

Addressing chronic leg conditions from assessment to healing



Venous leg ulcers

medi's wound care pathway

1
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Meeting the challenges of community nursing



Community nursing is challenging at the moment. We, as practitioners, need to ensure that our patients have access to the right care at the right time. NHS England's (2017) 'Betty's story' highlighted differences within care delivery. However, the 'Leading Change, Adding Value' framework aims to reduce variations in practice, thus improving patient outcomes as well as enabling financial advantages (NHS England, 2016).

Guest et al (2015) highlighted that chronic wounds impose a significant burden on the NHS. The study identified that there were approximately 2.2 million patients living with a chronic wound in the UK, at an estimated total cost of £4.5–5.1 billion. The majority of these patients were treated in the community. Furthermore, less than 50% of chronic wounds healed within the study year — the common linking factor being inadequate assessment and lack of diagnosis.

The Scottish Intercollegiate Guidelines Network (SIGN, 2010) outlined that assessment, which should take place within four weeks of presentation (and three monthly thereafter), should include clinical history and ankle brachial pressure index (ABPI) measurement to exclude arterial insufficiency. However, clinicians frequently cite that they are unable to meet the guidance to obtain and perform ABPI readings due to skill mix and time. Clare Mechen's article discusses why holistic assessment is so important and looks at the MESI ABPI MD device (medi UK), which can calculate an accurate ABPI in under a minute with no resting time, and how this can help clinicians in their day-to-day practice and enable patients to be started on the correct treatment pathway in a timely fashion (pp. 4–9).

This supplement also looks at the importance of wound debridement as an essential element of wound bed preparation and why this should be performed on an ongoing basis (pp. 10–15), as well as the management of chronic oedema (pp. 17–22).

I hope that you enjoy this supplement, which provides useful education on complex and challenging conditions.

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- Guest JF, Ayoub N, McIlwraith T, Uchegebu I, Gerrish A, Weidlich D, Vowden K, Vowden P (2015) Health economic burden that wounds impose on the National Health Service in the UK. *BMJ Open* 5(12): e009283
- NHS England (2016) *Leading Change, Adding Value. A framework for nursing, midwifery and care staff.* Available online: www.england.nhs.uk/wp-content/uploads/2016/05/nursing-framework.pdf
- NHS England (2017) *NHS RightCare scenario: the variations between sub-optimal and optimal pathways. Betty's story — leg ulcer.* Available online: www.england.nhs.uk/rightcare/wp-content/uploads/sites/40/2017/01/nhs-rightcare-bettys-story-narrative-full.pdf
- Scottish Intercollegiate Guidelines Network (2010) *Management of venous leg ulcers.* Clinical guideline no.120. SIGN, Edinburgh. Available online: www.sign.ac.uk

IN BRIEF

- Prevalence of leg ulcers means that they present a significant challenge both in terms of management and NHS resources.
- Holistic assessment and accurate diagnosis are key for leg ulcer management.
- Measuring a patient's ankle brachial pressure index (ABPI) is a vital part of wound assessment to identify or exclude peripheral arterial disease (PAD).

KEYWORDS:

- Holistic assessment
- Vascular assessment
- Ankle brachial pressure index (ABPI)
- Reassessments

Holistic assessment

Clare Mechen

With over 700,000 people in the UK estimated as having leg ulceration and the documented annual cost of its management being a staggering £1.94 billion (Guest et al, 2015; 2018), its impact on NHS resources is significant. As leg ulcer management is currently estimated to account for at least 1.3% of the healthcare budget in the UK, it is essential that clinicians adhere to best practice to achieve optimal outcomes. As wound care is predominantly a nurse-led discipline and the majority of wounds are managed in the community setting (Guest et al, 2015), it is essential that nurses take the lead as patient advocates in securing adequate provision for patients with leg ulceration to ensure that they receive evidenced-based, cost-effective clinical care.

However, in practice, there are many challenges and barriers which impact on the delivery of best practice. Recent wound care statistics have identified that 420,000 of the 730,000 leg ulcers treated by the NHS in the UK each year were

classified as 'unspecified' (Guest et al, 2015). This suggests that the root cause of the problem is not being identified (Vowden and Vowden, 2016). Indeed, Guest et al (2015) suggested that approximately 30% of wounds lack a differential diagnosis. Without being able to understand the underlying cause, decisions cannot be made on the best course of treatment for patients. The absence of a clear decision on care can lead to a delay in patients receiving the correct treatment, thereby prolonging discomfort and ultimately increasing costs to the NHS (Ritchie and Taylor, 2018). Also, without fully understanding the underlying cause of any health problem, there is increased risk of recurrence, leading to a further burden on NHS resources and negative outcomes for patients.

There is a clear link between leg ulceration and its detrimental impact on a person's health (European Wound Management Association [EWMA], 2017). Research links chronic leg ulcers closely to social isolation and low mood (Nogueira et al, 2012). It has also been demonstrated that lonely people:

- ▶ Are more likely to visit their GP
- ▶ Have higher use of medication
- ▶ Have higher incidence of falls
- ▶ Have increased risk factors for long-term care (Cohen, 2006).

This adds greater demands on healthcare services.

WHY ASSESSMENT IS IMPORTANT

The nursing process is a scientific method of care delivery, which enables nurses to deliver patient-focused holistic care (Huckabay, 2009). This process can be broken down into five separate steps, including assessment, diagnosis, planning, implementation and evaluation (Royal Marsden NHS Foundation Trust, 2015).

This article will focus on assessment, which is the first phase of the process, influencing subsequent steps and enabling nurses to gather data, and make relevant observations and judgements to determine the care and treatment needed (Royal Marsden NHS Foundation Trust, 2015). Comprehensive assessment of a patient with a leg ulcer is possibly the single most important factor when deciding upon an effective care plan (Wounds UK, 2016). It is recommended that this involves general holistic assessment of the patient, their leg, as well as the wound and surrounding skin (Scottish Intercollegiate Guidelines Network [SIGN], 2010; Wounds UK, 2016).

HOLISTIC ASSESSMENT OF A PATIENT WITH A LEG ULCER

As highlighted, wounds to the lower limb require a focused approach to assessment, which should include

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Practice point

The outcome of comprehensive holistic assessment should provide an overview of the patient's presenting medical condition, the cause, duration and status of the wound, along with any factors that might impede wound healing (Anderson and Hamm, 2012).

vascular assessment. Diagnosing the aetiology of an ulcer/wound during assessment helps to signpost clinicians towards the correct wound treatment regimen. There are many areas to explore during this holistic assessment.

Healthcare professionals must consider medical, psychological and social factors that can have an impact on wound healing, rather than look at a wound in isolation (Table 1). For example, if a patient has a poor diet, they will not be receiving adequate nutrients to aid tissue healing. History-taking must be comprehensive, with clear consideration and exploration of patients' past and current medical history, current self-care and lifestyle. During the assessment stage, it is also important to ascertain how the wound is affecting the patient's activities of daily living and gain an understanding of their expectations and goals to enable individualised patient-centred treatment plans.

Medical status and comorbidities should be reviewed, taking into consideration anything that will contribute to further damage of venous or lymphatic systems, such as diabetes, peripheral vascular disease

or autoimmune diseases. Healthcare professionals should enquire about any previous deep vein thrombosis (DVT) or surgery to the legs, chronic oedema, skin conditions, or any previous history of ulceration. It is also important to ask if there has been a repeated pattern of ulceration, or if this is the first occasion, and whether there is a family history of ulcers.

Patients' regular medication should be reviewed, including questions about any over-the-counter/self-issued, in case any of these medications might have an effect on wound healing. Medications, such as corticosteroids and non-steroidal anti-inflammatory medications, have been linked to an increase in wound infection and delayed healing (Anstead, 1998), due to the effect that they have on the inflammation process. Cytotoxic agents, such as methotrexate, chemotherapeutic agents and immunosuppressants, such as azathioprine, can all have a potential negative impact on wound healing (Levine, 2018).

Extrinsic factors, such as lifestyle choices, i.e. being sedentary, overweight or having a poorly balanced diet, can significantly impair wound healing and increase the risk of venous insufficiency. Healthcare professionals should also review the patient's mobility — do they sit for lengthy periods which may result in venous insufficiency, or do they require help or walking aids to mobilise?

The history of the wound should also be reviewed, considering when it developed and if there are any predisposing causes, such as trauma or surgery. Documenting wound size, tissue type present, condition of the periwound skin, and if there are any signs of infection are also vital.

Details about previous dressing choices/treatments for both the current wound and any previous ulcers, and whether they aided healing and were acceptable to the patient, need to be ascertained to help with future care planning. Establishing if compression therapy

has been previously used (e.g. hosiery kits, wrap systems, etc) and, most importantly, if the patient was able to tolerate the treatment is vital. Within an holistic approach, the patient's choice/opinion should be considered, and so healthcare professionals need to gain an understanding of previous issues with concordance with treatment and to ensure that they keep the patient central to the decision-making process (Stanton et al, 2016).

Documentation of smoking status is vital, as this can impair wound healing due to nicotine being a vasoconstrictor which adversely affects the microcirculation (Siverstein, 1992).

Visual inspection of the lower limb provides a good insight as to the presence of venous disease, such as varicose veins, oedema or haemosiderin staining (Harding et al, 2015), while understanding the patient's vascular status enables clinicians to assess whether an ulcer is venous or arterial in origin, or a combination of both, i.e. a mixed venous/arterial ulcer (Vowden and Vowden, 2001).

Measuring ankle brachial pressure index (ABPI) is widely used as a non-invasive method of testing the extent of peripheral arterial disease (PAD) in the lower limbs. In simple terms, it compares blood flow in the arms to that of the legs and a ratio is composed (Al-Qaisi et al, 2009). This index is the most commonly taught assessment tool for vascular assessment and is seen as a mandatory part of assessment for leg ulcer patients before starting compression therapy in primary care (Vowden and Vowden, 2001).

