Expert consensus: Optimising debridement strategies for effective management of local wound infection

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Foreword

Effective wound bed preparation (WBP) within the context of holistic patient care forms the foundation of wound care, removing barriers to healing, reducing the risk of infection and other complications, and optimising outcomes. All treatment must be tailored to the needs of the patient and their wound, being informed by thorough and timely assessments. Identifying and addressing physical barriers to healing – such as devitalised tissue, infection and excess exudate – facilitates healing and reduces infection risk.

As such, debridement is a key step of WBP that is often underused in practice, despite recognition of the growing importance of debridement for many wounds, especially wounds that are infected or at risk of infection.

It is important to note there are now many different methods of debridement, many of which can be carried out by generalist and non-specialist staff and should be used as part of the WBP process.

A multidimensional approach to WBP – using products that simultaneously cleanse, debride, and manage infection and biofilm – increases efficiency in clinical practice. Using a single product that addresses these aspects can reduce dressing complexity while supporting cost savings, minimising waste and contributing to environmental sustainability.

Chronic wounds have a significant impact on patients' lives and are challenging for healthcare professionals to treat; failure to implement evidence-based practice can prolong patient suffering and lead to wound complications such as infection. As rates of chronic wounds continue to increase, it is necessary to view this in context of the wider socioeconomic landscape.

Potential contributing factors include: an ageing population, increases in comorbidities and general poor health across all age groups. Socioeconomic challenges, such as increased cost of living, higher unemployment rates and growing prevalence of mental health conditions including anxiety and depression, further compound the issue.

Working towards health equity for all patients means that evidence-based care is more important than ever, providing standardised gold-standard care for all. Resource and time limitations, alongside staff shortages in the current climate, make simplifying evidence-based care a priority. Simplifying wound management can ease the burden on healthcare professionals while increasing opportunities for supported self-care.

In line with the NHS's 2025 '10 Year Health Plan for England: fit for the future' (Department of Health and Social Care, 2025), nurses are increasingly leading on complex wound care. As their roles expand, it is essential they are supported with simplified, evidence-based tools to deliver effective care efficiently.

A group of experts met online on 1 April 2025 to discuss practical strategies to simplify and improve clinical practice. Discussions included the development of a structured framework to guide decision-making and support standardisation, with particular emphasis on areas such as debridement practice, in order to promote consistency and improve health equity.

While there is a great deal of information in the literature about debridement and WBP, this document aims to link theory to practice, providing guidance that is practical and useful for clinicians at all levels, facilitating genuine change.

This document aims to demystify debridement and increase all clinicians' knowledge and confidence in selecting appropriate and accessible debridement methods and using multidimensional dressings to facilitate multiple elements of WBP.

Karen Ousey, Chair

Removing barriers to healing: why debridement matters

Debridement is a key step in the process of wound bed preparation (WBP) and an important component of all wound treatment, especially when necrotic tissue, slough or other non-viable tissue is present in the wound bed, increasing the risk of wound chronicity and development of infection (Nair et al, 2024). Debridement is defined as a multifaceted intervention that involves the removal of devitalised tissue (also known as non-viable, non-vital or dead tissue), including slough, necrotic tissue, debris, microorganisms and biofilm, from the wound bed and edges (Mayer et al, 2024).

See **Table 1** for further guidance on types of tissue that may require debridement.

It is important to note that not all wounds are suitable for debridement and the guiding principle should always be 'do no harm' (see section below on 'When not to debride').

Although not all wounds are suitable for debridement, in many wounds, debridement helps to remove the physical barriers to healing and facilitates successful treatment, allowing topical treatments and wound dressings to work more effectively. Removing these barriers to healing kickstarts the healing process, effectively transforming a chronic wound environment into an acute one, restoring the wound to a normal healing trajectory (Nair et al, 2024). See **Box 1** for a summary of the benefits of debridement in practice.

