WOUND CARE TODAY

www.jcn.co.uk

For what matters in practice

Volume 3
Number 1
2016

How can we get a universally accepted pressure ulcer staging system?

How long does it take for your patients to receive the compression garments you prescribe them?

If it's too long, you need Daylong

Daylong's free prescription delivery service.
We guarantee your patient receives the hosiery you prescribe them.

Call us on **0800 195 0160,** email **prescriptions@daylong.co.uk** or visit **www.daylong.co.uk/prescriptions** to see how we can help you and your patients.

daylong
Compression support all daylong

We offer a wide choice of styles, brands and made to measure compression hosiery.

ACTIVA · BAUERFEIND · BSN medical · CARUSO · Credalast · JOBST · Juzo · medi · Scholl · SIGVARIS · VENOSAN

Daylong is backed by Credenhill Limited

Contents

4	Wound watch: how can we get a universally accepted pressure ulcer staging system?
6	At a glance: staging pressure injuries can seem challenging
12	Managing pain in wound care Jemell Geraghty
18	Negative pressure wound therapy: selection, choices and outcomes Jeanette Milne
24	The importance of accurately assessing the patient's wound Edwin Chamanga
32	Top tips: debridement

Making your mind up...

Making decisions is part of everyday life. Do I have that extra shot in my morning coffee to get me on the road; would the blue or the red curtains go better with the living room furniture; or most taxing of all, should I hit snooze on my alarm one more time or jump straight out of bed?

When patient's lives are involved, however, decision-making takes on a whole new sense of importance, which is why we often rely on clinical guidance. But, what if the guidance itself is too complicated? With pressure damage presenting as a wide range of wounds, many of us have relied on the EPUAP and NPUAP grading system to make clinical decisions around ulcer treatment. However, the latest version of this guidance has seen accusations that the system is now too complicated for clinicians to follow. In this issue of our 'wound watch' (*pp. 4–5*) series, we ask whether we will ever get a universally accepted pressure ulcer staging system.

This issue of *Wound Care Today* also looks at the challenging issue of managing wound pain effectively, the appropriate use of negative pressure wound therapy (NPWT), as well as the importance of accurately assessing a patient's wound, while the 'top tips' feature (*pp. 32–34*) provides a snapshot overview of debridement.

All of the articles are also available online (www.jcn.co.uk), where you can also learn more about wound care through our Learning Zone resources (www.jcn.co.uk/learning-zone), either by reading an article or completing a module and answering the accompanying questions to gain a certificate.You can then log this activity in your free JCN revalidation e-portfolio, as evidence of your continued learning (www.jcn.co.uk/revalidation).

Jason Beckford-Ball, editor, *Wound Care Today*

Managing director
Nicola Rusling
nicola@woundcarepeople.co.uk
Publisher
Binkie Mais
binkie@woundcarepeople.co.uk
Editor
Jason Beckford-Ball
jason@jcn.co.uk
Business director
Alec O'Dare
alec@woundcarepeople.co.uk
07535 282827
Sales manager
Sam Ciotkowski
sam@jcn.co.uk

WOUND CARE TODAY

First Floor, Unit G, Wixford Park, George's Elm Lane,
Bidford on Avon, Alcester B50 4JS

ISSN 2054-9636

t: +44(0) 1789 582000
e: binkie@woundcarepeople.com
http://www.jcn.co.uk

Printed in England by
Blackmore Ltd, Shaftesbury

In each issue of *Wound Care Today* we investigate a hot topic in wound care. Here, Binkie Mais asks...

How can we get a universally accepted pressure ulcer staging system?

Some conditions or incidents receive such a level of notoriety in health care that they become regarded as indicators of poor care in themselves; falls or urine infections, for example; or in this case, pressure ulcers. So avoidable are pressure ulcers deemed to be that schemes such as the NHS Safety Thermometer list them as key indicators of poor care (http://harmfreecare.org), which is a useful step forward of course, but is predicated on staff recognising what a pressure ulcer is in the first place. Traditionally, pressure ulcers have been assessed and classified using a variety of grading systems, but a new set of guidance has raised the question of whether pressure ulcer grading has now become too complicated.

MAKING THE GRADE

Grading or staging of pressure ulcers has continued to evolve over the past decades — for example, back in 1983, the Torrance Scale was introduced, and then in 1994 there was the Scottish Pressure Sore Severity Scales (Reid and Morrison, 1994). But, having different systems available makes reaching consensus of pressure ulcer severity difficult and any data collected only has relevance at a neighbourhood rather than national level (Beldon, 2014).

In 2003, the European Pressure Ulcer Advisory Panel (EPUAP) took the 'bull by the horns' and produced a standardised grading system on pressure ulcer classification, which was subsequently updated in 2009 in collaboration with the National Pressure Ulcer Advisory Panel (NPUAP), and again in 2015 in association with the Pan Pacific Pressure Injury Alliance (EPUAP/NPUAP/PPPIA, 2014).

With pressure ulcers presenting as a wide range of wounds, from mild discoloration over intact skin to a large open cavity wound affecting all tissue layers, even the bone, there is surely no question around the need to have a tool with which to systematically identify and stage them.

Pressure damage also seems to continually remain in the limelight and under scrutiny ('Pensioner who was found sobbing in her wheelchair dies from infected bed sores after being left for 4 hours without foot support' — *Daily Mail*, 2 September 2016). There is no doubt as to its cost, both in economic and human terms,

The level of scrutiny in relation to the development of pressure ulcers requires a consistent approach to staging. The NHS expects us to be able to compare pressure ulcer prevalence and so accurate staging of pressure ulcers is essential. A different interpretation of the staging system can lead to inconsistency in reporting and ultimately investigating.

Thus, the issue of staging pressure ulcers is one that will impact clinically as well as financially. The stage of ulcer will influence not only clinical care delivery, but also the investigation process and potentially a financial penalty for the development of an avoidable pressure ulcer.

Consistency is key and the NHS needs to agree on the adoption of the latest staging recommendations and education to support the classifications needs to be essential or mandatory training for all clinical staff who required to stage pressure ulcers.

Jackie Stephen-Haynes
Professor in tissue viability, Professional Development Unit, Birmingham City University and consultant nurse, Worcestershire Health and Care NHS Trust

Changes and improvements in clinical practice are necessary to improve the level and quality of care being delivered especially to untoward harms. However, the idea of changing terminology without addressing the harm does not seem to improve the level of care being delivered. In relation to pressure ulcer guidelines, this is not the first time that terminological changes have been introduced — not so long ago the term grading in pressure ulcers was abolished to be replaced with category/staging. Up to this very day in most clinical settings pressure ulcers are still recorded and reported as grades. The whole idea of EPUAP, NPUAP and PPPIA is to create a universal consensus on how to reduce pressure ulcers, but I am not sure if this will be achieved by having a battle on terminology.

Edwin T Chamanga, Tissue viability service lead, Hounslow and Richmond Community Healthcare NHS Trust

despite, in many cases, being a largely avoidable injury with the right care and early detection.

Back in 2009 the Department of Health (DH) labelled pressure ulcers as being 'never events' and in 2013 NHS England identified pressure ulcer prevention as a priority under domain 5 of the NHS outcomes framework for 2014/15 (DH, 2013).

So, given the complexity and demand around grading pressure damage, it is not surprising that the EPUAP/NPUAP/PPPIA guidance was adopted throughout the UK (Beldon, 2014), presumably to establish uniformity and to help capture real data on the scale of the problem.

Yet, while healthcare professionals in primary care might still be 'coming to grips' with this guidance, some amendments have now been made to the system outside of the joint guidance from EPUAP/NPUAP/PPPIA (2014), with the term pressure injury replacing pressure ulcer and updates to the previous stages.

However, rather than being universally applauded, this move has led to open debate and criticism as to the rationale behind the changes, in that flaws from the original guidelines (such as the notion that skin damage takes a top-down approach from the epidermis to the bone, when it can occur from within the muscle layer [Bryant, 2016]), rather than being addressed were being perpetuated (Bohn, 2016; Bryant, 2016; Schank, 2016).

Whatever view you might take on the new staging system, the advantage of healthcare professionals being educated and trained to competently stage pressure ulcers/injuries with consistency across healthcare settings is a given if prevalence is to be reduced and patient outcomes improved. **WCT**

There are two main changes here that deviate from the joint international guidance last published in 2014. The first is about the use of the term injury. It's important to remember the healthcare context in the USA and the way that services are reimbursed by healthcare insurers. The term 'injury' very clearly points towards a negative event, whereas 'ulcer' may represent a symptom of an organic disease process. The other change is the addition of mucosal membrane pressure injuries and medical device-related pressure injuries, along with the detail provided in their definitions. There is some disparity around the UK about how these two groups of tissue damage are reported and investigated, these changes may help if adopted in the next revisions of the EPUAP ratified guidance.

Michael Ellis, clinical nurse specialist in tissue viability; lecturer in healthcare practice, Royal Devon and Exeter NHS Trust

REFERENCES

Beldon P (2014) How to accurately identify and record pressure ulceration. *J Community Nurs* 28(5): 33–40

Bohn G (2016) Pressure injury replaces pressure ulcer: provider thoughts on changes to pressure ulcer staging. *Ostomy Wound Manage* 62(5): 46–7

Bryant R (2016) The revised pressure ulcer staging criteria: where are we going and why? *J Wound Care* 25(7): 1–3

Department of Health (2009) *NHS 2010–2015: from good to great. Preventative, people-centred, productive.* DH, London. Available online at: www.gov.uk/government/uploads/system/uploads/attachment_data/file/228885/7775.pdf

Department of Health (2013) *NHS Outcomes Framework for 2014/15.* DH, London. Available online: www.gov.uk/government/uploads/system/uploads/attachment_data/file/256456/NHS_outcomes.pdf

EPUAP/NPUAP/PPPIA (2014) *Prevention and Treatment of Pressure Ulcers: Quick Reference Guide.* Available online: www.npuap.org/wp-content/uploads/2014/08/Updated-10-16-14-Quick-Reference-Guide-DIGITAL-NPUAP-EPUAP-PPPIA-16Oct2014.pdf

Reid K, Morrison M (1994) Towards a consensus: classification of pressure sores. *J Wound Care* 3(3): 157–60

Schank J (2016) Changing pressure ulcer terms: consensus or conspiracy. *Ostomy Wound Manage* 62(6): 1–7

Torrance C (1983) *Pressure Sores: aetiology, treatment and prevention.* Croom Helm, London

Staging pressure injuries can seem challenging...

Despite ongoing controversy and debate around the revised pressure injury staging system (see *pp. 4–5*), there is a need for staging/classifying to help determine the degree of pressure damage, with this information being used to help guide management plans and monitor progress. This piece outlines the recent amendments made by the National Pressure Ulcer Advisory Panel (NPUAP) to the staging system to help clinicians understand this important, but challenging, aspect of care.

With identification and prevention of pressure ulcers being seen as an indication of the quality of care given (Vowden and Vowden, 2015), and the requirement to accurately document all wounds (National Institute for Health and Care Excellence [NICE], 2014a, b), it is vital that healthcare professionals keep abreast with new developments in staging pressure ulcers — or pressure injuries as they are now termed. The updated National Pressure Ulcer Advisory Panel (NPUAP, 2016; bit.ly/2eC9nCB) staging system, defines a pressure injury as:

> *... localised damage to the skin and/or underlying soft tissue usually over a bony prominence or related to a medical or other device. The injury can present as intact skin or an open ulcer and may be painful. The injury occurs as a result of intense and/prolonged pressure or pressure in combination with shear. The tolerance of soft tissue for pressure and shear may also be affected by microclimate, nutrition, perfusion, comorbidities and condition of the soft tissue.*

The updated system includes the following stages.

Key changes

- Pressure injury replaces pressure ulcer
- Arabic numbers used instead of roman ones
- Two new 'additional' definitions added.

STAGE 1 PRESSURE INJURY: NON-BLANCHABLE ERYTHEMA OF INTACT SKIN

This refers to intact skin with a localised area of non-blanchable erythema, which may look different in darkly pigmented skin. Presence of blanchable erythema or changes in sensation, temperature, or firmness may occur before visual changes. Colour changes do not include purple or maroon discoloration; as these may indicate deep tissue pressure injury.

STAGE 2 PRESSURE INJURY: PARTIAL-THICKNESS SKIN LOSS WITH EXPOSED DERMIS

This refers to partial-thickness loss of skin with exposed dermis. The wound bed is viable, pink or red, moist, and may also present as an intact or ruptured serum-filled blister. Adipose (fat) and deeper tissues are not visible. Granulation tissue, slough and eschar are not present. These injuries commonly result from adverse microclimate and shear in the skin over the pelvis and in the heel. This stage should not be used to describe moisture-associated skin damage (MASD), including incontinence-associated dermatitis (IAD), intertriginous dermatitis (ITD), medical adhesive-related skin injury (MARSI), or traumatic wounds (skin tears, burns, abrasions).

STAGE 3 PRESSURE INJURY: FULL-THICKNESS SKIN LOSS

This refers to full-thickness loss of skin, in which adipose tissue is visible in the ulcer and granulation tissue and rolled wound edges are often present. Slough and/or eschar may be visible. The depth of tissue damage varies according to the anatomical location; areas of significant adiposity can develop deep wounds. Undermining and tunnelling may also occur. Fascia, muscle, tendon, ligament, cartilage and/or bone are not exposed. If slough or eschar hides the extent of tissue loss, this is an unstageable pressure injury.

Practice point

Pressure injuries have previously been described as:

- Bed sores
- Pressure sores
- Decubitus ulcers
- Pressure ulcers.

Some of these terms imply that only those who are bedbound can develop them. However, while poor mobility is a risk factor, mobile patients can also develop pressure injuries.

STAGE 4 PRESSURE INJURY: FULL-THICKNESS SKIN AND TISSUE LOSS

This refers to full-thickness skin and tissue loss with exposed or directly palpable fascia, muscle, tendon, ligament, cartilage or bone in the ulcer. Slough and/or eschar may be visible. Rolled edges, undermining and/or tunneling are often present, with the depth varying according to anatomical location. If slough or eschar hide the extent of tissue loss, this is again an unstageable pressure injury.