Table 1: Factors to consider during wound assessment (Carville, 2005)

▶ Underlying disease
▶ Vascularity
▶ Nutritional status
▶ Immune status
▶ Obesity
▶ Disorders of sensation or movement
▶ Psychological state
▶ Radiation therapies
▶ Drugs — prescribed, recreational and/or alternative
▶ Allergies and/or sensitivities
Local factors:
▶ Hydration
▶ Wound management
▶ Pressure, friction and shear forces
▶ Foreign bodies
▶ Wound infection

Although completing an ABPI reading is not a diagnosis of venous disease (Wounds UK, 2016), it assesses for underlying arterial involvement and so can guide the level of compression that may be used (Table 2).

The optimum treatment for venous leg ulcers is recognised as being 40mmHg compression therapy graduated from the ankle upwards (SIGN, 2010). Indeed, best practice guidance advises that any patient requiring compression levels greater than 17mmHg should have a vascular assessment (Wounds UK, 2016) to establish the underlying vascular status before applying compression therapy. For those wounds caused by arterial insufficiency, treatment with compression is contraindicated, as it could potentially restrict arterial perfusion causing further harm (Mosti et al, 2012). Patients with a mixed aetiology ulcer may benefit from reduced levels of compression of between 20 and 30mmHg. Without diagnosing the underlying aetiology of a leg ulcer, it is not possible to provide the correct treatment. Therefore, full vascular assessment is vital to establish the correct level of compression to be applied, or if it is contraindicated.

CHALLENGES/BARRIERS TO FULL ASSESSMENT

With demands on healthcare professionals' time within the community, it can be challenging to dedicate sufficient time to undertake thorough assessment of patients with leg ulcers. A key principle in delivering safe and effective practice is that healthcare professionals

receive competency-based training; this is imperative in leg ulcer management. However, this can prove challenging in community and practice nursing, where teams may be smaller and securing time out of the work environment can be difficult. Furthermore, as staff may work in relative isolation, it can be challenging to ensure competency-based assessment with an adequately trained mentor. However, Leg Clubs® can support the standardisation of education, provide an environment for healthcare professional development and a teaching resource for research-based wound management (Hampton, 2016).

Too often, in the author's clinical experience, short appointments are given to patients requiring leg ulcer care within busy clinical settings, leading to limited history-taking, ineffective assessment, and subsequently poor care planning. Adequate time needs to be allocated for full holistic assessment, as this will guide the clinician in their care planning. Furthermore, to provide holistic care, treatment pathways need to be undertaken in partnership with the patient (Stanton et al, 2016).

Knowledge and training are paramount for any clinical skill and this is no different with leg ulcer care. Healthcare professionals need to receive regular, up-to-date training so that they have the current knowledge and competencies required to undertake all aspects of leg care, including full assessment and management, based on best practice (Wounds UK, 2016).

> Remember

Measuring ABPI:

- ▶ Aids holistic lower limb assessment
- ▶ Aids diagnosis of ulceration aetiology
- ▶ Guides level of prescribed compression
- ▶ Identifies need for further investigations and/or onward referral to specialists.

Barriers to ABPI assessment

While the importance and relevance of ABPI assessment is largely reported, Guest et al (2015; 2018) highlighted that it is not being carried out often enough. This could be because there are potential barriers to its completion.

First, when should you assess a patient with a wound to the lower limb? There is often a gap between presentation of a patient with a wound and completion of holistic assessment, including vascular examination. It has previously been recommended that any wound which has failed to heal within six weeks be defined as an ulcer and that a full assessment should be scheduled (Royal College of Nursing [RCN], 2006). However, more recent guidance suggests that a leg ulcer is defined as a break on the skin which fails to heal within two weeks (National Institute for Health and Care Excellence [NICE], 2016). Therefore, a full holistic and vascular assessment is recommended if a wound fails to heal within this two-week period, and, ideally, within 10 days from presentation if the patient has any skin changes or oedema associated with venous disease to aid prompt diagnosis of aetiology and initiation of appropriate treatment (Wounds UK, 2013).

With the current recommendation for patients to be treated at the earliest possible opportunity, it is suggested that appropriate patients with acute wounds to the lower limb (i.e. those with an initial diagnosis, no signs of critical ischaemia, intact sensation and a normal limb shape),

Table 2: ABPI readings (Harding, 2015)

ABPI reading	Indication	Compression level
>1.0-1.3	No indicators of peripheral vascular disease	Apply high level compression therapy
0.81-1.0	Mild peripheral disease	May have high levels of compression therapy; monitor ABPI
0.51-0.8	Significant arterial disease	May have reduced compression; refer to specialist nurse/vascular specialist
<0.5	Severe arterial disease	No compression; urgent referral to vascular specialist
>1.3	Measure toe pressures or refer to specialist	May have compression therapy; liaise with specialist nurse/vascular specialist

should be treated immediately with light Class 1 compression of up to 17mmHg to prevent deterioration (Wounds UK, 2015; 2016). If the wound subsequently fails to heal within two weeks, they should undergo full holistic assessment, including vascular examination (Wounds UK, 2016).

Local service provision and patient pathways need to be introduced to follow guidance. The time needed to complete traditional ABPI assessment, including the 20-minute resting period, is often seen as a barrier for its completion to community nurses faced with high caseloads and low staff numbers (Kirby and Hurst, 2014).

It is well known that completion of traditional ABPI assessment requires meticulous attention to ensure that current measurement values are obtained (Vowden and Vowden, 2001). As with any other skill, if this is not routinely practised, inaccuracies may occur. Also, in the author's clinical opinion, there are many areas where mistakes which can lead to errors in ABPI readings can be made; such as incorrect cuff placement, true systolic pressures being missed when listening for returning sounds, using an incorrect probe or cuff size, or repeatedly inflating the cuff. Furthermore, difficulties can occur in patients presenting with chronic or severe oedema or tissue fibrosis (Guest et al, 2015). The calculation of the pressures themselves to obtain the ABPI ratio figure is another area where inaccuracies can occur.

A less time-consuming method of taking ABPI measurements has

Practice point

In venous leg ulcer management, lack of diagnosis and documented assessment can impact on effective care management and wound healing. With venous leg ulcers accounting for 40–85% of leg ulcers (Harding et al, 2015), it is essential to ensure that holistic assessment is completed to optimise care.

Practice point

Tools commonly used for lower limb vascular assessment, include:

- ▶ Ankle brachial pressure index (ABPI): bedside test to exclude significant arterial disease by comparing systolic blood pressure at the ankle and arm
- ▶ Toe brachial pressure index (TBI): similar to ABPI but the cuff is placed on the hallux for a toe pressure
- ▶ Pulse oximetry: a secondary diagnostic tool to measure levels of oxygen in the blood, although not reliable at excluding peripheral vascular disease
- ▶ Arterial duplex scan: non-invasive ultrasound scan of the arteries; used to provide visual assessment of vessels.

been suggested as a way of helping clinicians to better manage their time (Yap Kannan et al, 2016). Furthermore, developments in science and technology in health care have been encouraged in the 'Five year forward view' (NHS England, 2014), such as new technology in ABPI assessment, which offers prompt, accessible vascular screening, for example, MESI ABPI MD (Freeman, 2017).

This system was developed using improved oscillometric plethysmography technology, which offers a fast, simple and accurate solution for the measurement of ABPI in clinical practice. By utilising three colour-coded blood pressure cuffs to either arm and to each ankle, with the simple push of a button, ABPI can be measured and calculated in one minute. The results of the left and right ABPI are displayed on the screen with a colour-coded alert to the presence and level of arterial disease, as suggested by TASC II guidelines (Norgren et al, 2007).

This device also provides a visual image of the pulse wave detected, which provides further diagnostic information regarding vascular status that can be used alongside holistic assessment. With no need for lengthy rest periods, mathematical calculations, subjective listening skills, or difficult competencies to learn and maintain, it offers clinicians working in community settings an alternative to traditional methods of obtaining ABPI, particularly where time pressures may result in absence of full vascular assessment.

Evidence has shown comparable results to the handheld doppler

method, and that it offers comprehensive detection of critical limb ischaemia (Span et al, 2016). As MESI ABPI MD is lightweight and portable, it can be used in a variety of care settings, such as patients' homes, community clinics and Leg Clubs. Staines (2018) identified that nurses, when asked, stated that they would use MESI ABPI MD in practice, rather than the traditional doppler method, to provide efficient assessment (Figure 1).

For some patients, there may be difficulties in obtaining accurate ABPI readings, e.g. those presenting with chronic or severe oedema or tissue fibrosis (Guest et al, 2015), or other medical conditions. If clinically indicated, patients should be referred for further assessment or specialist review.

REASSESSMENT AND WELL LEG/ REDUCTION OF RECURRENCE

Despite successful healing, this is not the end of the patient journey and care for those with venous leg ulceration. With the risk of recurrence within the next 12 months estimated to be as high as 26–69% (Harding et al, 2015), patients need to receive ongoing maintenance treatment (Wounds UK, 2016). Maintenance therapy and monitoring should be incorporated as a key part of any leg ulcer care pathway so that patients can receive ongoing care and advice.

Patient education and involvement from the onset of care can help to improve concordance with self-care both during the healing and maintenance phases (Jin et al, 2008). Patients need to understand

that the agreed self-care plan, which should include a good skin care regimen and exercise (Wounds UK, 2015), is a lifelong commitment to prevent recurrence. In the author's clinical experience, involving and informing family and carers can also help to support the patient to take ownership of their condition.

Guidelines support the continued use of compression hosiery or wraps to reduce the risk of recurrence of ulceration, which should be applied at the strongest compression that a patient can tolerate (SIGN, 2010; Wounds UK, 2016).