The aim is always to create the best healing environment possible, and steps in practice should always be taken to achieve this aim. Debridement should be seen in context as part of all wound treatment pathways: cleansing and debriding the wound as appropriate, informed by thorough assessment of the patient and their wound, and forming the

Table 1. Types of tissue that may require debridement

Type/barrier to healing	Description	Effect on wound healing
Necrotic/dead tissue	Usually caused by interruption to the blood supply to tissue and cells, resulting in local ischaemia and tissue death	Increased infection risk, physical barrier to topical treatment
Eschar	Dry, black, hard tissue that may be loose or firmly attached	Physical barrier to topical treatment
Slough	Non-viable tissue of varying colour (e.g. cream, yellow, greyish, green or tan) that may be loose or firmly attached, slimy, stringy or fibrinous	Increased infection risk, providing ideal environment for bacterial proliferation and increased bioburden
Other debris	Dressing debris or other foreign material in the wound	Increased risk of inflammation and infection
Biofilm	Community of microorganisms, primarily bacteria, that adhere to the wound surface	Chronic inflammation, prevention of tissue regeneration, increased infection risk and resistance to antimicrobial treatments

basis of ongoing treatment. The presence of devitalised tissue can impair wound healing, but areas of the wound bed that are clean may begin to progress, even if other regions remain non-viable. Establishing an overall trajectory of healing is more likely once the majority of devitalised tissue is removed.

Debridement informed by assessment

All debridement should be carried out following a holistic assessment of the patient and treatment of the underlying cause of the wound. A structured wound assessment and management framework should be used, such as TIMERS (Atkin et al, 2019), which includes the following components:

- Tissue
- Inflammation/Infection
- Moisture balance
- Edge of wound/Epithelialisation
- Repair and Regeneration
- Social factors.

It is important to assess the patient holistically, looking at their overall health, their history and general wellbeing. Any comorbidities and medications may affect their wound healing and inform their care plan. The patient's lifestyle and circumstances (e.g. housing environment, friends and family support) should also be considered from a psychosocial perspective. See **Box 2** for considerations in holistic assessment.

When considering debridement, it is essential to identify patients at high risk of developing infection to enable timely intervention. These patients should be identified to implement strategies that facilitate the prevention of a more severe infection developing, with close monitoring and a focus on maintaining a clean wound bed and responding promptly to any signs of infection.

It should be acknowledged that time constraints and overburdened workloads may make holistic assessment challenging; however, thorough and accurate assessment should form the basis for all treatment, increasing the chances of success and potentially saving future time and increased demand on resources.

Box 1. Benefits of debridement in practice (Gray et al, 2010; Strohal et al, 2013; Davies et al, 2015; Schofield and Ousey, 2021)

- Stimulation of wound edges and epithelialisation, kickstarting healing and promoting a normal healing trajectory
- Decreased risk of inflammation
- Decreased risk of infection
- Preservation of surrounding skin
- Improved patient quality of life
- Support of accurate wound assessment
- Enhanced effectiveness of therapeutic measures
- Pain reduction
- Reduction of excess moisture/exudate
- Reduction of odour.

Box 2. Holistic assessment (adapted from Dhoonmoon et al, 2023; Mayer et al, 2024)

A holistic wound assessment considers the entire patient, including their health, environment, physical, psychological and psychosocial factors. A holistic assessment should include:

- The patient's skin, including their skin tone
- Their overall health
- Their medical history, particularly concerning circulation
- Any medications
- Their wound (underlying aetiology, potential for healing, presence of biofilm, tissue types present, overall wound characteristics)
- Their lifestyle and environment (e.g. smoking, exercise, nutrition, hygiene)
- Their individual needs and preferences
- Their education and ability to follow information and guidance, especially when caring for a wound at home
- Their socioeconomic status
- Availability of support networks.