ReadyWrap™ NEW

Self-care at your fingertips

New on Drug Tariff XXL calf, knee and thigh sizes (from August)

ReadyWrap™ compression garments are designed as an easy to use compression therapy for patients with venous and lymphatic disease

- Pre-shaped curved straps adjust to the limb providing comfort and support
- Unique calf muscle support spine reduces stretch and maintains garment's shape
- Colour coded VELCRO® brand fasteners makes application easy

ACTIVA® HEALTHCARE an LR Company

Call **08450 606707** to speak directly with a Customer Care Advisor or visit our website at: **www.activahealthcare.co.uk**

1 Wellington Court, Newborough Road, Needwood, Burton on Trent, Staffordshire DE13 9PS.

ADV247 V1.2

expert opinion

The development of a pressure ulcer has a cost impact on NHS organisations and may have a significant effect on a patient's quality of life. Pressure ulcer staging is a challenge in clinical practice; with evidence indicating that it may be inaccurate in up to 18% of patients (All Wales Tissue Viability Nurse Forum [AWVTN] and Welsh Wound Innovation Centre [WWIC], 2016). To ensure accurate pressure ulcer staging in clinical practice, it is essential that healthcare professionals have an in-depth understanding of a recognised pressure ulcer classification, which they can apply effectively when assessing a patient. This ensures consistency in documentation, guides clinical decision-making and drives appropriate treatment options.

However, prevention is better than cure, so identifying patients at risk and putting interventions in place that may prevent pressure damage should be a priority for any clinician.

Kirsty Mahoney, clinical nurse specialist, wound healing, Cardiff and Vale University Health Board

UNSTAGEABLE PRESSURE INJURY: OBSCURED FULL-THICKNESS SKIN AND TISSUE LOSS

This refers to full-thickness skin and tissue loss. The extent of tissue damage within the ulcer cannot be confirmed as it is obscured by slough or eschar. If slough or eschar is removed, a stage 3 or 4 pressure injury will be visible. Stable eschar (i.e. dry, adherent, intact without erythema) on the heel or ischaemic limb should not be softened or removed.

DEEP TISSUE PRESSURE INJURY (DTPI): PERSISTENT NON-BLANCHABLE DEEP RED, MAROON OR PURPLE DISCOLORATION

This refers to intact or non-intact skin with localised areas of persistent non-blanchable deep red, maroon, purple discoloration or epidermal separation revealing a dark wound bed or blood-filled blister. Changes in pain and temperature often occur before any changes in the skin colour. Discoloration may appear differently in darkly pigmented skin.

This type of injury results from intense and/or prolonged pressure and shear forces at the bone-muscle interface. The wound may develop rapidly to reveal the actual extent of tissue injury, or may resolve without tissue loss. If necrotic, subcutaneous, or granulation tissue, or fascia, muscle or other underlying structures are visible, this indicates a full-thickness pressure injury (unstageable, stage 3 or stage 4). The staging system stresses that DTPI should not be used to describe vascular, traumatic, neuropathic, or dermatologic conditions.

ADDITIONAL DEFINITIONS

The revised staging system also has the following additional pressure injury definitions.

Medical device-related pressure injury

Medical device-related pressure injuries result from using devices for diagnostic or therapeutic purposes. The pressure injury that occurs generally conforms to the pattern or shape of the device, and should be staged using the staging system.

Mucosal membrane pressure injury

Mucosal membrane pressure injuries are found on mucous membranes where medical devices have frequently been used at the site of the injury. The staging system states that these injuries cannot be staged due to the anatomy of the tissue. WCT

REFERENCES

AWTVN Forum, WWIC (2016) *National Pressure Ulcer Audit 2015*. Unpublished data presented at the Tissue Viability Society Conference, Cardiff

NICE (2014a) *Pressure ulcers: the prevention and mangement of pressure ulcers*. NICE, London. Available online: www.nice.org.uk/guidance/cg179?unlid=799546122016914675

NICE (2014b) *Costing statment; pressure ulcers. Implementing the NICE guidelines on pressure ulcers (CG 179)*. NICE, London. Available online: www.nice.org.uk/guidance/cg179/resources/costing-statement-248688109

Vowden K, Vowden P (2015) Documentation in pressure ulcer prevention and management. *Wounds UK* 11(3 Suppl 2): 6–9

ONCE-DAILY USE CAN PROVIDE **24 HOURS SKIN HYDRATION.**[1,2]
IMPROVES SKIN BARRIER **FUNCTION & SKIN INTEGRITY.**[1]
ONCE-DAILY HAS THE POTENTIAL TO **REDUCE THE BURDEN ON RESOURCES.**

REHYDRATES AND RESTORES AGED SKIN

balneum® CREAM

Urea 5% and ceramide NP

PRODUCT INFORMATION

Name of the Class I Medical Device: Balneum Cream

Ingredients: Urea 5 %, Ceramide NP, Aqua, Glycine Soya Oil, Propylene Glycol, Cetearyl Alcohol, Liquid Paraffin, Isohexadecane, Sodium Lactate, Lactic Acid, PEG-20 Stearate, Polysorbate 60, Squalane, Stearic Acid, Disodium EDTA, Lecithin, Tocopherol, Ascorbyl Palmitate, Hydrogenated Palm Glycerides Citrate. Balneum Cream is free of fragrances, colourants and preservatives.

Pharmaceutical form: White cream.

Indications: Balneum Cream is formulated to protect the skin, to maintain skin moisture and to restore the impaired skin barrier in conditions giving rise to dry skin. It contains urea, ceramide NP and physiological lipids. Urea is known to increase the skins ability to retain water and maintain skin hydration. Ceramide NP is known to help restore the barrier function of skin. Balneum Cream is designed for daily use to relieve dry and very dry skin conditions including eczema, psoriasis and other dermatological conditions.

Method of administration: Using clean hands, apply the cream to the skin once or twice daily.

Contraindications: Patients with known hypersensitivity to any of the ingredients, soya or peanut.

Warnings and precautions: For topical use only. Do not use on broken or inflamed skin. Caution should be exercised with concomitant treatment with other medicated topical products. If the condition becomes worse or if patients experience side effects/adverse incidents, discontinue treatment with Balneum Cream and seek medical advice.

Adverse incidents: Although very few adverse incidents have been reported, the most frequent are local skin reactions.

Special precautions for storage: Do not store above 25°C. Use within 6 months of first opening.

Pack sizes: Available in 50g (£2.85) and 500g (£9.97) pump dispensers.

CE marking held by:
Almirall Hermal GmbH, Scholtzstraße 3, 21465 Reinbek, Germany.

Distributed in the UK by:
Almirall Ltd, 1 The Square, Stockley Park, Uxbridge, UB11 1TD.

Date information last revised: 02/2015.

Item code: UKSOY3039.

Adverse incidents should be reported.
Online reporting forms and information can be found at www.mhra.gov.uk/yellowcard.
Adverse incidents should also be reported to Almirall Ltd.

Date of preparation: September 2016 Job Code: UKSOY3305c

Almirall
Solutions with you in mind

References
1. Brown K, *et al*. The effect of an emollient cream containing 5% urea on the biophysical properties of aged skin. Poster presented at 11th meeting: European Epidermal Barrier Research Network and COST Action BM 0903 Skin Barrier in Atopic Disease Scotland. May 8th 2013. **2.** Almirall Data on File BAL01.

CliniMed®
Essentials

Appeel® Sterile is available via NHS Supply Chain or direct from CliniMed®. Appeel® and CliniMed® are registered trademarks of CliniMed (Holdings) Ltd. CliniMed Ltd, a company registered in England number 01646927. Cavell House, Knaves Beech Way, Loudwater, High Wycombe, Bucks. HP10 9QY.

From one cry baby to another

Appeel Sterile medical adhesive remover helps to remove dressings and adhesive appliances from delicate skin easily, whilst reducing pain and skin stripping. So, by using our unique range of applications, now including a single patient multi-use spray, you can make tearful dressing changes history.

For more information please call the CliniMed Careline on: **0800 036 0100**
or visit **www.clinimed.co.uk**

Appeel®
STERILE
Medical adhesive remover

IN BRIEF

- Wound pain should be approached in an holistic and objective manner, listening to the patient's experience of pain and how it is affecting their daily lives.
- It is important to clarify the type of pain being experienced — whether it is background, breakthrough, procedural or operative.
- Choosing an appropriate dressing to manage the wound can have a huge impact on the patient and their perception of pain.

KEY WORDS:

- Complex wounds
- Pain
- Holistic assessment
- Reflection

Managing pain in wound care

Jemell Geraghty

Pain management in wound care is a daily challenge for nurses and in a much wider context is a psychosocial phenomenon, uniquely complex to each individual person who experiences it. It is part of a nurse's professional duty of care to alleviate wound pain. Pain is a multifaceted experience, for which there is no 'one-size-fits-all' management approach in relation to wound care; rather, it is vital to emphasise the importance of assessing each person as an individual (Gloth, 2011).

Nurses should approach the management of wound pain in an objective and holistic manner, listening to the individual's experience of pain and how it impacts on their life. They should also listen to the patient's experience of different treatment options that have been used to alleviate pain, and what may or may not have worked in the past.

Jemell Geraghty, lead nurse, tissue viability, Royal Free London NHS Foundation Trust

Due to the business of clinical life and growing caseloads of patients both in numbers and complexity, pain has the potential to be misinterpreted which, in turn, can lead to it being mismanaged.

Credit: Sander van der Wel@wikicommons.com

Figure 1. *Wound pain can have a devastating effect on patients' lives.*

This can have a detrimental effect on a person's daily life, relationships, job and confidence. This article will explore a number of everyday approaches to assessing pain, as well as providing practical tips and strategies aimed at relieving pain in wound management.

PAIN PERCEPTION

The author asks the question that with the business of clinical life, do we as nurses sometimes become blasé to the complex assessment and management of pain?

Young (2007) highlighted the many myths surrounding wound pain, such as the idea that older people have greater tolerance, or that certain wounds are more painful than others, e.g. the deeper the wound, the more painful it is.

The assessment and management of pain does not sit within a tidy box of structure and alignment. Thus, it is important that nurses allow themselves the time to assess pain, as this can influence the patient experience at that point of contact and in the future. Assessing

Top tip:

Time management in wound care is a skill in itself in terms of communicating with the patient, cleansing and redressing wounds, as well as tidying up and ensuring that all documentation is accurate and up to date. Keep a diary to reflect on how you manage your time and consider if and how this could be improved.

THE SCIENCE — ASSESSING WOUND PAIN

Credit: Squeezyboy@flickr.com

The assessment of wound-related pain should be an ongoing process, involving negotiation and partnership between nurse and patient. It is important that nurses note the effects of analgesia and dressings on pain levels, as well as any subtle changes in discomfort (Day, 2013). The underlying aetiology of the pain must be identified if treatment is to be successful. It is worth noting that there may be a number of contributing factors influencing wound pain, such as soft tissue inflammation, infection, underlying peripheral arterial disease, and musculoskeletal or neurological disorders. Various diagnostic tools such as Doppler assessment, Duplex scanning, X-ray, magnetic resonance imaging (MRI) or tissue biopsy alongside microbiology may be required to identify the underlying cause of pain.

wound pain cannot be overlooked regardless of caseload pressures and demands on resources, as side-stepping this fundamental aspect of patient treatment potentially removes the care from practice. Nurses understand that there is often no cure for wound pain; however, by offering therapeutic techniques and reassurance, the patient's pain experience can be alleviated or improved.

REFLECTION

One of the first practical steps in managing a patient's pain is being self-aware and reflecting on practice. This requires nurses to 'take a step back' and ask some searching questions about the way in which they are managing a particular patient (*Table 1*). In the author's clinical opinion, the concept of pain management has as much to do with exploring the nurse's views, judgements and practices of managing pain, as the phenomenon of pain itself.

Essentially, pain means different things to different people and is often dependent on a number of external and internal factors. It is a biopsychosocial phenomenon, which means that the patient's pain experience, and the assessment of pain itself, are influenced by biological, physical, social, emotional, behavioural, spiritual and cultural factors (Richardson, 2012).

Roberts' (2013) guide to holistic nursing brings together an abundance of literature to support nurses in psychotherapeutic approaches to care. He views nursing as a therapeutic activity and, by adapting psychotherapeutic techniques, describes how nurses can set the foundations for best practice when managing wound-related pain (*Table 2* illustrates some of the recommended activities).

Table 1: Reflective questions that nurses can ask themselves

Question
What does managing pain mean to me in practice?
What are my own thoughts about pain management?
Does my own experience of pain, or managing pain in others, affect how I assess patients' pain?
Do I regularly keep up to date with current evidence in the management of pain in wound care, or is there anything I could do to improve my current knowledge?
Do I really listen and observe my patients when they are speaking about pain, or appear to be in pain or discomfort?

ASSESSMENT

Any assessment of wound-related pain (see 'Science' box above) should include a thorough evaluation of:

- The pain's origins (i.e. ask the patient where the pain is coming from, as this may not always be the wound itself)
- Details of the pain and its effects, both physical and psychosocial. For example, what does the pain feel like — is it burning, stinging, throbbing, stabbing continuous or intermittent? Do certain physical or environmental triggers exacerbate or alleviate the pain, i.e. the cold or heat, elevation or dependency in the morning/at night, etc? Psychosocially, pain can affect a patient's social life, relationships, work, and overall wellbeing (Mudge et al, 2008).

Nurses should also use a pain scale (see details below), as well as recording the patient's vital signs, any current or previous analgesia, and any side-effects of current or previous pain medication (nausea, constipation, etc) (Coulling, 2007).

The World Union of Wound Healing Societies (WUWHS, 2008) has highlighted some useful tips with regards to pain in wound care (*Table 3*), as well as looking in detail at the two types of pain, nociceptive and neuropathic:

- Nociceptive pain: the body's natural physiological response to a painful stimulus, which may involve acute or chronic inflammation
- Neuropathic pain: arises as a result of disease or damage to the nervous system.

As said, the psychological and emotional aspects that can result

Top tip:

In general, it is important that wounds are kept moist to facilitate healing and aid dressing removal and prevent trauma.

Table 2: Therapeutic activities that nurses can use to manage wound-related pain

Activity	Practical example
Develop and promote a sense of trust and security with your patient by demonstrating competence	Be welcoming and introduce yourself with a professional yet relaxed demeanour
Be aware of non-verbal and verbal communication — use reflection to improve this and learn to create a positive patient experience	Develop a relaxed yet confident attitude; use positive and reassuring body language
Use metaphor and humour to help relax patients	Demonstrate humour with a smile, a gentle laugh, sharing a positive experience or joke
Create a sense of closeness and partnership with the patient	Provide reassurance through active listening and eye contact
Manipulate the environment for patient comfort	Make sure the room is warm and establish patient comfort on their terms, ensuring privacy and dignity

from having a chronic wound, such as anxiety, depression, can impact on how a patient perceives their pain (Vuolo, 2009), and, indeed, lead to non-concordance with treatment.