Along with prevention therapy, patients should be reassessed at regular intervals during the first year post wound healing. It is recommended that this takes place at three, six and 12 months, and thereafter annually (Wounds UK, 2016). Where clinically indicated, and in concordance with local policy, reassessment may need to include repeat ABPI to check that there have been no changes in arterial status and that the patient remains suitable for compression therapy (Freeman, 2017). Reassessment should, therefore, also be part of the local leg ulcer care pathways.

To facilitate patient self-care, healthcare professionals should develop a therapeutic, non-judgemental relationship by listening to any concerns that they might have, managing their expectations, and empowering them to make decisions about the best options for lifelong prevention. Any maintenance system should be simple and practical to use (Wounds UK, 2015), so that it fits in with a patient's lifestyle.

With time being a rare commodity in the community, models of care such as Leg Clubs provide opportunities for patients to receive ongoing care and advice to prevent recurrence, along with the provision of early intervention should a problem arise, due to their unique ethos of 'no appointment necessary'. The model breaks traditional boundaries and evidence demonstrates that patients who attend Leg Clubs have better healing and lower recurrence rates than those treated in conventional settings (Lindsay, 2017).

Ongoing maintenance, as part of the 'well leg' regimen, is a core aspect of the Leg Club model, where a patient's care never ends

Remember

'Improving the assessment of wounds' was specified as a key goal of the Commissioning for Quality and Innovation (CQUIN) scheme for 2017–2019 (NHS England, 2016).

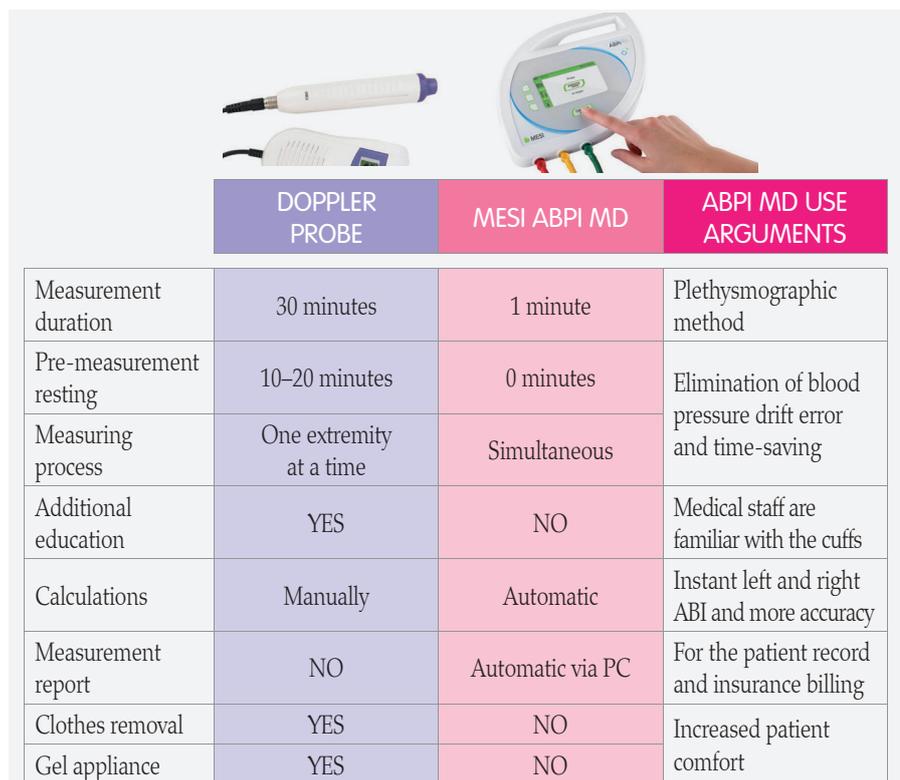
despite wound healing. This provides an opportunity for clinicians to review any problems that a patient may have through holistic-based discussions, as patients can attend for review at any time through the 'well leg' pathway, rather than just at pre-agreed intervals.

CONCLUSION

The high prevalence of leg ulceration in the UK, which results in the utilisation of significant NHS resources, presents many challenges to anyone involved with caring for patients with lower leg problems. Ultimately, any assessment should incorporate a full holistic approach to provide accurate diagnosis and care planning at an early stage. Healthcare professionals have a duty of care to ensure that they have had training and have the adequate competencies to undertake lower limb care.

Along with full holistic history-taking, vascular assessment is a key component of lower limb assessment. However, time pressures in primary care can impact on a clinician's ability to complete an ABPI to exclude arterial disease. Healthcare providers need to ensure that staff have sufficient time allocated and consider modern technology to assist clinicians in offering adequate and timely appointments. The incorporation of a psychosocial model, such as the Leg Club®, gives an opportunity for an evidence-based approach to patient-centred care and to promote ongoing preventative support.

Overall, early intervention, improving essential wound assessments and promoting self-care can significantly reduce patient suffering, improve patient outcomes, and save NHS resources. **JCN**



	DOPPLER PROBE	MESI ABPI MD	ABPI MD USE ARGUMENTS
Measurement duration	30 minutes	1 minute	Plethysmographic method
Pre-measurement resting	10–20 minutes	0 minutes	Elimination of blood pressure drift error and time-saving
Measuring process	One extremity at a time	Simultaneous	
Additional education	YES	NO	Medical staff are familiar with the cuffs
Calculations	Manually	Automatic	Instant left and right ABI and more accuracy
Measurement report	NO	Automatic via PC	For the patient record and insurance billing
Clothes removal	YES	NO	Increased patient comfort
Gel appliance	YES	NO	

Figure 1. Use of MESI ABPI MD compared with the doppler probe.

REFERENCES

- Al-Qaisi M, Nott DM, King DH, Kaddoura S (2009) Ankle brachial pressure index (ABPI): An update for practitioners. *Vasc Health Risk Management* 5: 833–41
- Anderson K, Hamm KL (2012) Factors that impair wound healing. *J Am Coll Clin Wound Specialist* 4(4): 84–91
- Anderson I (2012) Encouraging compliance and concordance in leg ulcer patients. *Wounds UK* 8(1 suppl): S6–8
- Anstead GM (1998) Steroids, retinoid and wound healing. *Adv Wound Care* 11(6): 277–85
- Carville K (2005) *Wound Care Manual*. 5th edn. Silver Chain, Perth
- Cohen GD, et al (2006) The impact of professionally conducted cultural programs on the physical health, mental health, and social functioning of older adults. *Gerontologist* 46(6): 726–34
- European Wound Management Association (2017) Meeting report: No compromise on quality: Is 'good enough' really good enough? *Wounds International*. Available online: www.woundsinternational.com/journal-content/view/meeting-report-no-compromise-on-quality-is-good-enough-really-good-enoughmeeting-report-no-compromise-on-quality-is-good-enough-really-good-enough
- Freeman N (2017) ABPI: simplifying an essential component of holistic wound assessment. *Wound Care Today* 4(1): 51–2
- Guest JF, Ayoub N, McIlwraith T, Uchegbu I, Gerrish A, Weidlich D, Vowden K, Vowden P (2015) Health economic burden that wounds impose on the National Health Service in the UK. *BMJ Open* 5(12): e009283
- Guest JF, Fuller GW, Vowden P (2018) Venous leg ulcer management in clinical practice in the UK: costs and outcomes. *Int Wound J* 15: 29–37
- Hampton S (2016) *The Leg Club Handbook. Leg Ulcers and their Healing: Essential Information for Practitioners using the Lindsay Leg Club Model*. Available online: www.legclub.org/uploads/files/documents/The-Lindsay-Leg-Club-Handbook.pdf
- Harding K, Expert working group (2015) *Simplifying venous ulcer management: consensus recommendation*. Available online: www.woundsinternational.com
- Huckabay LM (2009) Clinical reasoned judgement and the nursing process. *Nurs Forum* 44: 72–8
- Jin J, Sklar GE, Oh VMS, et al (2008) Factors affecting therapeutic compliance: a review from the patient's perspective. *Ther Clin Risk Manag* 4(1): 269–86
- Kirby E, Hurst K (2014) Using a complex audit tool to measure workload, staffing and quality in district nursing. *Br J Community Nurs* 19(5): 219–23
- Levine JM (2018) How oral medications affect wound healing. *Nursing* 48(3): 34–40
- Lindsay E (2017) Leg Clubs: A cost-effective social prescribing approach to lower limb management. *Br J Community Nurs* 1(2): 111–12
- Mosti G, Iabichella ML, Partsch H (2012) Compression therapy in mixed ulcers increases venous output and arterial perfusion. *J Vasc Surg* 55(1): 122–8
- National Institute for Health Care and Excellence (2016) *Leg ulcer – venous*. NICE, London. Available online: www.nice.org.uk/about/what-we-do/evidence-services/journals-and-databases
- NHS England (2014) *Five year forward view*. Available online: www.england.nhs.uk/wp-content/uploads/2014/10/5yfv-web.pdf
- NHS England (2016) *Commissioning for Quality and Innovation (CQUIN) Guidance for 2017–2019*. Available online: www.england.nhs.uk/wp-content/uploads/2016/11/cquin-2017-19-guidance.pdf
- Nogueira GS, Zanin CR, Miyazaki MC, Pereira de Godoy JM (2012) Quality of life of patients with chronic venous ulcers and socio-demographic factors. *Wounds* 24(10): 289–92
- Norgren L, Hiatt WR, Dormandy JA, Nehler MR, Harris KA, Fowkes FG, TASC II Working Group (2007) Inter-society consensus for the management of peripheral arterial disease (TASC II). *J Vasc Surg* 45(Suppl S): S5–67
- Ritchie G, Taylor H (2018) Understanding compression: part 2 — holistic assessment and clinical decision-making in leg ulcer management. *J Community Nurs* 32(3): 22–9
- Royal College of Nursing (2006) *The nursing management of patients with venous leg ulcers*. RCN, London
- Royal Marsden NHS foundation Trust (2015) *The Royal Marsden manual of clinical procedures*. 9th edn. John Wiley and Sons, Chichester
- Scottish Intercollegiate Guidelines Network (2010) *Management of venous leg ulcers*. Clinical guideline no.120. SIGN, Edinburgh. Available online: www.sign.ac.uk
- Siverstein P (1992) Smoking and wound healing. *Am J Med* 15: 93
- Span M, Geršak G, Millasseau SC, et al (2016) Detection of peripheral arterial disease with an improved automated device: comparison of a new oscillometric device and the standard doppler method. *Vasc Health risk Management* 12: 305–11
- Staines K (2018) Safe compression and accurate ABPI — overcoming the barriers. *Wounds UK* 14(1): 64–7
- Stanton J, Hickman A, Rouncivell D, Collins F, Gray D (2016) Promoting patient concordance to support rapid leg ulcer healing. *Br J Community Nurs* 30(6): 28–35
- Vowden P, Vowden K (2001) *Doppler assessment and ABPI: Interpretation in the management of leg ulceration*. Available online: www.worldwidewounds.com/2001/May/Vowden/Doppler-assessment-and-ABPI.html
- Vowden K, Vowden P (2016) *The growing burden of leg ulcers in the UK*. Available online: www.healthawareness.co.uk/wound-care/the-growing-burden-of-leg-ulcers-in-the-uk
- Wounds UK (2013) *Optimising venous leg ulcer services in a changing NHS: a UK consensus*. Wounds UK, London. Available online: www.wounds-uk.com/supplements/optimising-venous-leg-ulcer-services-in-a-changing-nhs-a-uk-consensus
- Wounds UK (2015) *Best Practice Statement: Compression Hosiery*. Second edition. Available online: www.wounds-uk.com/pdf/content_11547.pdf
- Wounds UK (2016) *Best Practice Statement: Holistic management of venous leg ulceration*. Wounds UK, London. Available online: www.wounds-uk.com
- Yap Kannan R, Dattani N, Sayers RD, et al (2016) Survey of ankle-brachial pressure index use and its perceived barriers by general practitioners in the UK. *Postgrad Med J* 92(1088): 322–7