Debridement in the context of WBP

WBP is a structured framework incorporating assessment, diagnosis and treatment of wounds (Nair et al, 2024). The overall goal of WBP is to help create a balanced, moist environment that optimises conditions for wound healing by producing a well-vascularised, stable wound bed, reducing bioburden, managing excess exudate and increasing the formation of healthy granulation tissue (Schofield and Ousey, 2021; Barrigah-Benissan et al, 2022).

While they are separate processes, wound cleansing and debridement both contribute to the removal of dead tissue and debris, and

contribute to WBP to facilitate wound healing (Nair et al, 2024). Debridement should not be viewed in isolation, but considered as a key step within the overall wound management process, alongside thorough cleansing.

Therapeutic wound cleansing, debridement and wound dressings all address the key goals of WBP, including [International Wound Institute [IWII], 2025]:

- Preventing and treating wound infection
- Stimulating the wound bed for healing
- Promoting the holistic needs of the individual
- Improving the ability to visualise the wound bed and wound edges, thus improving the accuracy of wound assessment
- Reducing unpleasant signs and symptoms, including exudate and wound odour
- Reducing wound-related pain
- Increasing the individual's comfort and feeling of cleanliness.

It should be noted that wounds should be cleansed before and after debridement as part of the WBP process (Mayer et al, 2024). Wound cleansing is a significant component in preventing and managing wound infection and preparing a wound for healing. Wound cleansing should be therapeutic, using appropriately selected techniques, cleansing solutions and sequencing, while considering the holistic needs of the individual.

Debridement to support infection and biofilm management

Devitalised or necrotic tissue provides the perfect environment for bacteria to thrive and for infection to develop (Atkin et al, 2019). Therefore, debridement helps to reduce bioburden and stabilises the microbiome of the periwound skin, creating a more favourable environment for healing and reducing the risk of recurring infection (Young et al, 2013; Sen et al, 2021; Thomas et al, 2021).

Biofilm is a key consideration, particularly in chronic wounds, or wounds at risk of becoming hard-to-heal. Studies suggest that between 60% and 100% of chronic wounds contain biofilm, with the 'true' prevalence likely approaching 100%, indicating that all chronic wounds may have biofilm on at least part of the wound bed (Bjarnsholt et al, 2017; Malone et al, 2017). Biofilms are often polymicrobial, involving clusters of different types of bacterial cells growing at different rates, which makes them difficult to treat (Fletcher et al, 2020).

Biofilm management guidelines state that, where non-viable tissue is present in a wound, this should be removed through debridement, as it may support the attachment and development of biofilm (Percival and Suleman, 2015). It is emphasised that ongoing biofilm disruption through 'repetitive and maintenance debridement' is paramount (Leaper et al, 2010; Ousey and Ovens, 2023).

Reducing bioburden is a key aim of debridement. Historically, sharp debridement has been considered the traditional gold standard for rapid removal of necrotic, infected tissue. However, novel debridement modalities show clinical promise in treating certain wounds, particularly those with bacterial presence (Nusbaum et al, 2012).

Figure 1 demonstrates the reduction of *Staphylococcus aureus* count (yellow colonies) through hydrosurgical debridement on a porcine model. The images compare bacterial colonies from three sites (A, B and C) before and after debridement (Bowling et al, 2009).

Whose responsibility is debridement?

Debridement is often underutilised in practice, possibly due to lack of clinician knowledge and confidence (Nair et al, 2024). This may also be linked to a reliance on ritualistic or task-orientated practice, or 'doing what we always do' rather than considering the needs of the individual patient and their wound.

Historically, there is a perception that debridement requires specialist training or is only performed by a specialist or senior clinician. This may be because, when debridement is considered, it is predominantly thought of as sharp or surgical debridement.