Bechert and Abraham (2009) referred to the importance of evaluation and the need for nurses to clarify the type of pain the patient is experiencing. They identified four key categories related specifically to wound pain, namely:

- Background pain: this is directly related to the underlying aetiology of the wound. It can be continuous or intermittent and can be experienced even when the individual is at rest, for example pain from an ischaemic/arterial leg ulcer
- Breakthrough pain: this normally occurs very quickly with a severe yet brief duration and can occur with normal daily activities, such as movement. An example would be the pain felt after recent surgery or from a traumatic wound
- Procedural pain: this results from a physical intervention in relation to managing a wound, such as removing a dressing; cleansing a wound and reapplying a dressing; dressing a pressure ulcer or leg ulcer; or the application of negative pressure wound therapy (NPWT)
- Operative pain: this is related to a specific intervention performed by a specialist requiring a local or general anaesthetic, for example wound debridement, 'washout' or tissue/wound biopsy.

Whatever the source and category of pain, nurses must prepare and reassure patients, while also keeping them continually informed and, where possible, help them to be involved in the treatment regimen, as this can potentially help to alleviate pain and anxiety (Solowiej and Upton, 2012).

Nurses working in primary care should actively involve other members of the multidisciplinary team when trying to find the cause of wound-related pain. If infection is suspected, it is good practice to obtain a wound swab, along with routine blood tests such as full blood count (FBC) and C-reactive protein (CRP), as well as clinical observations such as blood pressure, blood glucose level, temperature, pulse and respiration for any new patient. These baseline figures should be taken routinely throughout the patient's wound care pathway. Hofman (2006) highlights the use of the four 'I's' as a useful way to think about causes of pain and the dressings and treatments to be considered (*Table 4*).

Table 3: General practice tips for pain management

Assume all wounds are uncomfortable, distressing and potentially painful
Over time wounds can become more painful, and this, along with past experience, can potentially exacerbate wound pain. Do not assume that if a patient has had a wound for some time, even years, that they have adapted to that pain or can manage it without appropriate support or intervention
Understand that the skin surrounding the wound can become sensitive and painful; for some, this pain is worse than the wound itself
Understand that for some patients the slightest touch or even exposure to air can be profoundly painful; find what best suits them in terms of dressing regimen, cleansing, skin care and bandaging
Know when to ask for medical intervention and when to refer for specialist assessment, for example, advice from the medical or pain management team

Practice point

Pain diaries are also a useful and personal way of gaining an account of how a patient rates their pain both during daily activities and at dressing change (Upton, 2014).

Pain scales

Butcher and White (2014) canvassed an expert panel of clinicians to understand which pain assessment tools they generally used. There was consensus that the visual analogue scale (VAS) (where patients mark their pain on a range of 1–10, with 1 signifying the least amount of pain and 10 the highest) is used 'always' or 'most of the time'; while the Wong-Baker Faces pain rating scale (Wong and Baker, 1988) (where patients are asked to pick the facial graphic that most accurately reflects their pain) is used more occasionally. Whichever scale is chosen to assess pain, it should be used consistently (European Wound Management Association [EWMA], 2002) and considered alongside the nurse's clinical expertise and patient opinion.

MEDICATION

In terms of wound-related pain, the use of medications such as paracetamol, non-steroidal anti-inflammatory drugs (NSAIDS), and minor opioids on the analgesic

ladder (for example, codeine and the 'gold standard' opioid, morphine), should all be considered together with the patient's past and current medical history, the nature of the pain, and, following assessment, what best suits the individual patient.

Gaining consensus among the multidisciplinary team is vital, as everyone needs to work together and communicate regarding pain management. Furthermore, it should be remembered that what works for one patient is not guaranteed to work for the next.Thus, nurses need to take into account all the options.

Nitrous oxide (Entonox®) can also be used during dressing changes with appropriate training. Most pain management teams have access to, or can share resources relating to training for Entonox management.

Non-pharmacological interventions

Although evidence relating to the value of non-pharmacological interventions, such as complementary therapies and meditation, promoting wellbeing in wound-related pain is sparse, when used correctly and in conjunction with medical and nursing advice, they can be beneficial to those patients wishing to include them as part of their overall treatment plan (Richardson and Upton, 2011).

For example, in the author's trust, complementary therapy (such as massage) is used alongside conventional medical and surgical wound therapies, particularly for chronic, traumatic or malignant wounds. It is especially popular with younger adults and the paediatric population.

DRESSING SELECTION

Dressing changes have been cited as one of the most painful aspects of having a wound (EWMA, 2002), with one international survey finding that up to 62% of participants experienced pain up to two hours after the procedure (Price et al, 2008). Thus, it is important that nurses choose dressings that are atraumatic, both to the wound and periwound skin, and pain-free on removal (e.g. soft silicone dressings). This will help patients to view dressing changes as a positive part of the wound care regimen, rather than a procedure to be feared and cause anxiety.

Table 4: The Four 'I's' (Hofman, 2004)

Causes of pain	Dressings/topical regimens to consider
Infection	› Does the patient require systemic antibiotic therapy or can the infection be managed topically with antimicrobial dressings (e.g. iodine, honey, silver — note, all these products have the potential to cause some pain and should be monitored closely for tolerance and effectiveness) › Advise trying a small patch of dressing before full application
Inflammation	› Hydrogels, either in gel form or gel sheet, can be placed in a cool area or fridge before application to ease pain and inflammation › Topical anti-inflammatory treatments or oral non-steroidal anti-inflammatory drugs (NSAIDS)
Ischaemia	› Check Doppler reading and refer to vascular department if required › If patient has diabetes and infection is suspected, urgent podiatry and vascular department input is required › Avoid applying pressure to the area › The wound should be kept dry using a non-adherent dressing to avoid pain and reduce moisture until the source of ischaemia is identified and the area revascularised if possible
Iatrogenic (induced pain)	› Observe and monitor dressings and/or bandages to ensure they are not causing damage. Before removal ask the patient where the wound is and avoid this area if possible, or use adhesive removal spray/wipe if suitable › Allow time for dressing removal, cleansing and changing. The patient may also want to be involved with dressing removal if it eases the pain; this involves fully explaining the procedure, using gloves and making sure the necessary hand hygiene steps have been taken › Consider analgesia before dressing change and/or 50% nitrous oxide and 50% oxygen (Entonox®; BOC) › Consider patch testing

› Practice point

Successful assessment and management of wound pain, as well as any associated stress, can promote a positive patient experience and potentially improve wound healing outcomes (Solowiej, 2010).

Negative experiences from dressing changes in the past can also affect how patients' experience them in the future (EWMA, 2002), and lead to anticipatory pain (Solowiej et al, 2010). Creating a positive, relaxed environment and taking a sensitive approach to positioning the patient, with care being taken when moving painful limb(s) for instance, can be therapeutic and help to lessen any patient anxiety towards the procedure (Hollinworth and White, 2006; Richardson and Upton, 2011).

It is also important that patients are fully informed about the product used, including the rationale for choice, its mode of action, and the frequency of dressing changes. Involving patients in the decision-making process helps to ensure patient-centred care.

The majority of advanced wound care dressings have been designed with the concept of moisture balance and this, if used correctly, should ease the process of application and removal. However, dressing choice should always be guided by the condition of the wound, for example the volume of fluid being produced, bacterial load, etc.

There is the potential for wound dressings to adhere or become stuck to the wound bed which can

traumatise the wound, causing pain and potentially reverting the wound and healing back to the inflammatory phase (EWMA, 2002).

One practical tip to consider is that wounds generally need to be kept moist unless their aetiology indicates otherwise. For example, an ischaemic/gangrenous leg, diabetic ischaemic foot, or ischaemic heel ulcer should be kept dry until a full vascular assessment of the arterial blood supply is completed. The concept of moist wound healing means that the wound must be neither too wet nor too dry — applying a dressing that facilitates moisture balance will help with pain levels and ease of removal (WUWHS, 2008). However, the volume of wound fluid produced is not static, but will change throughout the wound's life cycle. Thus, it is vital that this is assessed at each dressing change, so that dressing choice can be changed to provide the optimum wound healing environment.

CONCLUSION

Pain is a hugely important but complex area of wound management. It is possible that nurses might be under daily constraints, such as caseloads and time pressures, to cope with the intricacy of pain management and the factors involved. Establishing a good rapport with the patient and setting time aside to discuss the impact of the wound and any related pain is a good place to start.

Management of pain in wound care is a partnership between the patient and healthcare team, where all parties share the same goal of alleviating or preventing pain. WCT

Wound pain facts...

- Pain is both complex and subjective
- Patients who have experienced painful dressing changes may become anxious about future experiences
- Assessment should involve talking to the patient about their pain and observing responses
- Using appropriate analgesia at the correct time, selecting dressings carefully, and spending time talking to patients about their pain are all strategies that can help to reduce or eliminate pain.

Practice point

Nurses working in primary care should actively involve the patient's GP practice and associated multidisciplinary team when a diagnosis of any wound-related pain is required.

REFERENCES

Bechert K, Abraham S E (2009) Pain management and wound care. *J Am Coll Certified Wound Specialists* 1: 65–71

Butcher M, White R (2014) Remedial action in the management of wound-related pain. *Nurs Stand* 28(46): 51–60

Coulling S (2007) Fundamentals of pain management in wound care. *Br J Nurs* (11 Suppl): S4–12

Day JM (2013) Minimising pain in wound management. *Pract Nurs* 24(6): 269–75

European Wound Management Association (2002) Position document: *Pain at wound dressing changes*. MEP Ltd, London

Gloth FM (2011) *Handbook of Pain Relief in Older Adults: an evidence-based approach*. Springer Science and Business Media, London

Hofman D (2004) Wound pain and dressings. In: White R, Harding K (eds). *Trauma and Pain in Wound Care*. Wounds UK, Aberdeen: 79–91

Hollinworth H, White R (2006) The clinical significance of wound pain. In: White R, Harding K (eds). *Trauma and Pain in Wound Care*. Wounds UK, Aberdeen: 3–16

Mudge E, Spanou C, Price P (2008) A focus group study into patients' perception of chronic wound pain. *Wounds UK* 4(2): 21–8

Price PE, Fagervik-Morton H, Mudge EJ, et al (2008) Dressing-related pain in patients with chronic wounds: an international perspective. *Int Wound J* 5(2): 159–71

Richardson C, Upton D (2011) Managing pain and stress in wound care. *Wounds UK* 7(4): 100–7

Richardson C (2012) An introduction to the biopsychosocial complexities of managing wound pain. *J Wound Care*, 21(6): 267–73

Roberts D (2013) *Psychosocial Nursing Care: A Guide to Nursing the Whole Person*. McGraw-Hill Education, Maidenhead

Solowiej K (2010) Pain-induced stress in wound care, part 2: assessment and management. *Br J Healthcare Assistants* 4(9): 448–51

Solowiej K, Upton D (2012) Painful dressing changes for chronic wounds: assessment and management. *Br J Nurs* 21(20): 20–5

Solowiej K, Mason V, Upton D (2010) Psychological stress and pain in wound care, part 2: a review of pain and stress assessment tools. *J Wound Care* 19(3): 110–15

Upton D (2014) Psychological aspects of wound care: implications for clinical practice. *J Community Nurs* 28(2): 52–7

Vuolo JC (2009) Wound-related pain: key sources and triggers. *Br J Nurs* 18(15 Suppl): S20–5

Wong DL, Baker CM (1988) Pain in children: comparison of assessment scales. *Paediatr Nurs* 14(1): 9–17

World Union of Wound Healing Societies (2008) *Principles of best practice: Minimising pain at wound dressing-related procedures. A consensus document*. Toronto, Ontario, Canada: © WoundPedia Inc 2007

Young T (2007) Assessment of wound pain: overview and a new initiative. *Br J Nurs* 16(8): 458–61

GET IN THE ZONE

97% of community nurses prefer to access product information in one independent place*.

THE NEW JCN DIGITAL LEARNING ZONE IS THAT PLACE

Learn about products relevant to your work in our Products in Practice area

- Entries about specific products
- How they work
- Unique product features
- How to use
- When to use
- Instructional videos
- Clinical evidence

- Easy-to-use, module format
- Searchable by product category and name
- Tiered approach to learning about products
- Learning activity counts to your revalidation requirements
- Log your learning in our free revalidation e-portfolio
- Desktop, tablet and mobile-friendly

http://www.jcn.co.uk/learning-zone/

*JCN survey April 2016. n=983, answers in more than one category allowed

IN BRIEF

- Negative pressure wound therapy (NPWT) can promote healing, reduce exudate volume and odour and thus improve patient quality of life.
- -80mmHg is the appropriate level of negative pressure in most wound types (Malmsjö et al, 2009).
- Single-use/disposable NPWT systems are now available, offering greater flexibility for the patient.

KEY WORDS:

- Negative pressure wound therapy (NPWT)
- Contraindications/precautions
- Pressure settings
- Single-use/disposable systems

Negative pressure wound therapy: selection, choices and outcomes

Jeanette Milne

This article describes the appropriate use of negative pressure wound therapy (NPWT). NPWT can facilitate a variety of treatment aims, which will vary according to patient and wound characteristics. Key benefits of NPWT are shown in *Table 1*. Successful NPWT depends on conditions which are essential to wound healing. For example, the wound bed must have sufficient blood supply; the patient needs to have a good nutritional status; if appropriate, pressure relief should be used; and other comorbidities (see 'Precautions' section in this piece) should be addressed to minimise their impact on wound healing (Henderson et al, 2010).

To optimise NPWT it should be used as an adjunct to wound bed preparation. Wound bed preparation is described as the process of removing the barriers to healing, such as the removal of dead and devitalised tissue, managing wound infection, and allowing the wound repair process to progress normally. Wound bed preparation represents a combination of both scientific knowledge and practical skill; its application can help correct abnormalities in chronic wounds and stimulate the healing process (Schultz, 2003).

'Before the application of NPWT, it is important that a full assessment of the wound and patient is undertaken by a knowledgeable and competent clinician...'

NPWT is indicated in a number of different wounds, such as:

- Postoperative and dehisced surgical wounds
- Pressure ulcers
- Diabetic/neuropathic ulcers
- Traumatic wounds
- Skin flaps and grafts
- Venous insufficiency ulcers
- Explored fistulae (European Wound Management Association [EWMA], 2007).