IN BRIEF

- Debridement is a key component of wound bed preparation.
- It should not be seen as a one-off procedure, but something to be done on a regular basis and included in the patient care pathway.
- It is vital to remove dead and contaminated tissue, as it harbours bacteria which poses a barrier to timely healing. Debridement can also remove the presence of biofilm.

KEYWORDS:

- Wound bed preparation
- Debridement
- Wound cleansing
- Skin care

Wound debridement in the community

Beverley Edmunds

Wound debridement is a key component of wound bed preparation (Wilcox et al, 2013). It involves the removal of damaged and dead tissue, debris and bacteria from the wound bed (Brown, 2013), which reduces the risk of infection and encourages wound healing by allowing healthy granulation tissue to form.

In acute wounds, autolytic debridement occurs automatically and often does not require intervention (Atkin, 2014), as during the inflammatory stage of wound healing, neutrophils and macrophages digest and remove non-viable tissue, cell debris and any cellular barriers to wound healing. However, in chronic wounds, this process can become overwhelmed and inefficient (Broadus, 2013). Wound debridement is thus an essential part of chronic wound management, as it assists the conversion of the molecular and cellular environment to resemble that of an acute wound and encourages wounds to progress to healing (Ousey et al, 2016).

*Beverley Edmunds, community staff nurse,
Friar Park district nurses*

WHEN TO DEBRIDE

Before debriding, comprehensive holistic wound assessment and diagnosis is essential to ensure that it is suitable (Vowden and Vowden, 2011). There will be situations where a patient's comorbidities or underlying arterial status may mean that debridement is contraindicated. For example, necrotic tissue in lower limb wounds in cases of dry gangrene and arterial insufficiency should, where safe to do so, be left to auto debride. Once a decision to debride a wound has been made, there are multiple methods to choose from, such as:

- ▶ Autolytic
- ▶ Biosurgical
- ▶ Enzymatic
- ▶ Hydrosurgery
- ▶ Mechanical/physical
- ▶ Sharp/surgical.

Method chosen will be dependent on many factors, such as:

- ▶ Clinician skill
- ▶ Location of wound
- ▶ Treatment environment
- ▶ Equipment available
- ▶ Patient choice.

Mechanical debridement involves using an external force to separate necrotic tissue from the wound bed. Historically, this was carried out with wet dressings, such as gauze, which were left to dry and then regularly changed. This mechanically removed

devitalised tissues but could also strip healthy tissue away. This method is no longer common practice in the UK (Davies, 2004), and newer products have been developed to assist with mechanical debridement.

For example, mechanical debridement can be carried out with a pre-moistened debridement cloth (UCS™, medi UK). This has been found to be fast, simple and effective and requires no specialist training (Hughes, 2015). The UCS pre-moistened debridement and cleansing cloth allows for atraumatic cleansing and debridement of a wound and the surrounding skin without the use of extra water, surfactants or equipment (Downe, 2014). Debridement in this form is so simple that it can also be undertaken by patients themselves, thereby enabling and promoting self-care.

UCS™ premoistened debridement cloths

The cloth works by gently lifting and removing barriers to healing, such as slough, debris and biofilm, which are trapped in the cloth's specially woven

Practice point

Ongoing, regular debridement is vital to maintain a healthy wound bed in most chronic wounds (Wolcott et al, 2009).

fibres, enabling the wound bed to prepare for healing (Downe, 2014). The physical act of using the cloth on a wound, along with the active ingredients in the UCS cloths, provide an optimum debridement solution.

The UCS cloth is premoistened with active ingredients containing a surfactant, a mild keratolytic and aloe vera. UCS is a class IIb medical device, and is therefore safe for use in deep wounds where there may be exposed bone. Surfactants are cleansers that penetrate the surface of a wound, providing deep and effective cleansing in just a few minutes.

Percival and Suleman (2015) proposed that best practice for slough removal should include the use of surfactants to disrupt the outer membrane of sloughy tissue. The surfactants used in UCS are gentle, non-allergenic cleansers, which are non-cytotoxic and so cause no harm to healthy tissue or cells. The mild keratolytic helps to soften any hardened skin or dry necrotic tissue and eschar, allowing it to lift away and shed (Gillies, 2016). The addition of the solution to the mechanical debridement aspect of the cloth is key in its efficacy (Percival et al, 2017).

WOUND ASSESSMENT

While assessment is important in the decision to debride, there are also occasions where debridement is needed to be able to fully assess a wound. Weir et al (2007) identified that devitalised tissue needs to be removed to enable visibility of the wound bed. Since Guest et al's (2015) seminal health economics study and NHS England including 'improving the assessment of wounds' as a key goal of the Commissioning for Quality and Innovation (CQUIN) framework scheme for 2017–2019 (NHS England, 2016), wound assessment has been at the top of wound care priorities.

Indeed, accurate assessment is key to ensure correct diagnosis and development of the optimal treatment plan (Chamanga, 2016). The preliminary step in the assessment process should be to ensure that the wound and any

> Facts...

The ingredients contained in UCS debridement cloths are:

- ▶ Poloxamer 188: a surfactant. Surfactants are able to provide a 'deep clean' of tissues and wounds by breaking down the interface between water and oils and/or bacteria. This action allows for deeper cleaning than that provided by water
- ▶ Allantoin: a mild keratolytic with moisturising properties, which causes the skin's keratin layer to soften. This property helps skin to heal quickly and to bind moisture effectively, benefiting dry skin and helping to heal the wound
- ▶ Aloe vera barbadensis leaf extract: this comprises ingredients derived from the various species of aloe vera for a soothing and moisturising effect with no known side-effects.

(Khatun, 2016)

surrounding skin are clean to enable a true picture of the wound to be obtained (Downe, 2014). This not only enables clinicians to assess the size, depth, and location of the wound accurately, but also to identify the tissue types present, which will help in monitoring wound progress and choosing appropriate dressings (Downe, 2014).

WOUND BED PREPARATION

When managing chronic wounds, a structured approach to wound bed preparation, such as the TIME acronym (tissue, infection/inflammation, moisture/moisture imbalance, and wound edges) is recommended (Schultz et al, 2003). Debridement plays a key role in all areas of the TIME framework (European Wound Management Association [EWMA], 2013), i.e:

- ▶ Tissue: debridement of non-viable or wound debris from the wound
- ▶ Infection/inflammation: debridement reduces the bacterial burden within a wound and controls ongoing inflammation (Ousey et al, 2016)
- ▶ Moisture imbalance: debridement can assist in wound exudate management by decreasing excess moisture (EWMA, 2013)
- ▶ Edge of wound: debridement can assist in removing senescent cells and encouraging advancement of wound edges (Cornell et al, 2010).

To achieve an acceptable rate of healing, wounds must be properly cleansed and debrided (Milne, 2015).

However, it can be difficult to cleanse wounds where pain is an issue.

The ability to allow the solution in the UCS cloth to soften non-viable tissue, which can then gently be removed, is helpful in situations where patients decline cleansing due to pain (Khatun, 2016). The cloths also allow patients to control the level of pressure applied to the wound, thereby reducing anticipatory pain expectations (Khatun, 2016).

Case report one

This 83-year-old gentleman who presented with a venous leg ulcer to the left medial malleolus (*Figure 1*) had a history of venous insufficiency/varicose eczema and a recent history of infection and cellulitis. He had been treated with antibiotics, which had controlled exudate volume and odour, but his wound remained necrotic with evidence of biofilm and dry, non-viable skin to the periwound area.

It was decided to use UCS debridement cloth first to soften the eschar and dry skin, and then to debride the biofilm and necrotic tissue, as well as exfoliating the periwound skin. After just one session, improvement could be seen in both the condition of the wound bed and periwound skin (*Figure 2*). Metal forceps and debridement scissors were also used to trim areas of attached skin, to prevent bleeding or further ulceration

The patient's pain level was not an issue, but he did also have a degree of neuropathy to his left lower leg. The patient was happy

Figure 1.