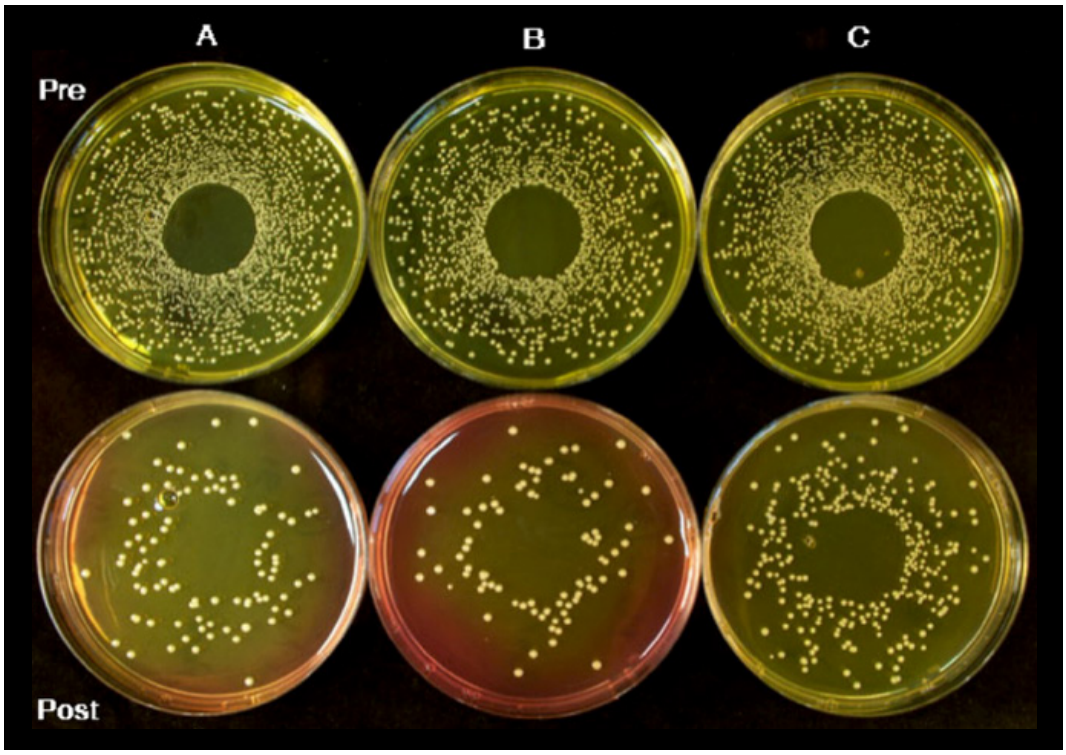


Figure 1. *Staphylococcus aureus* count (yellow colonies) from three sites (A, B and C) from a biofilm created on a porcine model; the top row shows pre-debridement (using hydrosurgery) compared to bottom row showing post-debridement

Box 3. Immediately escalate/refer to a specialist if the following red flags are suspected

- Spreading infection, gas or air in tissues
- Limb-threatening ischaemia
- Red, hot, swollen leg or foot
- Suspected deep vein thrombosis
- Suspected skin cancer.

Box 4. Competent clinicians performing wound debridement are expected to have (Vowden and Vowden, 2011; Nair et al, 2024)

- Good knowledge of relevant anatomy
- Understanding of the range of wound debridement methods available
- Capability to identify viable tissue and differentiate it from non-viable tissue
- Ability to manage pain and discomfort before, during and after the procedure
- Appropriate skills to handle potential complications (e.g. bleeding)
- Awareness of infection control procedures.

In current practice, there are many different forms of debridement in use. Other methods of debridement, such as autolytic or mechanical debridement, are less invasive and generally require less training, and therefore more widely used. However, different debridement methods should be selected based on individual patients and wound types and require varying levels of clinician expertise. Some debridement methods can be performed by generalist or non-specialist staff (Mayer et al, 2024).

When not to debride

Not all wounds are suitable for debridement; certain wounds and patient conditions require caution and red flags **[see Box 3]** may necessitate a referral to a specialist due to high risk of complications. However, many wounds can benefit when the appropriate debridement method is chosen, with autolytic debridement providing a safe alternative in many cases (Nair et al, 2024).