In addition, wounds with particular attributes may be ideal for NPWT; for example, those that have failed to respond to traditional wound care and are showing signs of chronicity or little progress towards healing, or deep/cavity wounds with a high volume of wound exudate.

FACTORS TO CONSIDER BEFORE STARTING NPWT

Before the application of NPWT, it is important that a full assessment of the wound and patient is undertaken by a knowledgeable and competent clinician to confirm whether NPWT is appropriate.

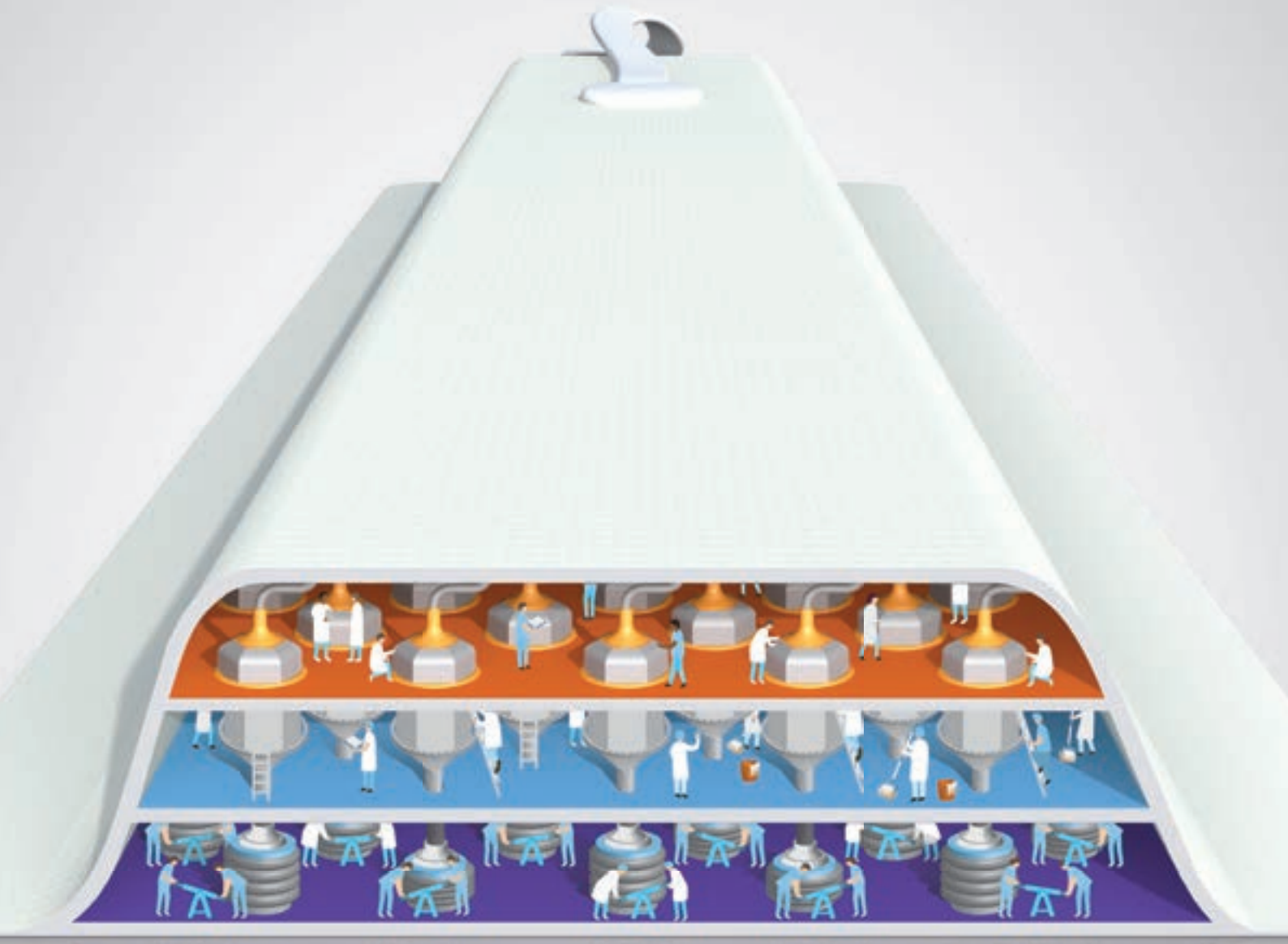
Points to consider include:

- Will the patient's wound symptoms be managed more effectively using NPWT?
- What are the dimensions of the wound and can NPWT be easily applied?
- Are there any contraindications and/or precautions to therapy?
- Will the placement of tubing pose any actual or potential problems?
- If the patient is discharged home on NPWT, will they be able to manage the NPWT system alone at home?

Top tip:

As with all wound treatments, NPWT should start with a comprehensive assessment of the patient and their wound.

Jeanette Milne, lead nurse tissue viability, Northumbria Healthcare NHS Trust



The real action is happening beneath the surface

PICO's proven clinical efficacy has been often linked to its small yet powerful pump. But that would be to overlook the revolutionary design of PICO's dressing itself. An airlock layer distributes the negative pressure evenly across the dressing[1] while the super absorbent core ensures rapid uptake from the wound[1]. These combine with a top film with an impressive Moisture Vapour Transmission Rate which ensures most of the exudate is evaporated away[1]. Both dressing and pump combined deliver the clinical results published in more than 62 clinical articles to date. So if you're looking for a NPWT system that works harder for you and your patients, PICO is ready for action.

www.smith-nephew.com/pico

smith&nephew

PICO◇

Single Use Negative Pressure Wound Therapy system

Supporting healthcare professionals for over 150 years

[1]Malmsjö M, Huddleston E, Martin R. Biological effects of a disposable, canisterless Negative Pressure Wound Therapy system. Eplasty 2014;14:e15. ◇Trademark of Smith & Nephew © Smith & Nephew September 2016. Asset code 77723

NPWT: the facts...

NPWT systems consist of a:

- Wound contact layer and dressing: this is traditionally foam or gauze and fills the wound cavity
- Film (drape): this is applied over the foam or gauze filler as an air-tight seal
- Drainage tube: this is connected to a suction device with a canister that collects and removes exudate.

Standard devices consist of a pump which is attached to a canister to collect exudate, this in turn is connected to non-collapsible tubing that is attached via a port to the patient's dressing. These devices have incremental pressure settings — generally, -80mmHg is sufficient to give optimal benefit. The pressure settings can be changed based on individual patient need and the clinician's guidance. Negative pressure may be increased by 10mmHg increments if:

- A high volume of exudate is present
- Wound volume/size are large
- There is difficulty in maintaining the seal, e.g. due to the anatomical location.

- Can the wound bed be effectively debrided and prepared before the application of NPWT?
- Is the patient willing/able to give consent?

It is also essential to educate the patient and their carer about the use of NPWT. Patient information should include:

- Initially the negative pressure dressing may take longer to apply than other products. However, this therapy will be in place for up to three days
- The device should make a noise only when it is establishing a seal; once this has been achieved, the machine will operate more quietly
- Portable devices are available that enable patients to undergo therapy regardless of the setting.

NPWT CONTRAINDICATIONS

The following factors should be seen as contraindications to the application of NPWT:

- Suspected or confirmed osteomyelitis must be treated as per local guidelines before and during any NPWT, until resolved
- NPWT is not recommended in malignant wounds, but can be used post-tumour removal, if tissue margins are clear of disease (if unsure, please seek local guidance or clarification from the lead clinician)
- Fistulae must be investigated to establish the location and extent of communication between organs and establish causation, e.g. a small bowel fistula with a distal obstruction will not seal unless the distal obstruction is cleared. However, if there is no distal obstruction, it may heal over with appropriate management. As such, the endpoints of care with NPWT will differ depending on the results of investigations
- Negative pressure, directly applied to exposed arteries or veins, could result in vessel compromise. The lead clinician, therefore, should approve use of NPWT
- If dry, necrotic eschar is covering the wound, or if there is a large amount of necrotic issue present, NPWT is not appropriate. Best results are obtained if the wound is debrided before NPWT application. Small amounts of soft tissue slough will autolyse during therapy. As long as haemostasis is achieved, NPWT should be applied as soon after debridement as possible, if not immediately
- Severe peripheral arterial disease — ankle brachial pressure index (ABPI) less than 0.5 needs investigation and, if appropriate, revascularisation before starting NPWT
- Any cavity/sinus, of which the origin is not clearly visible, or cannot be gently probed to gain an indication of origin.

PRECAUTIONS

Precautions should be taken when using NPWT in the following cases (EWMA, 2007; Henderson et al, 2010):

- Extra caution should be used for patients with neuropathic

Table 1: Summary of treatment goals achievable with NPWT

Treatment goals	Related aspect of mechanism of action
To manage and protect the wound	Improved fluid management Prevention of wound dessication Prevention of environmental insult
To prepare the wound for surgical closure or to progress wound healing by secondary intention	Improved quality of the wound bed (granulation tissue formation) Contribution to infection management Reduction of size and complexity of the wound
To improve outcome after split-thickness skin graft (SPTG)	Splint the wound Prevention of postoperative complications (such as graft failure)
To improve patient comfort	Reduction of wound pain Reduced frequency of dressing changes Improved patient mobility Management of wound exudate and odour
To reduce costs	Faster progression to additional surgery/hospital discharge Shorter time to closure Reduced nursing time Prevention of wound complications

aetiologies, or those who have compromised circulatory flow to the wounded area
- Burns – devitalised tissue must be debrided before application of NPWT
- Patients with wounds in close proximity to blood vessels, delicate fascia, vital organs or exposed tendons (ensure adequate protection with overlying fascia, tissue or other protective barriers)
- Bone fragments or sharp edges can puncture protective barriers, vessels, or organs causing injury. Any injury could cause bleeding, which, if uncontrolled, could be potentially fatal. It is important to be aware of possible shifting of the relative position of tissues, vessels or organs within the wound that might increase the possibility of contact with sharp edges when the dressing collapses. Sharp edges or bone fragments must be eliminated from the wound area or covered to prevent them from puncturing blood vessels or organs before the application of NPWT. Where possible, completely smooth and cover any residual edges to decrease the risk of serious or fatal injury, should shifting of structures occur. Use caution when removing dressing components from the wound so that wound tissue is not damaged by unprotected sharp edges
- Enteric fistulae — ensure that there is no distal obstruction. This task should only be undertaken with expert supervision
- Patients receiving anticoagulant therapy or platelet aggregation inhibitors, or those who are actively bleeding or have weakened irradiated blood vessels or organs. If significant bleeding develops, immediately discontinue the use of NPWT and take measures to stop the bleeding. Do not remove the dressing until the treating clinician or surgeon is consulted. Do not resume the use of NPWT until adequate haemostasis has been achieved, and the patient is no longer at risk of bleeding
- Spinal cord injury — some patients can experience autonomic hyperreflexia (sudden elevation in blood pressure or bradycardia [slow heart rate] in response to stimulation of the sympathetic nervous system). Discontinue NPWT to help minimise sensory stimulation and seek immediate medical assistance
- Malnourished patients without access to adequate nutrition/ nutritional supplements
- Non-concordant patients.

WHICH WOUND-FILLER MATERIAL

The function of the wound filler is to deliver negative pressure to the wound bed. The suction force generated by the negative pressure leads to active drainage of exudate from the wound. No differences in the mode of action have been observed with either foam or gauze, although polyurethane (PU) foam results in more contraction than gauze in large wounds (Malmsjö et al 2010).

Choosing a filler

In the author's clinical experience, gauze fillers conform easily to the shape and contours of the wound bed during application and once negative pressure is applied (*Figure 2*).

Conversely, foam does not conform easily to non-uniform wounds and needs to be cut and shaped and layered to ensure it fits the wound dimensions (*Figure 3*).

Remember:

When applying NPWT it is important to consider the pressure settings, type of dressing used and whether the therapy is intermittent or continuous.

PRESSURE SETTINGS

The level of negative pressure may be varied within the recommended therapeutic range, according to clinical circumstances (some of which are outlined below), without compromising clinical outcomes and treatment goals (Campbell et al, 2008; Hurd et al, 2010; *Figure 4*).

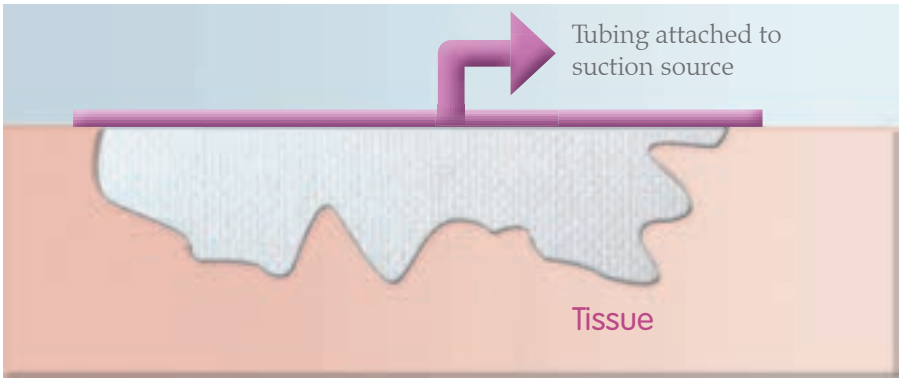


Figure 2. *Gauze conforms easily to the shape and contours of the wound bed, giving uniformity of pressure.*

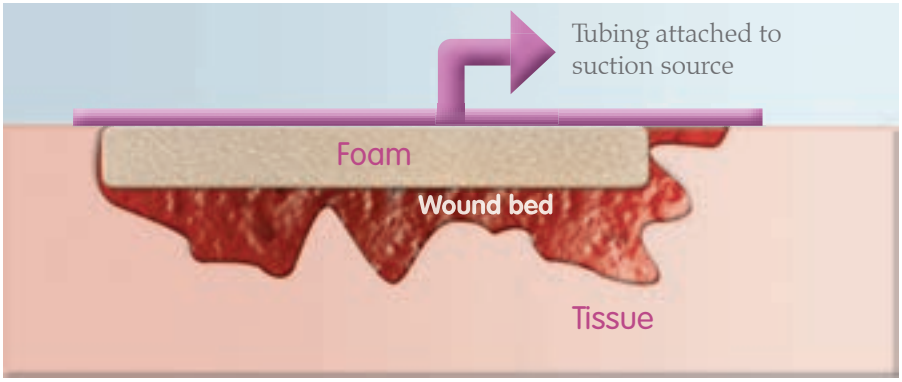


Figure 3. *Foam is easily applied to regular-shaped wounds, but fails to conform to irregular-shaped wounds and would need to be cut.*

NPWT dressings: hints and tips

- Do not place any dressings into blind/unexplored tunnels. Channel drains may be more appropriate for use with explored tunnels. Do not force dressings into any area of the wound, as this may damage tissue, alter the delivery of negative pressure, or hinder exudate and dressing removal
- Always count the total number of pieces of dressing used in the wound and document that number on the drape and in the patient's notes
- Dressings are not bio-absorbable: the number of pieces of dressing removed from the wound must be counted to ensure the same number of pieces have been removed as placed
- Dressings left in the wound for greater than the recommended time period may foster ingrowth of tissue, creating difficulty in removing them from the wound, or lead to infection or other adverse events
- Consider use of a skin preparation product to protect periwound skin
- Do not allow foam to overlap onto intact skin. Protect fragile, friable periwound skin with additional drape, hydrocolloid or other transparent film
- Multiple layers of the drape decrease the moisture vapour transmission rate (MVTR), which can increase the risk of periwound maceration
- To avoid trauma to the periwound skin, do not pull or stretch the drape over the dressings during drape application
- Ensure that the pump and tubing does not:
  - Lie in a position where it could cause pressure damage to the patient
  - Trail across the floor where it could present a trip hazard or become contaminated
  - Present a risk of strangulation or a tourniquet to patients
  - Rest on, or pass over a source of heat
  - Become twisted or trapped under clothing or bandages so that the negative pressure is blocked.