Figure 2.



with the result, as he said that the ulcers were becoming uncomfortable under bandages and beginning to itch, but that he found the process of debridement soothing.

Case report two

Mr A was an 80-year-old, retired gentleman, who had a healthy and active lifestyle. He had no particular past medical history or comorbidities. He presented to the tissue viability clinic for leg ulcer assessment following referral from a general practice nurse (GPN) for leg ulcer management.

During a game of bowls 11 weeks earlier, he had tripped and obtained a traumatic pre-tibial laceration to his left leg. He saw his GPN on the day of injury and started twice weekly dressing changes. However, after four

weeks of conservative treatment with autolytic debridement at the general practice there was no improvement in the condition of the wound and so, after discussion with the GP, Mr A was referred to the local plastics unit for surgical debridement and to the community tissue viability service. Mr A continued to receive a further six weeks of conventional treatment of twice weekly dressing changes with hydrogel to encourage autolytic debridement, but again with little progress. He was also prescribed oral antibiotics by his GP, as the GPN identified signs of wound infection.

At presentation to the tissue viability clinic after 10 weeks' treatment, Mr A's wound was covered with necrotic, leathery eschar (Figure 3). As no staff were trained to remove the eschar with sharp debridement, UCS premoistened debridement cloths were used to mechanically debride the wound twice weekly. After just one week, the eschar had lifted leaving islands of granulation tissue in a sloughy wound bed (Figures 4 and 5).

Mr A's vascular assessment showed no signs of arterial insufficiency so compression therapy was started. As he was active and wanted to continue to enjoy playing in his bowls team, he was anxious and concerned about compression bandages restricting his activity. He had little oedema in his lower limb and so was fitted with a juxtalite® compression wrap device (medi UK). This also allowed him to manage his personal hygiene needs and skin care during treatment. After two further weeks and four clinic visits, the condition of the wound bed had greatly improved — wound edges had advanced and a reduction in wound size could be seen. After three weeks of treatment at the tissue viability clinic, he was discharged back to the GPN with a self-care regimen, involving skin care and compression therapy with juxtalite, as surgical referral was no longer required.

BIOFILM MANAGEMENT

A biofilm is a complex microbial community, consisting of bacteria embedded in a protective matrix of sugars and proteins commonly

Figure 3.



Figures 4 and 5.



found in chronic wounds (Keast et al, 2014). Recent literature has demonstrated increasing awareness of their presence in the majority of non-healing wounds (Malone et al, 2017), and the role that biofilms play in delayed wound healing (Metcalf et al, 2014; Schultz, 2015).

Biofilms provide a protective environment for microorganisms embedded within them, improving their tolerance to the host's immune system, topical antimicrobial agents and environmental stresses, which is why they can stall wound healing. It is important to physically remove

Practice point

Cleansing wounds with UCS debridement cloths, not only facilitates assessment and healing, but also gives patients the experience of having their legs washed (Gillies, 2016).

biofilms by mechanical debridement and the use of surfactants (Phillips et al, 2010).

Surfactants are particularly useful in biofilm management, as they lower the surface tension in a wound. Their action facilitates the separation of loose, non-viable material on the wound surface and has the potential both to prevent and manage biofilms (Leaper et al, 2012). An expert panel recommended the use of maintenance-debridement for removal of tissue in the wound bed when it is colonised with excessive bacterial burden (Falanga et al, 2008). This panel highlighted the importance of frequent, ongoing mechanical debridement to help maintain the wound in a healing mode. Maintenance-debridement is also suggested for use in static and stagnant wounds where wound edge

advancement is not evident, even if the wound bed appears clinically 'healthy' (Falanga et al, 2008).

Case report three

This 72-year-old gentleman presented with a non-healing diabetic foot wound of four months' duration. The patient had undergone a transmetatarsal amputation. The wound had a history of recurrent infections and deterioration. The patient had been managed with various desloughing and antimicrobial dressings, but with little improvement. Due to the lack of wound edge advancement, appearance of granulation tissue and recurrent infections, the nurse suspected a biofilm to be present. The plan of care was thus re-evaluated.

Physical debridement with UCS was added to the current care plan at every dressing change, no other changes were made, i.e. the frequency and other products used remained the same. A care plan was developed for the wound to be debrided with a premoistened debridement cloth three times per week (Young, 2016), together with an autolytic debridement dressing regimen.

Figure 6 shows the wound at initial assessment in June 2016. At this stage it measured 9x4cm, with the greatest depth being 4cm. The wound bed consisted of 50% well-adhered slough. The wound was reviewed in August 2016 and at this time measured 6.5x2cm, with a greatest depth of 1.5cm. The wound bed consisted of 100% granulation tissue.

After six weeks of starting the new care plan, a 28% reduction in wound width, a 50% reduction in wound length, and a 63% decrease in wound depth was seen. These results demonstrate significant wound healing in a wound which had been non-healing for the previous four months. Exudate volume had also reduced to the point that a superabsorbent dressing was no longer required.

As said, the patient also had a history of persistent wound infection for three months, which had

been treated with oral antibiotics. However, when reviewed in August, the infection had resolved. Figure 7 shows the wound four months later, well on its way to wound closure.

PERIWOUND MANAGEMENT AND SKIN CARE

While wound bed preparation is key to systematic wound care, the SIGN (2010) leg ulcer guidelines highlight the importance of assessment and management of the peri-lesional area and surrounding skin. If these areas are neglected, this not only impedes wound healing but also increases the incidence of related problems, such as further ulceration, episodes of cellulitis, or recurrent fungal infections. Patients with lower limb disorders, such as chronic oedema or chronic venous insufficiency, often have skin changes that need to be considered when planning care. Lipodermatosclerosis, hyperkeratosis or varicose eczema are all commonly seen in lower limb conditions, and can be challenging for healthcare professionals to manage, as treatment is centred on good skin care with daily application of emollients and topical corticosteroids in conjunction with compression therapy (SIGN, 2010).

Although self-care is encouraged and promoted in skin care management (All Wales Tissue Viability Nurse Forum [AWTVNF], 2014), daily emollient therapy can be problematic if the limb is in conventional compression therapy bandages. Newer options for self-care with compression wraps have provided a solution to patients who require consistent, effective compression and easy access to the limb for topical skin care regimens.

Hyperkeratosis is often associated with lower limb management and is

Figure 6.



Figure 7.



caused by an over proliferation of the keratin-producing cells of the skin leading to a thickening of the outer layer (International Lymphoedema Framework [ILF], 2006). Removal of hyperkeratotic scales is important to decrease the risk of skin breakdown and potential infection (Wounds International, 2012). Using sharp implements to remove thickened scales is not recommended due to the risk of bleeding and infection, but rather safe and atraumatic removal is suggested after the hard scales have been softened. This can be completed with forceps or a gloved finger, but this can be a time-consuming process (Whitaker, 2012). UCS debridement cloths can offer a solution, as the mild keratolytic in the solution softens scales and the suggested polishing motion (see manufacturer's instructions), used in conjunction with fibres in the cloth, lift away the thickened scales of skin associated with hyperkeratosis safely and effectively.

Case report 4

This case involved a 63-year-old gentleman who had had bilateral lymphoedema to his legs for the past three years. He also had severe osteoarthritis to both knees and was obese, with a body mass index (BMI) above 50. His mobility was reduced due to the lymphoedema, which affected his activities of daily living as he was unable to walk any distance or climb stairs, and needed walking aids to help his mobility. He was also unable to drive his car or leave the house without a family member.

The skin below the knee on both his legs was severely hyperkeratotic (*Figures 8–10*). The hyperkeratosis had been present for over two years. Due to his sensitivity to a wide range of emollients, he was only able to wash using warm water and baby oil.

When assessed by a specialist nurse, it was decided to use UCS cloths to cleanse/debride the skin. Within a few weeks of using this treatment, both legs showed considerable improvement, as nearly all the hyperkeratosis had been removed (*Figures 11–14*). This reduced the risk of infection and provided optimal skin care.

Figures 8–10.



Figures 11–14.



After patch testing a variety of different creams, it was found that Dermol® lotion was suitable and this was used two to three times a week to help hydrate and improve the condition of the skin and reduce the risk of infections in the future.

CONCLUSION

Debridement is a key aspect of wound management. The use of UCS premoistened debridement cloths has been found to remove necrotic tissue, biofilm, slough and hyperkeratosis with minimal trauma and pain, while also cleansing and hydrating the periwound skin (Downe, 2014). Its skin-friendly surfactant and allantoin also soften hard, dry skin and help to cleanse the wound deeply. UCS thus facilitates improved wound care outcomes, while also enabling quick and accurate wound assessment, and speeds up the debridement process which, in turn, helps to free up clinician time (Downe, 2014). **JCN**

