases, in one outpatient clinic, diagnosed by magnetic resonance imaging (MRI).
- Treatment included complete offloading and immobilisation of the affected foot, and, within 3 days, a removable total contact cast (TCC) and crutches were provided.
- From the medical charts of 59 patients with a total of 71 ACF cases, it was deduced that ACF healing is more efficient when it is diagnosed at stage 0 rather than stage 1 (P=0.0012).
- Patients that reported foot pain were significantly more able to recall when a trauma had occurred than those that did not have foot pain. However, those with foot pain did not attend the clinic any earlier.
- In total, 70% of those diagnosed at ACF stage 0, and 32% of those diagnosed at ACF stage 1 healed without deformity (P=0.002).
- The authors noted that MRI was essential for ACF diagnosis at stage 0 as unremarkable X-ray results often led to misdiagnosis.
- No amputations or further surgery had occurred 4 years after healing.
- The authors note one limitation of the study as the fact there was no control cohort where ACF was managed on the basis of X-ray.

Chantelau EA, Richter A (2013) The acute diabetic Charcot foot managed on the basis of magnetic resonance imaging – a review of 71 cases. *Swiss Med Wkly* 143: w13831

5 Optimal rocker shoe design for individuals with no diabetic foot

Readability	✓	✓	✓		
Relevance to daily practice	✓	✓	✓		
Novelty factor	✓	✓	✓		

- This is the first study to attempt to find the optimum rocker shoe design for individuals with low-risk diabetes. Twelve shoe designs in a variety of values for the apex angle, apex position and rocker angle (plus a flexible control) were tested.
- In total, 24 people with low-risk diabetes with no previous foot complications, and 24 healthy participants walked a 20 m walkway at 1 m/s ± 10% distance in each shoe design (25–35 continuous steps per shoe).
- Peak plantar pressure was measured for the 1st metatarsophalangael (MTP) joint, 2nd–4th metarsal head (MTH), hallux, 5th MTH and heel.
- When the apex angle was incrementally increased from 70º to 100º, the biggest reduction in pressure relative to the control shoe was observed in the 2nd–4th MTH regions (39%).
- There was no clear trend in foot pressures across the foot when varying the apex position from 50% to 70%.
- When the rocker angle was increased from 10º to 30º, there was a decrease in peak pressure under the 5th MTH.
- The results suggest that for the optimum shoe design a 95º apex angle, an apex position of 60% of shoe length and a 20º rocker angle should be considered.

Chapman JD, Preece S, Braunstein B et al (2013) Effect of rocker shoe design features on forefoot plantar pressures in people with and without diabetes. *Clin Biomech* 28(6): 679–85

6 Cost of care using prophylactic negative pressure wound vacuum on closed laparotomy incisions

Readability	✓	✓	✓		
Relevance to daily practice	✓	✓	✓		
Novelty factor	✓	✓	✓		

- The authors sought to determine the decrease in wound complication rate needed to justify prophylactic negative pressure wound vacuum therapy (NPWT) compared to routine incision care (RC), in terms of cost savings, following laparotomy for gynaecologic malignancy.
- A decision model was made from a third-party payer perspective to compare NPWT and RC; the primary model outcome was average incision care cost using each strategy. Clinical parameter estimates (wound complication rates, re-hospitalisation, antibiotic use, re-operation and home health care) were taken from a published cohort of 431 women who underwent laparotomy for endometrial cancer between 2002–2007.
- Wound complication rate was 31%. The overall cost saving was US$104 for NPWT with the lowest cost of this therapy US$200.
- Prophylactic NPWT has the potential to be a cost saving treatment option if wound complication rate is reduced by a third or more.

Lewis LS, Convery PA, Bolac CS et al (2014) Cost of care using prophylactic negative pressure wound vacuum on closed laparotomy incisions. Gynecol Oncol [epub ahead of print]

Save a working week in nurse time for every patient treated[1]*

*Estimated from weartime, trust demographic and audit data[1,2,3]

ALLEVYN Life's differentiating core design features contribute to improvements in patient wellbeing[4,5], clinician satisfaction[5] and potential economic benefits[1]*.

*Estimated from weartime, trust demographic and audit data[1,2,3]

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