Conventional NPWT systems usually have continuous and intermittent suction settings. Continuous suction is the most commonly used and is the setting delivered in newer, disposable devices. It is the recommended setting at the start of therapy (Malmsjö and Borgquist, 2010).

Standard intermittent setting gives a cycle of five minutes on and two minutes off therapy and can be used when the exudate is reduced. In some clinical scenarios, continuous therapy is recommended, e.g. when used over unstable sternum, as the dressing is used to splint the wound allowing movement from breathing but avoiding separation of the wound edges that would impair healing (Argenta and Morykwas, 1997).

NPWT and wound infection

NPWT is safe to use on colonised, critically-colonised and infected wounds. Most wounds, particularly chronic wounds such as pressure and leg ulcers, are colonised by bacteria (World Union of Wound Healing Societies [WUWHS], 2008). These can be grown on a wound swab, but do not necessarily delay healing or create undue problems with the healing environment. When a wound becomes critically colonised or clinically infected, a host response occurs. Patients receiving NPWT should be monitored for clinical signs and symptoms of wound infection, such as increased exudate, odour and systemic pain, and friable granulation tissue, and additional treatments instigated accordingly, for example, prescribing systemic antibiotics as and when such conditions arise. Consideration must also be given to changing the NPWT dressing more frequently, or using an antimicrobial dressing as a wound contact layer to help reduce the bacterial burden at the wound surface.

NPWT and children

Either gauze or foam fillers can be used with children, but a wound contact layer must be used with all wounds ((Malmsjö and Borgquist, 2010). Lower pressures are sufficient to provide therapeutic results with children (McCord et al, 2007). As a general rule, start low and increase pressure in line with tolerance and clinical results. Devices should be set on continuous therapy in all children unless otherwise specified by the lead clinician.

Young children (less than five years of age) may need to go to theatre for placement and dressing changes. Dressing changes should occur twice a week, and any wound fluid loss into the canister should be closely monitored and replaced as per the lead clinician's instructions. This is of particular importance in neonates/infants and younger children, as exudate loss of 300ml would be a significant volume of fluid loss in relation to their overall circulating fluid balance. Thus, monitoring of fluid balance and replacement of any losses are paramount to maintain circulating volume and avoid hypovolaemic shock. Progress should be seen in the first week of therapy, with average treatment times not exceeding 1–2 weeks in most cases (McCord et al, 2007).

SINGLE-USE/DISPOSABLE NPWT SYSTEMS

Single-use NPWT systems consist of a pump and dressing kit. They deliver negative pressure to the wound surface in the same way as other devices. However, in some devices, the exudate is managed by the dressing through a combination of absorption and evaporation of moisture through the outer film or into a smaller canister. Some are designed to be used for up

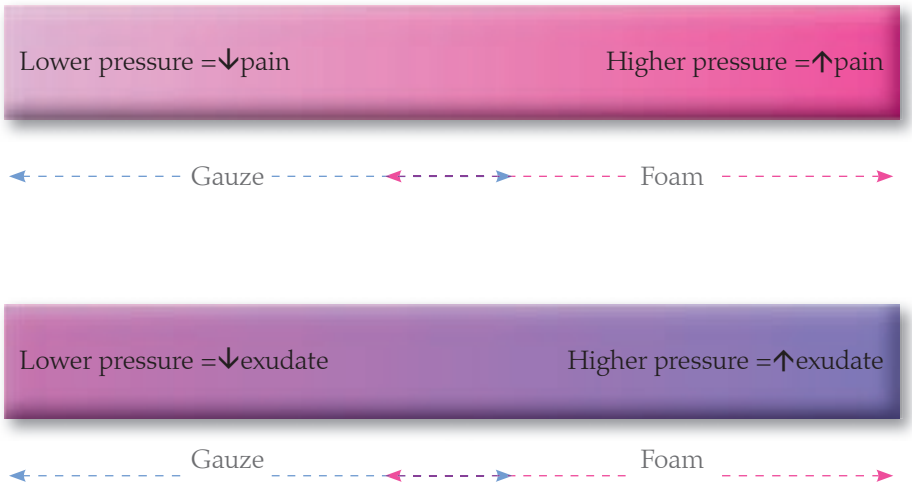


Figure 4. *Managing NPWT-related wound pain.*

to seven days, although duration may be less depending on the wound type, size, rate or volume of exudate, orientation of the dressing, or environmental condition (Payne and Edwards, 2014). The same mechanisms of action apply along with the same indications, contraindications and precautions, as described previously. These systems have the advantage of a smaller device which may be more appropriate for some patients and can be used to facilitate hospital discharge, or step a patient down from conventional NPWT. As the wound progresses, the rationale for use is largely dependent on identified treatment goals.

Additional considerations before use of disposable NPWT include:

- Some single-use systems do not have audible alarms. The pump should be carried so that it is accessible and the patient/healthcare professional can check the status routinely
- Although they can be used under clothing/bedding, it is important that occlusive materials, e.g. film dressings, are not applied over the pad area of the dressing as this will impair device performance.

CONCLUSION

NPWT has been widely used to benefit a large number of patients in terms of both symptom management and wound healing. Its ability to simultaneously manage exudate, while promoting granulation tissue is cited as the reasons for its use with larger defects (Malmsjö and Borgquist, 2010).

It is essential that clinicians assess the patient and the wound to optimise the use of the therapy. The decision to use foam or gauze interfaces should be based on the individual patient and wound assessment, and on the goals that need to be achieved — whether they be wound healing or symptom management, or both. All clinicians, patients and carers should know how the system they are using works, what the expected benefits of therapy are and how these will be measured, and what to do if there are any suspected complications. WCT

Practice point

Single-use/disposable NPWT systems offer patients greater flexibility and enable them to continue work/social activities while still receiving therapy.

REFERENCES

Argenta LC, Morykwas MJ (1997) Vacuum-assisted closure: a new method for wound control and treatment: clinical experience. *Ann Plast Surg* 38(6): 563–77

Campbell PE, Smith GS, Smith JM (2008) Retrospective clinical evaluation of gauze-based negative pressure wound therapy. *Int Wound J* 5: 280–6

European Wound Management Association (2007) *Position document: Topical negative pressure in wound management*. MEP Ltd, London. Available online: www.woundsinternational.com/pdf/content_46.pdf

Henderson V, Timmons J, Hurd T, Deroo K, Maloney S, Sabo S (2010) NPWT in everyday practice. Made Easy. *Wounds Int* 1(5). Available online: www.woundsinternational.com

Hurd T, Chadwick P, Cote J, et al (2010) Impact of gauze-based NPWT on the patient and nursing experience in the treatment of challenging wounds. *Int Wound J* 7: 448–55

Malmsjö M, Borgquist O (2010) NPWT settings and dressing choices. Made Easy. *Wounds Int* 1(3). Available online: www.woundsinternational.com

Malmsjö M, Ingemansson R, Martin R, Huddleston E (2009) Wound edge microvascular blood flow: effects of negative pressure wound therapy using gauze or polyurethane foam. *Ann Plast Surg* 63(6): 676–81

Malmsjö M, Lindstedt S, Ingemansson R (2010) Effects of foam or gauze on sternum wound contraction, distension and heart and lung damage during negative pressure wound therapy of porcine sternotomy wounds. *Interact Cardiovasc Thorac Surg* Dec 24

McCord SS, Naik-Mathuria BJ, Murphy KM, et al (2007) Negative pressure therapy is effective to manage a variety of wounds in infants and children. *Wound Repair Regen* 15(3): 296–301

Payne C, Edwards D (2014) Application of the single use negative pressure wound therapy device (PICO) on a heterogenous group of surgical and traumatic wounds. *Eplasty*. Available online: www.medscape.com/viewarticle/824485_4

Shultz G (2003) Wound Bed Preparation: a systematic approach to wound management. *Wound Repair Regen* 11: 1–28

World Union of Wound Healing Societies (WUWHS) (2008) *Principles of best practice: Wound infection in clinical practice. An international consensus*. London: MEP Ltd

IN BRIEF

- A systematic wound assessment by a skilled nurse is part of an effective wound healing or wound management care plan.
- Any assessment should take into account current medicines, past medical history and involve the patient in decision-making about their wound.
- Some patients will need input from other specialist services such as infection control or podiatry, thus requiring a whole-systems approach.

KEY WORDS:

- Holistic assessment
- Wound bed preparation
- Wound management
- Healing

The importance of accurately assessing the patient's wound

Edwin Chamanga

Approximately 50% of community nursing time is spent on wound care and a UK study has suggested that 3.7 in every 1,000 people will be affected by a wound at some time (Simon et al, 2004; Posnett et al, 2009). This helps to illustrate the need for community nurses to have a thorough understanding of wound assessment to deliver optimum wound care. A nurse's professional responsibility also dictates that they should be able to perform an holistic assessment of the patient and the wound bed before choosing the appropriate dressing and/or therapy (Benbow, 2016).

Accurate wound assessment involves both local evaluation of the wound bed and a holistic systematic assessment of the patient, as this supports differential diagnoses (Jaul, 2010). However, different clinical practices use different wound assessment tools to provide effective documentation (see example in *Figure 1*). These wound assessment tools are either paper-based or embedded in the healthcare organisation's electronic system. However, nurses should remember that these assessment tools are only an *aide-mémoire* and any wound assessment needs to be a streamlined, structured process that maintains good standards of care (Ousey and Cook, 2012). Assessment should be thorough and conducted by a skilled, competent and knowledgeable nurse, adhering to evidence-based models of care that reflect national and international guidelines (Collier, 2003; Harding et al, 2008).

The guidelines recommend an understanding of wound bed preparation dependent upon the patient and nurse's aim for the wound bed, be this healing or wound management. The latter applies in, for example, cancer-related wounds or palliative wound management, where the approach taken is determined by the clinical objectives for the wound bed, i.e. the treatment may focus on exudate, pain or malodour management, depending on the wound bed tissue type.

In the author's community experience, nurses are faced with various wound types, which mainly fall into the following categories:

- Leg ulcers (venous/arterial/mixed aetiology)
- Pressure ulcers
- Neuropathic ulcers
- Diabetic foot ulcers
- Surgical wounds
- Cancerous wounds
- Traumatic wounds (lacerations/skin tears/grazes)
- Burns and scalds
- Bites
- Sinus/fistula.

Credit: Arria Belli @flickr.com

Understanding the tissue type found in the wound bed is crucial to accurate wound assessment.

Top tip:

Wound assessment is not a one-off task to be carried out when the wound is identified; it is an ongoing, dynamic process involving changes in treatment, the patient's health and medical condition.

Edwin Chamanga, tissue viability service lead, Hounslow and Richmond Healthcare NHS Trust

medi

Available on prescription.

juxtacures

Awarded as "Most Innovative Product in Wound Care" by the World Union of Wound Healing Societies.