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REFERENCES

- All Wales Tissue Viability Nurse Forum (2014) *All Wales guidance for the management of hyperkeratosis of the lower limb*. Wounds UK, London
- Atkin L (2014) Understanding methods of wound debridement. *Br J Nurs* 23(Supp12): S10–15
- Broadus C (2013) Debridement options: BEAMS made easy. *Wound Care Advisor* 2(2): 15–18
- Brown A (2013) The role of debridement in the healing process. *Nurs Times* 109(40): 16–19
- Cornell R, Meyr AJ, Steinberg JS, et al (2010) Debridement of the non-infected wound. *J Vasc Surg* 52(3): 31s–36s
- Chamanga E (2016) Wound assessment in primary care. *Independent Nurse*. Available online: www.independentnurse.co.uk/clinical-article/wound-assessment-and-treatment-in-primary-care/116877
- Davies P (2004) Current thinking on the management of necrotic and sloughy wounds. *Professional Nurse* 19(10): 34–6
- Downe A (2014) How wound cleansing and debriding aids management and healing. *J Community Nurs* 28(4): 33–7
- European Wound Management Association (2013) *EWMA Document: Debridement. An updated overview and clarification of the principle role of debridement*. Available online: <http://bit.ly/1L1uD2V>
- Falanga V, Brem H, Ennis WJ, Wolcott R, Gould LJ, Ayello EA (2008) Maintenance debridement in the treatment of difficult-to-heal chronic wounds. Recommendations of an expert panel. *Ostomy Wound Manage (Suppl)*: 2–13
- Gillies A (2016) Effective debridement can be achieved in a busy clinic environment. *J General Practice Nurs* 2(2): 54–5
- Guest JF, Ayoub N, McIlwraith T, Uchegbu I, Gerrish A, Weidlich D, Vowden K, Vowden P (2015) Health economic burden that wounds impose on the National Health Service in the UK. *BMJ Open* 5(12): e009283
- Hughes (2015) How one trust saved money by changing its leg cleansing method in a switch to debridement cloths. *Wounds UK* 11(4): 74–7
- International Lymphoedema Framework (2006) *Best Practice for the Management of Lymphoedema. International consensus*. MEP Ltd, London
- Keast D, et al (2014) *Ten top tips... Understanding and managing wound biofilm*. Wounds International, London. Available online: www.woundsinternational.com/media/journals/_/949/files/content_11315-1.pdf
- Khatun S (2016) Demystifying debridement and wound cleansing. *J Community Nurs* 30(2): 26–30
- Leeper DJ, Schultz G, Carville K, Fletcher J, Swanson T, Drake R (2012) Extending the TIME concept: what have we learned in the past 10 years? *Int Wound J* 9: 1–19
- Malone M, Bjarnsholt T, McBain A, et al (2017) The prevalence of biofilms in chronic wounds: a systematic review and meta-analysis of published data. *J Wound Care* 26(1): 20–5
- Metcalf DG, Bowler PG, Hurlow J (2014) A clinical algorithm for wound biofilm identification. *J Wound Care* 23(3): 140–2
- Milne J (2015) Wound-bed preparation: the importance of rapid and effective desloughing to promote healing. *Br J Nurs* 24(supp 20): S52–8
- NHS England (2016) *Commissioning for Quality and Innovation (CQUIN) Guidance for 2017–2019*. Available online: www.england.nhs.uk/wp-content/uploads/2016/11/cquin-2017-19-guidance.pdf
- Ousey K, Rippon M, Stephenson J (2016) Barriers to wound debridement: Results of an online survey. *Wounds UK* 12(4): 36–41
- Percival SL, Suleman L (2015) Slough and biofilm: removal of barriers to wound healing by desloughing. *J Wound Care* 24(11): 498–51
- Percival SL, Mayer D, Malone M, et al (2017) Surfactants and their role in wound cleansing and biofilm management. *J Wound Care* 26(11): 680–90
- Phillips PL, Wolcott RD, Fletcher J, Schultz GS (2010) Biofilms made easy. *Wounds Int* 1(3): 1–6
- Scottish intercollegiate Guidelines Network, (2010) *Management of chronic venous leg ulcers*. Clinical guideline 120. SIGN. Edinburgh
- Schultz G (2015) *Debridement — whose problem is it? Solutions for patients, purchasers and providers*. Poster presentation, EWMA conference, London.
- Schultz GS, Sibbald RG, Falanga V, et al (2003) Wound bed preparation: a systematic approach to wound management. *Wound Repair Regen* 11: 1–28
- Vowden P, Vowden K (2011) *Debridement made easy*. Wounds UK. Available online: www.woundsuk.co.uk/made-easy/debridement-made-easy
- Weir D, et al (2007) Wound debridement In: Krasner DL, ed. *Chronic wound care: A clinical source book for healthcare professionals*. HMP communications, Malvern
- Whitaker J (2012) Self-management in combating chronic skin disorders. *J Lymphoedema* 7(1): 46–50.
- Wilcox, et al (2013) Frequency of debridement a time to heal: a retrospective cohort study of 312,746 wounds. *JAMA Dermatol* 149(9): 1050–58
- Wolcott RD, Kennedy JP, Dowd SE (2009) Regular debridement is the main tool for maintaining a healthy wound bed in most chronic wounds. *J Wound Care* 18(2): 54–6
- Wounds International (2012) *Management of hyperkeratosis of the lower limb: Consensus recommendations*. Available online: www.wounds-uk.com
- Young L (2016) *Improving patient outcomes using pre moistened debridement cloths on a chronic diabetic foot ulcer*. Poster presentation, Wounds UK, Harrogate

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IN BRIEF

- Chronic oedema presents as swelling which has been present for more than three months, which is usually caused by venous and lymphatic impairment.
- The aim of management for chronic oedema is to reduce the swelling and to prevent re-swelling.
- Adjustable Velcro compression devices (AVCDs) offer an alternative management option to compression bandaging and/or hosiery.

KEYWORDS:

- Chronic oedema
- Management
- AVCD
- Self-care
- Quality of life

Chronic oedema and compression

Dawn Morris

In today's climate, the National Health Service (NHS) is facing increasing demands on services. The 'Five year forward view' (NHS England, 2014) identified unprecedented demands on NHS services due to an ageing, and a growing population with complex long-term conditions. It is due to this increasing pressure that healthcare services are looking at ways to change current care delivery methods.

With healthcare policy focused on community-based care, larger numbers of patients with complex long-term health conditions are living for longer and being cared for out of hospital in the community (Chalk and Legg, 2017). Community nurses are expected to provide a range of skilled healthcare interventions to patients at home (Carrier and Newbury, 2016). Despite this, a recent study by Kirby and Hurst (2014) examining community staffing and workload, identified

'With healthcare policies encouraging services to adapt and evolve, nurses must evaluate and update their practice to ensure that they can meet the challenges they face in an evolving NHS.'

that heavy workloads were common and often accompanied by reduced staffing numbers, impacting on the amount of time nurses could spend with individual patients. The study also showed that dependency on nurses from patients was high. This, in combination with the workload and staffing numbers, has the potential to result in challenging and difficult working environments for community nursing teams.

With healthcare policies encouraging services to adapt and evolve, nurses must evaluate and update their practice to ensure that they can meet the challenges they face in an evolving NHS (Watts and Davies, 2017).

CHRONIC OEDEMA

Todd and Harding (2016) explained that chronic oedema is an umbrella term used to refer to a swelling that has been present for more than three months. It is defined by the National Lymphoedema Partnership (2015) as a group of conditions

characterised by the presence of swelling within tissues of the body caused by the accumulation of excess fluid within the interstitial space of the affected area. While chronic oedema can affect people of any age, it is more common in the elderly and often occurs with leg ulceration. Indeed, a study by Moffatt et al (2016) found that 40% of the patients evaluated, also had leg ulcers.

In a normal limb, fluid containing oxygen, proteins and nutrients are released by the capillaries into the interstitial space, which are then reabsorbed into either the bloodstream or lymphatic system, thereby maintaining fluid balance. However, in the presence of venous and/or lymphatic disease, this fluid drainage is impaired, resulting in an imbalance (European Wound Management Association [EWMA], 2003). Changes in the lymphatic system can occur as a result of:

- ▶ Heart disease
- ▶ Orthopaedic surgery
- ▶ Dependency
- ▶ Immobility
- ▶ Infection (Moffatt et al, 2003).

Lifestyle factors, for example, lack of exercise or obesity, can also lead to chronic oedema (Fife, 2008). In patients with an increased body mass index (BMI), chronic oedema can be caused by a multitude of

Practice point

AVCDs have been found to be more effective at reducing oedema than compression hosiery due to their inelasticity. This improves the action of the calf muscle pump, which helps to enhance venous return and subsequently reduces limb volume (Partsch, 2014). Conversely, hosiery, being more elastic, can allow the limb to swell (Richard and Spence, 1996).

factors (Goffman et al, 2004). Often, the weight of increased intra-abdominal bulk is suggested as the cause (Todd, 2009), as this bulk creates increased pressure on the inguinal vessels, which causes difficulty in the venous and lymphatic return from the legs. Obesity is also associated with an overall reduction in mobility, and patients tend to spend extended periods of time sitting with inactive, dependent legs. This reduced mobility and lack of range of movement due to limb size can prevent the use of the foot pump and calf muscles, reducing the venous return in the legs and increasing the burden on the lymphatics (Meissner et al, 2007).

The majority of patients with chronic oedema are seen in community settings. This was highlighted by a recent evaluation by Lymphoedema Network Wales, where findings identified that over 50% of community nursing time is spent treating people with chronic oedema and leg ulcers. Despite their complexities, Hunter (2015) explains that these patients are frequently managed in the community by nurses with little specialist knowledge, skills or experience in this area.

MANAGEMENT

The primary goal with chronic oedema is to reduce the limb volume and prevent further swelling (Mullings, 2012). This is achieved with compression therapy,

which can be delivered in a variety of ways, such as bandages, hosiery and adjustable Velcro compression devices (AVCDs).

Compression achieves limb volume reduction in a number of ways, namely:

- ▶ Increasing uptake via the lymphatics
- ▶ Decreasing capillary filtration
- ▶ Moving fluid to non-oedematous areas (Partsch and Moffatt, 2012).

Traditionally, compression for chronic oedema management was delivered with compression bandaging. Compression bandaging requires specialist skills and knowledge for it to be applied at a therapeutic level (Freeman and Norris, 2016). Even with adequate training, nurses still fail to apply bandages at the recommended 40mmHg level of compression (Nelson et al, 1995; Taylor et al, 1998; Reynolds, 1999). In many cases, bandages are either applied too loosely or tightly, resulting in bandage slippage, leaky legs and non-healing wounds, as well as potential pain and discomfort for the patient until the nurse can come and change them. It is a challenge to train nurses with the knowledge and skills to safely apply compression bandages, especially with rising patient caseloads and nurse vacancies, leaving little time for training and supervision.