A note on debridement terminology

While specialist involvement may be needed on occasion, it is important to remember that

Sharp debridement may be unsafe in the following wounds, so specialist involvement should be sought and autolytic debridement may be used in suitable patients (Vowden and Vowden, 2011; Jones, 2018; Nair et al, 2024)

- High-risk areas (e.g. wounds on the hands, feet or face). These patients require multidisciplinary involvement
- Lower limb wounds in patients with arterial disease - all lower limb wounds need an arterial assessment prior to considering debridement and may require referral to the vascular team
- Wounds associated with suspected malignancy or changes in normal anatomy. The wound location will determine the appropriate team involvement; this will usually be the plastics surgical team
- Wounds with exposed (or in close proximity to) blood vessels, nerves, tendon or bone
- Wounds where haematoma is present, or high risk of bleeding
- Any wound that has not been properly assessed by a competent practitioner **[see Box 4]**
- Wounds in patients with inflammatory conditions such as pyoderma gangrenosum, where active debridement may lead to wound deterioration.

These patients require review by the dermatology or rheumatology team:

- Wounds in patients unable to give informed consent or on palliative treatment regimens, which may require special consideration and alternative approaches where possible
- Wounds in patients with blood clotting disorders
- Wounds in patients with possible implants and/or dialysis fistulas
- Wounds in patients with untreated calciphylaxis
- Wounds in patients experiencing extreme wound pain.

Note: Autolytic debridement is not recommended in certain cases, such as dry, hard eschar in patients with arterial insufficiency or wounds in the context of active calciphylaxis.

debridement is not solely a specialist procedure and there are forms of debridement that can be conducted by generalist and non-specialist staff, if competent to do so (Mayer et al, 2024).

Where wounds are complex or comorbidities are involved, a collaborative approach based on 'joined-up thinking' is required (Nair et al, 2024).

The language used around debridement can be overly technical and therefore off-putting, or reinforce the perception that debridement is only for senior or specialist staff involvement. It is important to use clear and simple language whenever possible; clear communication and documentation around debridement is key.

It is important to remember that 'debridement' does not just mean one thing. Using instruments via sharp/surgical debridement is only one type of method, and many other products are available to facilitate debridement without instruments being required. Within sharp debridement, it should be noted that curettes may now be used, which requires different training and may be more accessible than 'traditional' sharp debridement methods. Additionally, maintenance debridement is an ongoing process that may include more than one debridement method.

Education on debridement

It has been identified that many clinicians are lacking in knowledge and confidence around debridement.

Education on debridement is essential for ensuring all health professionals involved in wound care can provide effective, safe, and high-quality care, leading to better patient outcomes and more efficient use of healthcare resources (Mayer et al, 2024).

The key to this is making debridement an accessible option for all staff, raising awareness that there are many types of debridement that are suitable for use without specialist training. Dispelling the myths and addressing concerns, such as a lack of confidence, will help to improve uptake of debridement as a part of WBP. Embedding this into practice will help to improve outcomes.

The Nursing and Midwifery Council (NMC) Code of Conduct highlights the importance of practicing effectively and safely. For debridement practice, this means nurses must assess needs, deliver or advise on treatment based on the best available evidence, and ensure patient safety (NMC, 2025).

Methods of debridement

With a range of debridement techniques available, it is important to select the method that is most appropriate and effective for the patient, while also considering factors such as the care setting and level of clinician skill and confidence.

Depending on the needs of the patient and their wound, more than one debridement method may be used through the course of treatment, which is sometimes referred to as 'integral debridement' (Mayer et al, 2024).