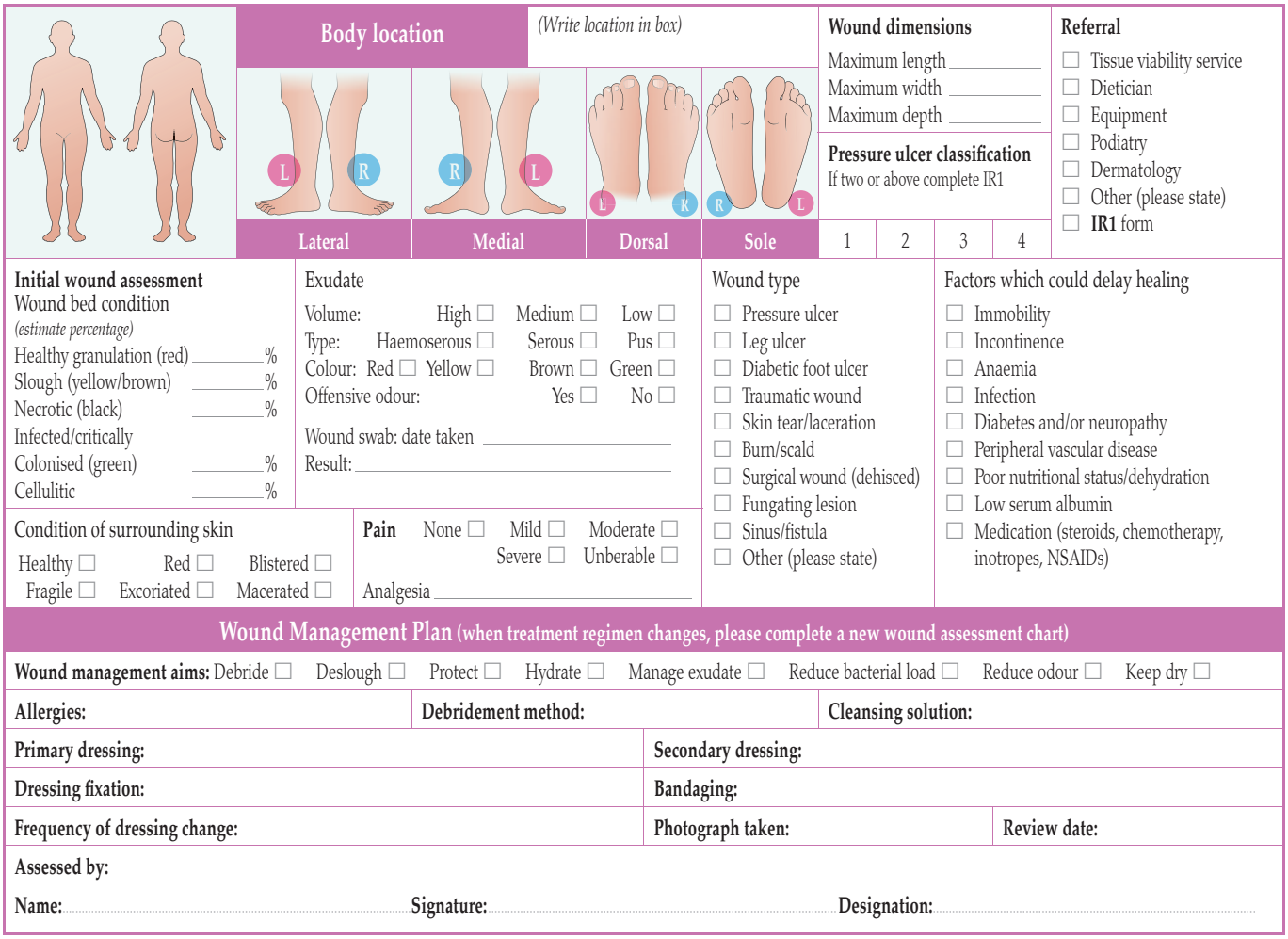
- Cost-effective and time-saving
- Safe, measureable compression
- Instantly adjustable
- Enables self care

JWC journal of wound care
WUWHS AWARDS
WINNER
MOST INNOVATIVE PRODUCT

medi World of Compression since 1951

Discover the medi World of Compression.

www.mediuk.co.uk/world-of-compression



Body location (Write location in box)

Lateral | Medial | Dorsal | Sole

Wound dimensions
Maximum length _____
Maximum width _____
Maximum depth _____

Pressure ulcer classification
If two or above complete IR1
1 | 2 | 3 | 4

Referral
- ☐ Tissue viability service
- ☐ Dietician
- ☐ Equipment
- ☐ Podiatry
- ☐ Dermatology
- ☐ Other (please state)
- ☐ **IR1** form

Initial wound assessment
Wound bed condition
(estimate percentage)
Healthy granulation (red) _____%
Slough (yellow/brown) _____%
Necrotic (black) _____%
Infected/critically Colonised (green) _____%
Cellulitic _____%

Exudate
Volume: High ☐ Medium ☐ Low ☐
Type: Haemoserous ☐ Serous ☐ Pus ☐
Colour: Red ☐ Yellow ☐ Brown ☐ Green ☐
Offensive odour: Yes ☐ No ☐
Wound swab: date taken _____
Result: _____

Condition of surrounding skin
Healthy ☐ Red ☐ Blistered ☐
Fragile ☐ Excoriated ☐ Macerated ☐

Pain None ☐ Mild ☐ Moderate ☐ Severe ☐ Unberable ☐
Analgesia _____

Wound type
- ☐ Pressure ulcer
- ☐ Leg ulcer
- ☐ Diabetic foot ulcer
- ☐ Traumatic wound
- ☐ Skin tear/laceration
- ☐ Burn/scald
- ☐ Surgical wound (dehisced)
- ☐ Fungating lesion
- ☐ Sinus/fistula
- ☐ Other (please state)

Factors which could delay healing
- ☐ Immobility
- ☐ Incontinence
- ☐ Anaemia
- ☐ Infection
- ☐ Diabetes and/or neuropathy
- ☐ Peripheral vascular disease
- ☐ Poor nutritional status/dehydration
- ☐ Low serum albumin
- ☐ Medication (steroids, chemotherapy, inotropes, NSAIDs)

Wound Management Plan (when treatment regimen changes, please complete a new wound assessment chart)

Wound management aims: Debride ☐ Deslough ☐ Protect ☐ Hydrate ☐ Manage exudate ☐ Reduce bacterial load ☐ Reduce odour ☐ Keep dry ☐

Allergies:	**Debridement method:**	**Cleansing solution:**
Primary dressing:	**Secondary dressing:**	
Dressing fixation:	**Bandaging:**	
Frequency of dressing change:	**Photograph taken:**	**Review date:**

Assessed by:
Name: ..... **Signature:** ..... **Designation:** .....

Figure 1. *An example of a wound assessment tool.*

ASSESSMENT

When it comes to wound assessment, it is worth remembering that healing is affected by both intrinsic (internal) and extrinsic (external) factors (Sussman, 2014; Stacey, 2016).

Intrinsic factors include:

Table 1: The 'nine Cs' of wound assessment (Baranoski et al, 2008)

Cause of the wound
Clear picture of what the wound looks like
Comprehensive picture of the patient
Contributing factors
Communication to other healthcare practitioners
Continuity of care
Centralised location for wound care information
Components of the wound care plan
Complications from the wound

- Health status, i.e. good blood supply and oxygenation
- Immune function, i.e. healthy immune function helps the wound-healing process and reduces the risk of wound bed infection
- Comorbidities, e.g. diabetes, autoimmune diseases, pain (increases the production of cortisol)
- Age-related changes to the skin, e.g. loss of hair follicles and sebaceous glands; reduced blood supply, increased fragility, etc
- Nutrition, i.e. a balanced diet including proteins, carbohydrates, fats and fluids promotes healing.

Extrinsic factors include:
- Physical damage, i.e. pressure, friction, shearing forces
- Debris, i.e. slough, necrotic tissue, eschar, etc
- Dessication, i.e. drying of the wound surface resulting in death of surface cells
- Maceration, i.e. excess moisture slows the healing process and damages the periwound skin
- Temperature
- Infection, i.e. chemical stress, caused by topical agents such as antiseptics, smoking, and drugs such as steroids and non-steroidal anti-inflammatory drugs (NSAIDs), may have an adverse effect on the wound and cells therein.

Each nurse should be aware of these factors for each individual

Top tip:

Initial assessment should focus on the patient themselves, including their age, mobility, nutritional status and any medication they might be on. It should also take into account any psychological problems and quality of life.

GPN: Journal of General Practice Nursing

JCN: Journal of Community Nursing

STUDY DAYS & EXHIBITION 2017

NEW AGENDA INCLUDES SESSIONS WITH A FRESH APPROACH TO WOUND CARE MANAGEMENT

- FREE ATTENDANCE FOR ALL PRIMARY CARE NURSES
- PRESENTED BY LEADING CLINICIANS
- COVERS THEORY AND PRACTICAL SKILLS FOR COMMUNITY PRACTICE
- EXHIBITION WITH LATEST PRODUCTS, DEMONSTRATIONS AND SAMPLES
- ATTENDANCE CONTRIBUTES TO REVALIDATION

event	venue	date
Cardiff	Mercure Cardiff Holland Hotel	Wednesday 1 February
Blackpool	Hilton Hotel	Wednesday 15 March
Stoke-on-Trent	Stoke City Football Club	Wednesday 26 April
Leicester	Leicester Racecourse	Thursday 11 May
Exeter	Exeter Racecourse	Wednesday 24 May
Bristol	Mercure Bristol Grand Hotel	Tuesday 6 June
Southampton	Grand Harbour Hotel	Wednesday 5 July
Falkirk	Macdonald Inchrya Hotel	Wednesday 6 September
Maidstone	Mercure Maidstone Great Danes Hotel	Wednesday 27 September
Esher	Sandown Park Racecourse	Wednesday 11 October
Sheffield	Hilton Doubletree	Wednesday 1 November
Durham	Ramside Hall Hotel	Wednesday 22 November
Norwich	Holiday Inn	Wednesday 6 December

Book now to reserve your place **www.jcn.co.uk/events/**

patient being assessed. The subsequent review is an important part of wound assessment and is not a one-off task to be carried out when the wound is identified; it is an ongoing, dynamic process involving changes in treatment, the patient's health and medical condition (Benbow, 2011). A skilled and knowledgeable reviewer is essential as the delivery of wound care is hugely dependent on each nurse's expertise.

As shown in *Figure 1*, as part of comprehensive wound assessment the community nurse has to evaluate the following aspects and document them to inform the care planning process:

- Wound type
- Wound location
- Wound dimensions
- Wound bed condition
- Exudate
- Factors which could delay wound healing
- Any necessary referrals, such as infection control team
- Condition of the surrounding skin
- Pain.

This also accords with the so-called 'Nine Cs of wound assessment', as discussed by Baranoski et al (2008) (*Table 1*).

Holistic wound assessment

A wealth of research has been published on the importance of comprehensive patient assessment for those presenting with a wound (Eagle, 2009; Benbow, 2011; Ousey and Cook, 2012; Benbow, 2016; Chamanga, 2016), while many clichés such as 'do not treat the hole in the patient, but treat the patient as a whole' have grown up as commentators try to mitigate against poor wound care practice (Cartlidge-Gann, 2008). This remains the case today, with the so-called 'burning platform' challenge of managing patients with complex wounds as a result of multiple comorbidities, brought about partly by the prolonging of old age due to medical advances (NHS England, 2014).

Wound assessments must be holistic and nurses should understand the concept of differential diagnosis to identify any causative or contributing factors that could potentially delay or prevent healing. Holistic wound assessment also means that nurses should consider the social, family and emotional needs of the patient. These aspects of wound care assessment are hard to measure, however, wounds — particularly non-healing wounds — can lead to frustration and emotional distress for patients, as well as the extra resources needed for community nurses to assess patients' support networks (Jaul, 2010; Benbow, 2011).

Wound history

It is essential that the community nurse gains a full history of the wound, including the length of time it has been present and factors which may have led to its development, such as infection or pressure due to immobility (Eagle, 2009). This is essential for all types of wounds, but especially pressure ulcers where there is a greater need for risk reduction/elimination to enhance healing. Similarly, accurately assessing the wound history influences the focus of treatment, for example, does the wound require management or healing (Chamanga, 2016). Wound management is often associated with wounds that cannot be progressed towards healing such as fungating tumours, chronic pressure ulcers and any lesions where tissue regeneration cannot be achieved, such as arterial ulcers (Rogers, 2015). These kinds of wounds are often seen at end of life where their treatment becomes part of the patient's palliative care and involves control of exudate, odour, or pain, for example, rather than healing.

Conversely, wound healing aims to encourage tissue repair and regeneration in wounds that have the potential for healing. Healing is mainly associated with superficial traumatic wounds, acute wounds and chronic wounds that lack complications, i.e. there are no known comorbidities.

Wound types

Nurses have to be able to clearly identify the cause of the wound as this will influence the treatment plan. Similarly, failure to accurately diagnose the underlying cause of a wound can delay the wound-healing process, particularly if inappropriate treatments are selected as a result. Commonly, wounds are either acute or chronic and heal either by primary or secondary intention (Eagle, 2009). Acute wounds — mainly as a result of surgery or trauma — progress normally through the wound-healing trajectory and usually have a short healing time as the edges are brought together with stitches or sutures for example (primary intention).

On the other hand, chronic wounds are those which do not follow the normal wound-healing trajectory, possibly as a result of

Table 2: Common terms used in wound care (World Union of Wound Healing Societies [WUWHS], 2007)

Term	Description
Dry	• No visible moisture • Not an ideal wound healing environment • Surrounding skin may be dry, flaky and hyperkeratotic (exceptions are dry stable plaques in patients with inoperable ischaemia/peripheral arterial disease) • May need experienced/expert assessment
Moist	• An ideal wound environment • Primary dressing may have absorbed a low volume of exudate • Wound bed could appear glossy • Surrounding skin may be intact and hydrated
Wet	• Primary dressing may have absorbed a large volume of exudate • Potential for periwound maceration
Saturated	• Primary dressing may be saturated and leakage is visible on the secondary dressing

infection or other physiological factors, such as infected venous leg ulcers under compression bandages, and therefore present with unclosed edges. Healing by secondary intention essentially involves leaving the wound edges to close by themselves and results in longer healing times and an increased volume of exudate due to prolonged inflammation, for example (Eagle, 2009; Benbow, 2016).

Although some acute wounds deteriorate to become chronic wounds, pressure ulcers, leg ulcers, diabetic foot ulcers and malignant wounds are classified as chronic wounds as they are affected by the following factors from the onset:

- Pressure due to immobility
- Chronic venous hypertension
- Arterial insufficiency
- Progressive diabetic complications
- Anatomical changes in cancerous wounds (Benbow, 2016).

Irrespective of the origin of the wound, every patient has the right to expect clinically effective standards of care. Therefore, nurses need to provide accurate diagnosis, clear treatment goals and an evidence-based rationale for any dressing choice and therapy (Fletcher, 2010; Cook and Barker, 2012). If a patient presents with multiple wounds, each must be individually assessed and documented with a specific care plan (Ousey and Cook, 2012).

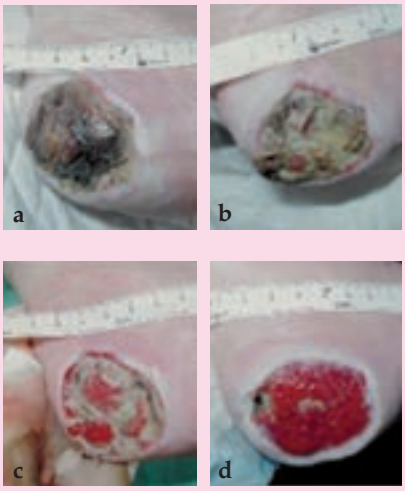


Figure 2, a–d. *a: necrotic tissue; b: sloughy tissue; c: mixture of slough and granulating tissue; d: granulating tissue.*

Wound location

The location of the wound may provide clues to its aetiology and can guide an effective care plan. For example, pressure ulceration should be suspected if the patient spends prolonged periods sitting, is not mobile and does not reposition enough and if the wound is overlying the gluteal fold (Jaul, 2010).