Physically, bandaging a leg can be challenging and can involve stooping, stretching, bending and lifting (Todd et al, 2014). This is often compounded by the environment in which community nurses work, i.e. patients do not have electric beds or even electric chairs to raise the limb to reduce the amount of bending and lifting. If a patient is immobile or obese, this can be even more challenging.

Adjustable Velcro compression devices (AVCDs) provide an effective alternative to compression bandaging (Mosti et al, 2015). These garments comprise Velcro straps which are layered to cover the affected limb. They work in

accordance with Laplace's law delivering graduated compression from the ankle to below the knee (Lund, 2000), offering low resting and high working pressures (Mullings, 2012).

AVCDs

Any patient who has been assessed and is suitable for compression could benefit from an AVCD. One example is the juxta range (medi UK), which is able to achieve consistent measurable compression due to its Built-in Pressure System (BPS™). The BPS is used to measure the level of compression, thereby ensuring that it is accurate and consistent (Lawrence, 2014). The simplicity of applying and measuring compression with AVCDs, means that patients, carers, and anyone who has received basic training will be able to apply the device at a safe therapeutic level of compression.

In comparison to compression bandaging, AVCDs are able to offer much more consistent levels of compression than bandages. A randomised control trial showed that inelastic bandages lose their pressure by up to 50% 24 hours after application, whereas AVCDs were able to maintain a consistent level of compression as the patient was able to readjust the AVCD as the garment became loose (Mosti et al, 2015). To ensure compression bandages maintain a therapeutic level of compression, they need to be reapplied on a regular basis. However, nurses do not have the resources to visit their patients daily to reapply their compression bandages. With the AVCD, patients/carers are able to readjust the pressure on a regular basis,

Laplace's law

This law shows that sub-bandage pressure will:

- ▶ Rise with increasing bandage tension and the number of layers
- ▶ Decrease with increasing limb circumference and bandage width.



Figure 1. Posterior aspect before juxtafit was introduced to the treatment regimen.

Figure 2. Anterior aspect before juxtafit was introduced to the treatment regimen.

ensuring that the compression delivered is maintained at a therapeutic level in between community nurse visits (Damstra and Partsch, 2015).

Furthermore, patients wearing bandages are unable to access their skin to complete essential care to hydrate the skin and prevent further breakdown in between nurse visits. Patients wearing AVCDs can access their skin on a daily basis, ensuring that they can inspect their skin and maintain a regular skin care regimen. The AVCD can easily be removed for the patient to have a shower, apply emollients, clean and redress the wounds.

Greene and Meskell (2016) explored patients' perceptions regarding the impact of lower limb chronic oedema on their quality of life. They found that 76% of patients reported a sense of altered body image. 55% of the patients felt that their chronic oedema affected their social and leisure activities, and they often felt that they could not participate in certain activities or wear appropriate

clothing for the occasion. Patients have reported that wearing the juxta wrap as an alternative to compression bandaging is life-changing, enabling them to work, wear normal shoes and manage their skin, while also seeing wound healing and limb reduction (Bradley et al, 2017; Hodgman, 2017).

In many cases, nursing visits can be reduced as the patient is able to apply and readjust the juxta wrap. Bradley et al (2017), in their evaluation of 10 patients using juxtacures[®], were able to reduce their clinic time by over half — from seven to two hours 50 minutes — and all patient visits were reduced from twice weekly to once per week.

Elvin (2015) evaluated 26 patients in juxta wraps who were previously managed in compression bandages. With this conversion, they saw a significant reduction in bandage and dressing spend over six months — £14,550.12 and £5,383.56 respectively. This was attributed to the accuracy and adjustability of the compression delivered by the juxta

wraps, as patients were taught how to readjust the garment in between nurse visits, thus maintaining a therapeutic level of compression. As a result, exudate volume reduced, alleviating the need for costly absorbent dressings. A time saving of 32 hours and 26 minutes a week was reported.

CASE STUDY — CHRONIC OEDEMA

Karen (name changed for confidentiality) is a 67-year-old lady living with her husband and two adult sons. She has a past medical history of diabetes, depression, deep vein thrombosis (DVT), pulmonary embolism (PE), obesity, asthma, lymphoedema, Caesarean section, and recurrent urinary tract infection (UTI). She developed ankle swelling in the 1990s and this worsened after she had a DVT and PE in 2000. She did not receive any treatment for her leg swelling until she was referred to her local lymphoedema service in 2009. Karen has had two episodes of cellulitis, resulting in hospital admission and intravenous (IV) antibiotics.

In 2015, she was discharged from the lymphoedema team. At this stage she was referred to the district nursing (DN) service for management. Since Karen came onto the DN caseload she has had recurrent leg ulcers and leaky legs. The frequency of visits ranged from three times per day to once a week (Figures 1 and 2).

The deterioration of Karen’s legs over the years has severely impacted upon her quality of life. She is living in constant pain, which affects all aspects of daily life. She is unable to stand for extended periods of time, which severely affects what she can do — she cannot cook for her family, leave the house, or get up the stairs, which has impacted on her personal relationship with her husband. Karen has depression and anxiety, which is exacerbated by her legs. She has an altered body image and does not feel confident leaving the house, she is also very restricted in the clothes she can wear. As the wounds have never fully healed, she has lost confidence in the nursing team’s ability to heal and manage her condition.

Managing Karen’s condition from a nursing perspective has also been challenging. There was a decreased morale in the team, as the legs would never fully heal and deteriorate quickly. The team did not feel that they had the specialist knowledge and skills to manage Karen, but there were no specialist services who they could refer her on to. There was also a cost implication as, at times, nurses were visiting up to three time a day and using vast amounts of dressings and trialing new products to see if they would help.

Practice point

AVCDs enable patients to play an active role in their care, as they can be removed and reapplied with minimal training, which results in improved quality of life (Mullings, 2012; Everette, 2016).

Bandaging	Juxtafit
Constant pain	No pain
Unable to stand to cook family meal	Able to stand and cook family meal
Unable to wear footwear and clothing	After nine months, visits reduced to once per month
Nursing visits of up to three times per day	After seven months, all wounds had fully healed
No sign of wound healing after three years	Exudate volume reduced and the wound progressed to healing
Oedema continued to increase	Oedema greatly reduced
Reduced mobility, difficult to leave the house	Mobility improved, able to go out for shopping and family occasions
Reliant on DNs to manage her legs	Able to manage juxtafit with her family, with minimal support from DNs



Figure 3. Both legs in juxtafit.



Figure 4. Ulcer before treatment with juxtafit.



Figure 5. Healed ulcer after treatment with juxtafit.

In July 2017, the DN team were introduced to juxtafit®, an AVCD produced by medi UK. Karen was assessed and fitted with a thigh-length juxtafit to both legs in July 2017 (Figure 3). Once juxtafit was fitted, Karen and her family were shown how to readjust the

device and how to use the BPS and readjust the compression in between DN visits.

The team initially visited twice per week to support Karen and her family and attend to dressing changes. Over the course of the next nine months, these visits reduced to once per month. After six months in juxtafit, the ulcer on her right leg healed and the following month the ulcer on the other leg healed.

A dramatic change was seen in Karen over the months since she started using juxtafit. She quickly saw a reduction in limb size and volume of exudate being produced. This encouraged her and boosted her confidence in the product and the abilities of the nursing team. As the oedema reduced, Karen was able to mobilise more and more — she was able to go out to the shops for the first time in many years. She was also able to attend a family Christmas gathering, which she had not felt able to do when she had active ulceration and leaky legs. As Karen's legs improved, she felt the symptoms of her anxiety and depression lessened and her confidence grew. Juxtafit also gave Karen and her family the ability to self-manage; she could remove the device and have a shower, as she did not need to wait in for the nurses to visit to bandage the leg.

Juxtafit offered a simple solution to managing a complex patient. The BPS ensured that Karen received a therapeutic level of compression throughout the day, and she and her family were able to readjust and maintain the compression in between the nursing visits. A dramatic reduction in limb volume was seen, and wound exudate volume also decreased, alleviating the need for costly dressings. The frequency of nurse visits was reduced over the nine months, but also the duration of each visit lessened, even in the first few weeks. When Karen was in bandages, a visit would take an hour, whereas when she went into juxtafit, this reduced to 20–30 minutes.

PATIENT FEEDBACK

Before I tried juxta I had many different stockings and dressings, but they all slipped and cut into my ankle and the back of my knee. They were uncomfortable and difficult to apply. Wearing juxta has made a world of difference to me — they are comfortable, easy for my family to apply, and I feel in control of my chronic oedema.

My confidence has really increased. Before, I never left the house; now I manage to go out weekly for shopping, and, this year, for the first year in a very long time, I went out for Christmas. I have also managed to have a party for our wedding anniversary. I am very thankful to have found this product.

CLINICIAN FEEDBACK

Finding a suitable product to use for this patient with a 24-year history of thigh-high, complex chronic oedema has been a challenge over the years.

Using juxtafit has improved this patient's quality of life without any doubt, both physically and psychologically. It has also dramatically decreased our workload and the associated costs in treating this patient.

This product is easy to use and provides great results.