Pressure damage can also develop on the skin around tubes and catheters such as nasogastric tubes, while wounds can be compounded by the body's rejection of foreign materials. For example, in the author's clinical experience, patients sometimes present with sinuses and non-healing surgical wounds caused by surgical meshes/dissolvable sutures. Therefore, care must be taken to establish any underlying factors, for example:

- A wound over a capsule joint such as a knee could be leaking synovial fluid, which can be mistaken for wound exudate
- Areas with exposed bone such as heel pressure ulcers or sacral pressure ulcers must be carefully treated to eliminate the risk of osteomyelitis (bone infection)
- Where an organ is exposed or the depth of a sinus is unknown, the use of negative pressure therapy may be inappropriate (Eagle, 2009).

Wound dimensions

Wound measurement is an important part of the assessment process, providing an essential parameter for evaluating healing progress. Ideally, wound measurement is effective when documented in volume, including length, width and depth. The measurement of wound size will help the nurse assess if the wound is increasing or decreasing in size over time (Ousey and Cook, 2012). It is important that when measuring the wound's dimensions, nurses take into account any cavities, sinuses, tracts or fistulae and measure these with a probe if necessary.

Wound bed condition

The condition of the wound bed varies as the wound heals or deteriorates, and wounds can be classified according to the tissue type present at any given time (Benbow, 2016) (*Figure 2*). For example, healthy granulation tissue is red in colour and granular in appearance and is a positive indicator of healing and a good blood supply, whereas necrotic tissue or slough impedes healing and usually requires debriding (Eagle, 2009; Ousey and Cook, 2012).

Practice point

Remember, all findings during initial assessment should be clearly documented. This will provide baseline data against which to monitor wound progress and subsequent evaluations.

Particular factors for the nurse to consider when assessing the wound are whether the tissue bleeds easily and if there is any swelling, malodour or pus, all of which can be indicators of wound infection and/or cellulitis (infection of the deeper layers of the skin and the underlying tissue) (Eagle, 2009).

Exudate

Wound exudate volume and consistency should be recorded. However, the amount will change throughout the wound-healing process (Eagle, 2009). Traditionally, wounds have been classified as lightly, moderately, or heavily exuding and it is assumed that nurses can differentiate between these and other subjective terminology such as:

- High/excessive (+++)
- Medium/moderate (++)
- Low/minimal (+).

Although such terminology is still being used in clinical practice today, it makes the choice of wound dressings difficult and subjective which may lead to poor exudate management and delayed wound healing. It is beneficial to use such terms and descriptors as detailed in *Table 2*.

FACTORS WHICH COULD DELAY WOUND HEALING

As summarised above, research has identified intrinsic and extrinsic factors that can inhibit the wound-healing process (Sussman, 2014; Stacey, 2016). Once the community nurse has identified these factors, they have to try and address them otherwise wound healing may not be achieved or a vicious cycle of wound healing and wound breakdown can take hold. For example, a patient with a wound as well as a comorbidity like diabetes may not achieve their full healing potential if the underlying diabetes is poorly managed.

REFERRALS

As part of holistic wound management, some patients require the involvement of a multidisciplinary team (Stang et al, 2014), which means referrals may have to be made to other services. For example, a patient who presented with a complicated diabetic foot ulcer might have a history of ischaemic heart disease, poor glycaemic control, neuropathy (sensory, motor and autonomic), loss of adipose tissue, renal disease and multiple infections. In this case, the nurse might need to involve the vascular team, diabetic podiatry team, diabetic team and an endocrinologist.

PERIWOUND SKIN

A thorough assessment of the periwound area can aid holistic assessment by informing the nurse about the effectiveness of the current therapy and even the wound's aetiology. For example, vascular and venous ulcers both have demarcated edges, but vascular ulcers have steep sides, whereas venous ulcers have sloped edges (Grey et al, 2006).

Evidence of maceration of the surrounding skin can be an indicator of either poor exudate management by the current dressing product or a wound that is producing a high volume of exudate. Excess exudate can encourage bacterial growth leading to infection and also slows down wound healing, as the fresh epithelium is unable to migrate across the new granulating tissue (Cook and Barker, 2012).

PAIN

Wounds can cause continuous or intermittent pain (Eagle, 2009; Jaul, 2010). Intermittent pain is usually experienced during dressing changes or when the patient is being repositioned, in which case the nurse may need to advise the patient to take analgesia before the procedure or arrange this for them.

Continuous wound pain can be related to ischaemia, neuropathy, oedema or infection. However, a pain diary that incorporates a validated pain assessment scale (such as the visual analogue scale, where patients rate their pain on a range of 1–10) will help the nurse prescribe the correct amount of analgesia (Benbow, 2016).

WOUND MANAGEMENT

Once the nurse has gathered all the relevant clinical, social and psychological information from the patient as part of holistic assessment, they need to collaborate with the patient to come up with some wound objectives. Wound bed preparation facilitates care planning by offering a structured and systematic approach to wound management (Ousey and Cook, 2012). It helps to identify and eliminate local barriers, such as slough, biofilms, necrotic tissue, etc, which, in turn, may facilitate wound healing by:

- Promoting an understanding of the barriers to healing
- Providing a systematic approach
- Enhancing the effects of advanced therapies, such as negative pressure wound therapy (NPWT) or larval debridement (Schultz et al, 2003).

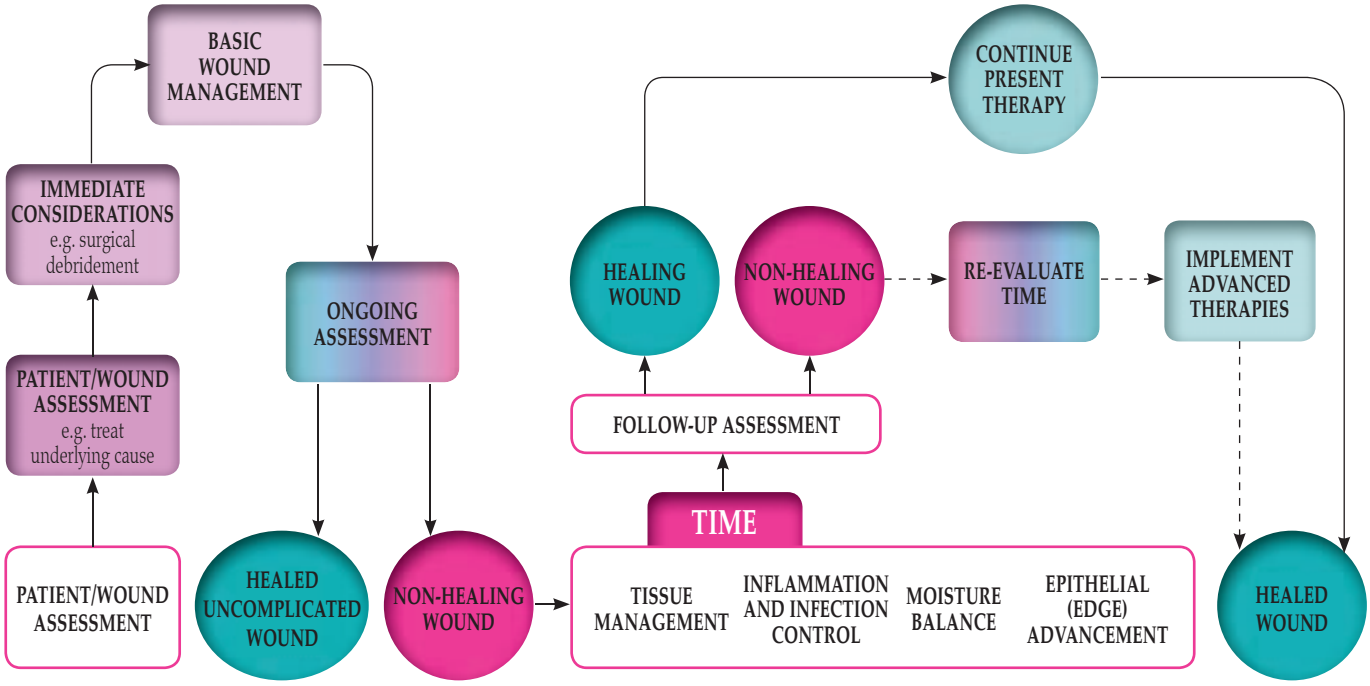


Figure 3. *Wound assessment and the TIME framework can be successfully implemented in clinical practice.*

Practice point

While healthcare professionals cannot heal wounds, they can help to provide the best wound environment for healing. Correct dressing choice is pivotal to effective wound management, and this should be determined by accurate and thorough wound assessment that considers the patient's individual needs. It is also important to assess how the wound and its treatment are affecting the patient, and if this is negatively impacting on normal activities of daily living.

Wound bed preparation uses the TIME framework, which provides nurses with a systematic approach to selecting wound interventions by considering each of the following components (Dowsett et al, 2015):

- **T**issue non-viable or deficient
- **I**nfection or inflammation
- **M**oisture imbalance
- **E**dges of wound: non-advancing or undermining.

Figure 3 demonstrates how wound assessment and the TIME framework can be successfully implemented in clinical practice (Falanga, 2004).

Following holistic patient assessment and in conjunction with wound bed preparation, clear wound bed objectives can be agreed between the patient and community nurse, including:

- To hydrate the wound — moist wound healing being the theory of wound healing as propounded in 1962 by George Winter
- To debride any necrotic tissue or slough that may be impeding healing
- To protect the skin — as epithelial or granulation tissue are vulnerable and at risk of breaking down
- To manage pain
- To manage exudate
- To encourage granulation
- To encourage epithelialisation
- To reduce bacterial bioburden.

CONCLUSION

Any comprehensive wound assessment should focus on the whole patient rather than just the wound. This means taking into account current medicines, past medical history and involving the patient in decision-making about their wound.

For an effective wound management plan to be implemented, the patient has to be assessed or reviewed by a skilled, competent and knowledgeable nurse who is familiar with the principles of wound bed preparation. In this respect, wound assessment charts, such as that shown in *Figure 1*, can be effective in prompting nurses to perform holistic patient assessment. WCT

REFERENCES

Baranoski S, Ayello EA, Langemo DK (2008) Wound assessment. In: Baranoski S, Ayello EA (eds). *Wound Care Essentials: Practice Principles*. Lippincott, Williams and Wilkins, Ambler PA: 77–92

Benbow M (2011) Wound care: ensuring a holistic and collaborative assessment. *Br J Comm Nurs* 16(9 Suppl): S6–16

Benbow M (2016) Best practice in wound assessment. *Nurs Stand* 30(27): 40–7

Cartlidge-Gann L (2008) Consider the whole patient, not just the hole: healing a wound cavity by secondary intention. *Wound Practice and Research* 16(4): 176–80

Chamanga E (2016) Wound assessment and treatment in primary care. *Independent Nurse* Available online: www.independentnurse.co.uk (accessed 24 March, 2016)

Collier M (2003) The elements of wound assessment. *Nurs Times* 99(13 Suppl): S48–49

Cook L, Barker C (2012) Exudate: understand it, assess it, manage it. *Nurs Res Care* 3: 198–201

Dowsett C, Nylokke M, Harding K (2015) Taking wound assessment beyond the edge. *Wounds International.* Available online: www.woundsinternational.com (accessed 24 February, 2016)

Eagle M (2009) Wound assessment: the patient and the wound. *Wound Essentials* 4: 14–24

Falanga V (2004) Wound bed preparation: science applied to practice. In: *European Wound Management Association (EWMA). Position Document. Wound Bed Preparation in Practice*. MEP, London

Fletcher J (2010) Development of a new wound assessment form. *Wounds UK* 6(1): 92–9

Grey JE, Enoch S, Harding EK (2006) Wound assessment. *Br Med J* 332(7536): 285–8

Harding KG and an expert wound panel (2008) *Best Practice Statement Optimising Wound Care*. Wounds UK, London

Jaul, E (2010) Assessment and management of pressure ulcers in the elderly: current strategies. *Drugs Aging* 27(4): 311–25

NHS England (2014) *Five Year Forward View*. Available online: www.england.nhs.uk (6 March, 2016)

Ousey K, Cook L (2012) *Wound Assessment: Made Easy*. Wounds UK, London

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

Rogers G (2015) Palliative Wound Care: Part 1. *Wound Care Advisor* 4(1): 25–7

Schultz G, Sibbald G, Falanga V, et al (2003) Wound bed preparation: a systematic approach to wound management. *Wound Repair Regen* 1(Suppl): S1–28

Simon D, Dix F, McCollum C (2004) Management of venous leg ulcers. *Br Med J* 328(7452): 1358–62

Stacey M (2016) Why don't wounds heal? *Wounds International.* Available online: www.woundsinternatinal.com (accessed 24 February, 2016)

Stang D, O'Brien J, Ricci E, Chadwick P (2014) *Larval debridement therapy: diabetic foot ulcer management*. Wounds UK, London

Sussman G (2014) Ulcer dressings and management. *Australian Family Physician* 43(9): 588–92

World Union of Wound Healing Societies (WUWHS) (2007) Principles of best practice: wound exudate and the role of dressings. A consensus document. London: MEP Ltd. Available online: www.woundsinternational.com

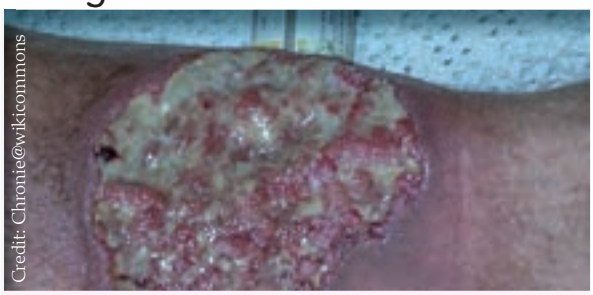
Debridement

Sometimes it's hard to work through all the research and evidence to find out exactly what the basics of good wound care are. Here, *Wound Care Today* outlines eight key elements of successful debridement...

1 What is debridement?

Debridement involves the removal of necrotic (dead) tissue, infected tissue, hyperkeratosis (abnormal thickening of the outer layer of the skin), slough (dead cells that have accumulated in wound fluid), pus and debris (such as fibres from clothes or wound dressings), or any other type of bioburden from a wound. The aim is to clear away the debris from the wound to allow granulation and epithelialisation to occur and ultimately promote healing. These types of chronic wounds often require repeated debridement to remove further slough, biofilm (a mass of microbial cells that collect on the wound's surface and promote infection), fibrin and tissue-destroying enzymes that collect in the wound bed and can prevent ongoing healing.