CONCLUSION

With more patients needing to be treated for long-term, complex conditions in the community, it is vital that healthcare professionals choose treatment options which are both clinically and cost-effective, while also keeping the patient at the centre of all care. Chronic oedema has been identified as increasing in prevalence, with many patients also having leg ulcers (Moffatt et al, 2016; Todhunter, 2017). However, AVCDs have been found to be effective at reducing limb volume and aiding healing of venous leg ulcers, while

also improving patient quality of life and enabling them to be actively involved in their own care. They also reduce the need for nurse visits, thereby easing demands on community nurses' time and resources (Elvin, 2015). **JCN**

REFERENCES

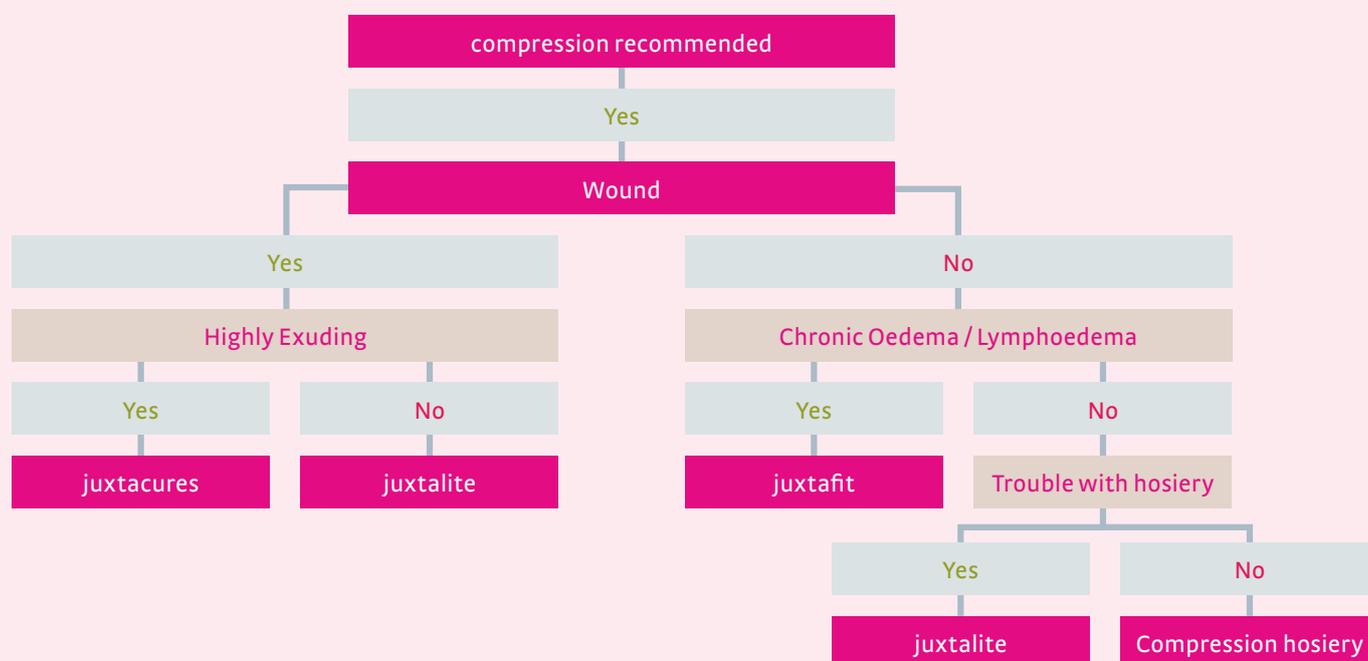
- Bradley S, Nelis L, Reagen M, et al (2017) Using an adjustable compression device to manage venous leg ulcers. *J Community Nurs* 31(2): 42–4
- Carrier J, Newbury G (2016) Managing long-term conditions in primary and community care. *Br J Community Nurs* 21(10): 504–8
- Chalk D, Legg A (2016) What factors are driving increasing demand for community nursing? *Br J Community Nurs* 22(1): 675–81
- Damstra RJ, Partsch H (2015) Prospective, randomized, controlled trial comparing the effectiveness of adjustable compression Velcro wraps versus inelastic multicomponent compression bandages in the initial treatment of leg lymphedema. *J Vasc Surg: Venous and Lymphatic Disorders* 1(1): 13–19
- Elvin S (2015) Cost efficacy of using juxtacure and UCS debridement cloth. *J Community Nurs* 29(2): 5–28
- European Wound Management Association (2013) *EWMA Document: Debridement. An updated overview and clarification of the principle role of debridement*. Available online: <http://bit.ly/1L1uD2V>
- Everette J (2016) The use of pressure wraps in treating lymphoedema in care. *Nurs Res Care* 18(8). Available online: www.mediuk.co.uk/fileadmin/Storage/Documents/Use_of_pressure_wraps_in_treating_lymphoedema_in_care_-_Jenette_Everett_NRC_2016.pdf
- Fife CE, Carter MJ (2008) Lymphoedema in the morbidly obese patient: unique challenges in a unique population. *Ostomy Wound Manage* 54(1): 44–56
- Freeman N, Norris R (2016) Using an adjustable compression system to treat community leg ulcers. *J Community Nurs* 30(3): 47–52
- Goffman TE, Laronga C, Wilson L, Elkins D (2004) Lymphedema of the arm and breast in irradiated breast cancer patients: risks in an era of dramatically changing axillary surgery. *Breast J* 10(5): 405–11
- Greene A, Meskell P (2016) The impact of lower limb chronic oedema on patients' quality of life. *Int Wound J* 14(3): 561–8
- Hodgman L (2017) A proven alternative to compression bandaging. *J Wound Care* 26(4 suppl): S22–S23
- Hunter M (2015) Assessing the effects of chronic oedema with associated ulceration. *Br J Community Nurs* 20(10): s8–s13
- Kirby E, Hurst K (2014) Using a complex audit tool to measure workload, staffing and quality in district nursing. *Br J Community Nurs* 19(5): 219–23
- Lawrence G (2014) Juxta CURES: When is it appropriate? *Wound Essentials* 9(2): 30–6
- Lund E (2000) Exploring the use of CircAid legging in the management of lymphoedema. *Int J Palliat Nurs* 6(8): 383–91
- Lymphoedema Framework (2006) *Best practice for the management of lymphoedema. International consensus*. London: MEP Ltd
- Meissner MH, Moneta G, Burnand K, et al (2007) The hemodynamics and diagnosis of venous disease. *J Vasc Surg* 46(Supplement): 4S–24S
- Moffatt CJ, Franks PJ, Doherty DC et al (2003) Lymphoedema: an underestimated health problem. *QJM* 96(10): 731–8
- Moffatt CJ, Keeley V, Franks PJ, Rich A, Pinnington L (2016) Chronic oedema: a prevalent health care problem for UK health services. *Int Wound J* 14(5): 772–81
- Mosti G, Cavezzi A, Partsch H, Urso S, Campana F (2015) Adjustable Velcro compression devices are more effective than inelastic bandages in reducing venous edema in the initial treatment phase: A randomized control trial. *Eur Soc Vasc Surg* 50: 368–74
- Mullings J (2012) Juxta-fit compression garments in lymphoedema management. *Chronic Oedema* 17(S10): 32–7
- NHS England (2014) *Five year forward view*. Available online: www.england.nhs.uk/wp-content/uploads/2014/10/5yfv-web.pdf
- National Lymphoedema Partnership (2015) *Consensus statement on the chronic oedema-lymphoedema interface*. Available online: www.lympho.org/wp-content/uploads/2017/10/Chronic-Oedema-definition-NLP-June-15.pdf on 2/2/2018
- Nelson EA, Ruckley CV, Barbenel JC (1995) Improvements in bandaging technique following training. *J Wound Care* 4(4): 181–4
- Noble-Jones R (2016) Using new research to improve treatments and management of lymphoedema. *Br J Nurs* 25(13): 726
- Partsch H (2014) Compression for the management of venous leg ulcers: which materials do we have? *Phlebology* 29(15): 140–5
- Partsch H, Moffatt C (2012) An overview of the science behind compression bandaging for lymphoedema and chronic oedema. In: Glover D, ed. *Compression Therapy: A Position Document on Compression Bandaging*. International Lymphoedema Framework in Association with the World Alliance for Wound and Lymphoedema Care: 12–23
- Reynolds S (1999) The impact of a bandaging training programme. *J Wound Care* 8(2): 55–60
- Richard K, Spence MD (1996) Inelastic versus elastic leg compression in venous insufficiency: A comparison of limb size and venous hemodynamics. *J Vasc Surg* 24(5): 783–92
- Taylor A, Taylor R, Said S (1998) Using a bandage pressure monitor as an aid in improving bandaging skills. *J Wound Care* 7(3): 131–3
- Todd M (2009) Managing chronic oedema in the morbidly obese patient. *Br J Community Nurs* 18(17): 990–4
- Todd M, Key M, Rice M, Salmon M (2014) Moving and handling issues in the delivery of chronic oedema management. *Br J Community Nurs* (supplement): S6–S12
- Todd M, Harding J (2016) *Compression bandaging of the lower limb for chronic oedema and lymphoedema*. MAP, London. Available online: www.independentnurse.co.uk/professional-article/compression-bandaging-for-the-lower-limb/143632/
- Todhunter J (2017) Empowering patients to self-care with a Velcro wrap compression device. *J Community Nurs* 31(4): 28–33
- Watts T, Davies R (2017) Chronic oedema 'on the ground' education programme. *Br J Community Nurs* 22(11): 526–34

Using the juxta range within current care pathways

The indications for which the juxta range are suitable treatment options may present in acute or primary care, with the majority of patients being treated in a community setting. Healthcare Improvement Scotland (2018) has recently recommended using the juxta range as an alternative to traditional compression bandaging for the treatment of venous leg ulcers and lymphoedema. Although compression bandaging has been seen as the 'gold standard' treatment option, patients are dependent on healthcare professionals to apply, adjust and remove bandages, and the level of compression applied is dependent on the healthcare professional's skill in application.

However, across the juxta range, a pressure measurement card (Built-in Pressure system™ [BPS]) allows the compression pressure to be measured and monitored, so that the optimum level is maintained. Self-adjustment of the Velcro wraps provides a safe and consistent level of compression and promotes self-care in the community, thereby reducing nursing time and resources without markedly changing current care pathways (Healthcare Improvement Scotland, 2018).

juxta care pathways from medi UK



REFERENCE

Healthcare Improvement Scotland (2018) *Juxta Range of Products (Juxtacures, Juxtalite, Juxtafit)*. *Innovative Medical Technology Overview: Number 011/2018*. Available online: www.healthcareimprovementscotland.org/our_work/technologies_and_medicines/shtg_imto/imto_011-2018.aspx



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