2 Slough and necrosis



Credit: Chronie@wikicommons

Wounds, particularly those that have become chronic and are not healing properly, such as leg ulcers or pressure ulcers, often 'collect' necrosis, slough and bacteria as these are not cleared away by the normal wound-healing process. Necrotic tissue is often dry and 'leathery' in appearance, a form of devitalised tissue known as eschar; while slough is predominantly soft and yellow, comprising white blood cells, bacteria and debris, as well as dead tissue. Slough is often mistaken for pus, which is often also present in infected wounds, but which is actually a thin protein-rich fluid comprising leukocytes from the body's immune response.

Removing any factors such as damaged and dead tissue, debris, and bacteria that may prevent or impede the wound's healing process is an important goal for nurses working in primary care and will help to minimise infection risk and encourage healthy granulation tissue to form.

3 When do I debride?

The decision whether to debride a patient's wound must be based on a comprehensive wound assessment performed by a competent and trained practitioner. The assessment must be fully documented.

Effective debridement of the wound allows clinicians to make a detailed assessment of the wound bed. The particular debridement technique chosen will depend on a number of variables, including whether the patient has a wound that needs debriding quickly; whether the nurse has the necessary skills to perform debridement or needs to refer on; and the organisation's formulary, i.e. what products are available?

4 What are the different methods?

The goals of debridement are to cleanse the wound, reduce bacterial contamination, and provide an optimal environment for wound healing and prepare the wound for possible future surgical intervention. There are a number of debridement techniques available from surgical to physical/mechanical methods, and nurses should be aware of all the available options. It is not necessary for nurses to be an expert in all of the types of debridement, however, they should have enough understanding to recognise which method is the most appropriate for the individual person and their wound.

The most common methods of debridement used by nurses are:

- Autolytic
- Larval
- Mechanical
- Sharp.

5 Autolytic debridement

Autolytic debridement uses the body's enzymes to soften and remove necrotic and devitalised tissue. The wound is covered with a dressing — usually a hydrogel, hydrofiber or hydrocolloid — which promotes a moist wound-healing environment. The main benefits of this technique are that it is rarely painful and nurses can be easily trained to apply the dressings and monitor the softening of necrotic tissue.

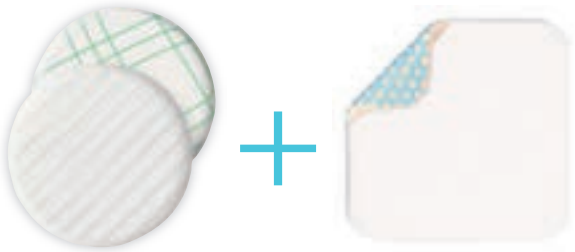
However, autolytic debridement can be expensive because of the amount of dressings used and the nursing time required to keep changing them. It is also essentially a gradual technique, relying on the necrotic tissue being softened and absorbed into the dressing.

JWC journal of wound care
WUWHS AWARDS 2016
FINALIST
MOST INNOVATIVE DRESSING

At last... an innovative wound treatment that delivers simple and effective wound care

Introducing HydroTherapy, our new sequential wound care treatment programme using HydroClean® plus and HydroTac®.

For further info please contact
hydrotherapy@uk.hartmann.info



HydroClean® plus

HydroTac®
With
AquaClear™
Technology

HydroTherapy

HydroClean® plus HydroTac® HydroTac® Comfort

www.hartmannhydro.co.uk

HARTMANN

Going further for health

Autolytic debridement can also cause odour, which can be upsetting for some patients. This is produced as the dead tissue is slowly broken down by the body's enzymes. Maceration of the surrounding skin can also be a problem, as the amount of wound fluid produced is increased by moisture from the softening wound tissue.

6 Larval therapy

Larval debridement involves the application of larvae to the wound bed, either in a sealed mesh bag or as a 'free-range' treatment. The larvae used in this technique do not 'eat' the dead tissue, as is commonly thought, but rather secrete an enzyme that liquefies the tissue before ingesting it.

While it might be seen as the best option, larval therapy is not suitable for all patients: in some cases simple distaste will prevent the therapy being used; the wound position might make it difficult to apply the larvae (sacral wounds are a good example, where the person may crush the larvae when sitting or lying down); in other cases the necrotic tissue in the wound may be too hard and dry to be liquefied by the larvae.

However, while larval debridement is a skilled technique, it can be applied by nurses who have received appropriate training and while it can be expensive initially, it has a relatively short treatment period.

7 Mechanical debridement

The so-called 'wet-to-dry' method of debridement was popular in the past but has fallen out of fashion, mainly due to the pain. This technique involved applying a dressing to dry-out the top layer of the wound, which adhered to the dressing; the top layer of the wound was then removed when the dressing was changed. Not only was this wet-to-dry method often painful and traumatic, it also removed healthy and unhealthy tissue.

Credit: Essent@wikicommons

Recent times have seen the advent of more patient-friendly mechanical debridement techniques such as debridement pads, which lift up debris, superficial slough and exudate and bind them within the pad. These pads are quick and easy to use and require no specialist training. This kind of pad can remove barriers to healing such as debris and slough, leaving the wound area clear, while not damaging any new granulation or epithelial cells. Patients can also use these debridement pads as part of their self-care regimens.

8 Sharp debridement

There are two main techniques used in sharp debridement, one of which requires surgery and the other which is less invasive and can be performed by trained nurses.

Surgical debridement involves excision of all necrotic or devitalised tissue in the wound, sometimes including the wound margin, and is usually carried out in theatre under anaesthetic by a surgeon. The second technique involves the removal of dead or foreign material just above the level of viable tissue and can be performed without anaesthetic by nurses using a scalpel or tweezers, for example. The method used depends on the anatomical position of the wound and amount of tissue requiring debridement.

While devitalised tissue is 'dead' and therefore painless, it is attached to viable tissue and when this is removed it can cause significant pain. Pain is a warning sign and nurses should never ignore it. Nurses should consider giving analgesia 30 minutes before starting any sharp debridement.

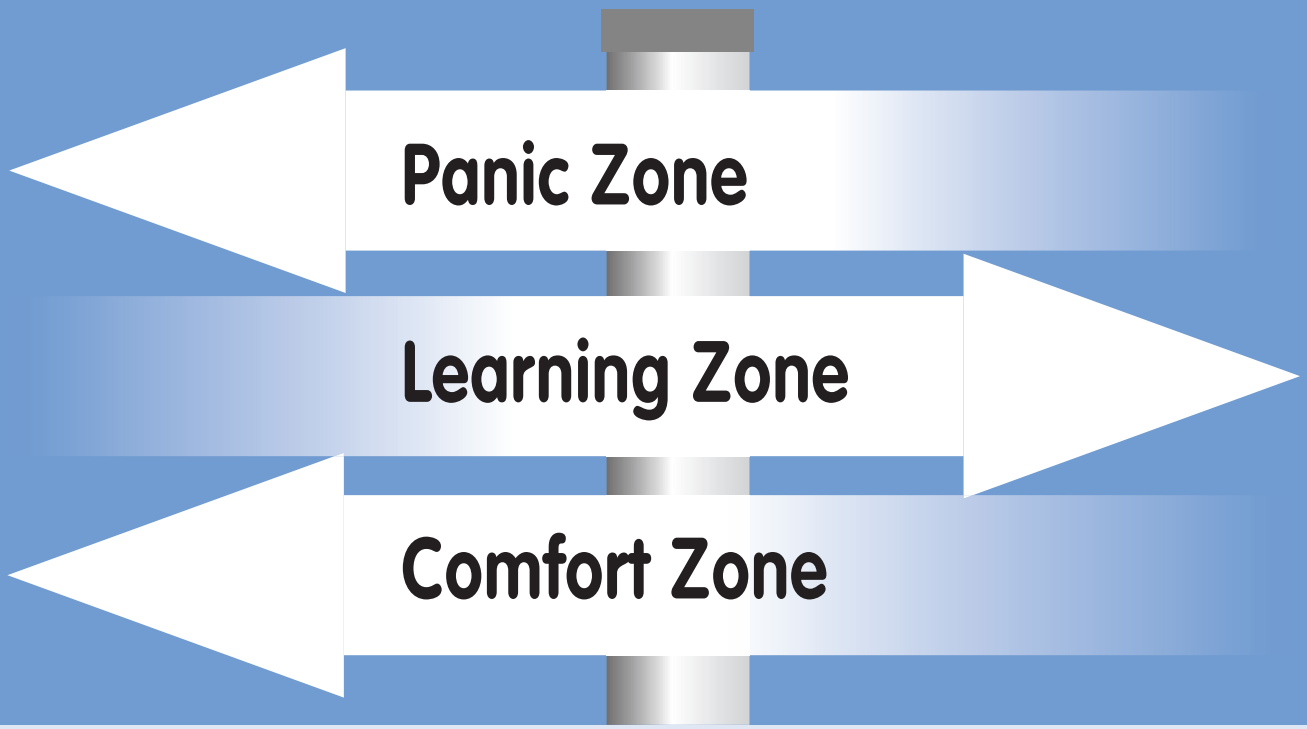
Conclusion

There are two well-established aims of debridement:

- To remove tissue contaminated by bacteria and foreign bodies
- To remove permanently devitalised tissue.

Debridement is viewed as an essential component of wound bed preparation with the aim of creating an optimal wound-healing environment that is stable, well-vascularised and producing a manageable volume of exudate. Failure to remove devitalised tissue can lead to infection, generalised sepsis and failure of the wound to heal or reduce in size. It is important to remember, however, that the method of debridement chosen must always be that which is appropriate for the patient, rather than suiting the skill of the nurse.

GET IN THE ZONE



THE NEW JCN DIGITAL LEARNING ZONE

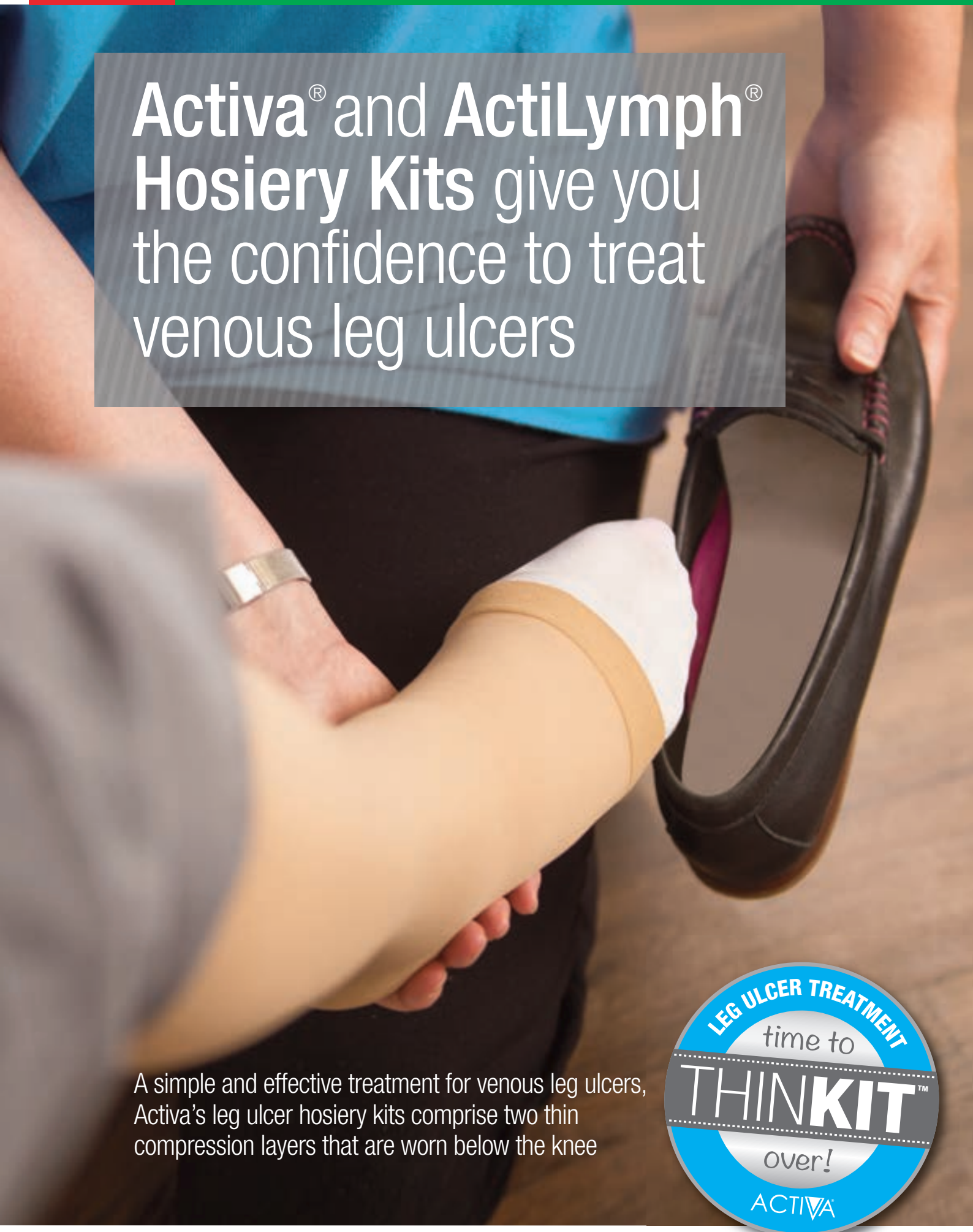
Wide range of topics in four categories:

- INSIGHTS
- MODULES
- LZ:TV
- PRODUCTS IN PRACTICE

Learn for free online

- Easy-to-use, module format
- Searchable by category and topic
- Learning activity counts towards your revalidation requirements
- Log your learning in our free revalidation e-portfolio
- Desktop, tablet and mobile-friendly
- Content compliments our free-to-access journal archives and regional study days

http://www.jcn.co.uk/learning-zone/



Activa® and **ActiLymph**® **Hosiery Kits** give you the confidence to treat venous leg ulcers

A simple and effective treatment for venous leg ulcers, Activa's leg ulcer hosiery kits comprise two thin compression layers that are worn below the knee

LEG ULCER TREATMENT
time to
THINKIT™
over!
ACTIVA

ACTIVA® HEALTHCARE
an ConvaTec Company

Call **08450 606707** to speak directly with a Customer Care Advisor
or visit our website at: **www.activahealthcare.co.uk/thinkit**

1 Wellington Court, Newborough Road, Needwood, Burton on Trent, Staffordshire DE13 9PS.

ADV229 V1.2