Care settings

Debridement may be easier to undertake in clinical settings rather than a patients own home. A suitable environment and access to basic resources (e.g. clean water, a suitable surface) may not be available in all homes. There may be additional resource and hygiene challenges and considerations for patients who are experiencing homelessness. Therefore, it is particularly important to consider debridement options that can be easily used without additional resource requirements (i.e. autolytic debridement through dressing selection).

Nursing homes or other residential facilities may also present a different environment with distinct challenges, including varying levels of staff training. If patients are likely to have dementia, cognitive or mental health issues, specific techniques and patient communication is required. In some settings, such as mental health units or prisons, debridement with a sharp instrument or blade may not be suitable.

Understanding and adopting the approach to the specific setting where required helps to achieve optimal outcomes and efficient wound healing (Mayer et al, 2024).

Selecting a debridement method

Before undertaking any form of debridement, a full structured assessment should be carried out, and the following questions considered:

- What is the cause and type of the wound?
- What is the aim of treatment?
- What are the risks/benefits of debridement?
- What speed of debridement is required?
- Which method would be most appropriate?
- Where are the skills and/or equipment required to perform the treatment?
- Does the patient need to be referred for debridement (e.g. to a tissue viability nurse, podiatrist or surgical team), depending on local protocols?

Different debridement methods may be suited to individual patients, wound types and the wound bed, using the TIMERS assessment framework (Atkin et al, 2019). These may require varying levels of clinician expertise. This section provides an overview of the key points of each widely used debridement method.

Autolytic debridement

- Uses the body's own enzymes and moisture to liquefy and remove non-viable tissue; can be aided by using topical agents and contemporary wound dressings that promote autolysis
- Suitable for continuous debridement
- Care setting: Suitable for all care settings, including GP surgeries, patients' homes and inpatient facilities
- **Skill level**: Can be carried out by generalists or specialists; requires low levels of skills and knowledge. It may also be applied by the patient or a carer to support self-care or supported care.

Mechanical debridement

- Physical removal of devitalised tissue and debris from the wound bed, with products such as monofilament/microfibre debridement pads
- **Care setting:** Suitable for most care settings including GP surgeries, patient's home and inpatient settings
- **Skill level:** Requires some training and can be performed by both generalists and specialists. Incorrect technique may cause pain or reduce effectiveness, so appropriate application is essential.

Biosurgical/larval debridement

- Uses larvae of the green bottle fly (*Lucilia*

Methods of debridement *(Continued)*

sericata) to selectively remove moist slough, necrotic and devitalised tissue from the wound
- **Care setting:** Suitable for a variety of settings, including community, primary and secondary care
- **Skill level:** Generalist or specialist practitioner with the appropriate level of skill, training and competence.

Enzymatic debridement

- Employs topical chemical agents containing enzymes to debride, containing surfactants to remove tissue; several enzymatic debridement agents have been developed, such as trypsin, streptokinase–streptodornase combination and subtilisin (Nowak et al, 2022)
- Not suitable for large wounds with eschar, severely necrotic wounds, heavily infected wounds or patients with sepsis
- **Care setting:** Suitable for use in a range of settings, although a controlled environment is recommended due to the potential for aerosol spread (formulation dependent)
- **Skill level:** Specialist practitioner with relevant training.

Sharp debridement

- Removal of dead or devitalised tissue using instruments such as a scalpel, curette, scissors, and/or forceps, typically cutting just above the level of viable tissue
- Requires in-depth knowledge of tissue types and anatomy, as there is a risk of damaging blood vessels, nerves or tendons
- **Care setting:** Suitable for performing at the patient's bedside or in a clinic setting
- **Skill level:** Competent practitioner with specialist training.

Hydrosurgical debridement

- Uses a high-energy saline stream that creates a localised vacuum that cuts and removes devitalised tissue from the wound bed (requires specialist equipment)
- **Care setting:** Requires a controlled environment due to the risk of bacterial aerosolisation
- **Skill level:** Specialist practitioner with relevant training.

Surgical debridement

- Excision or wider resection of non-viable tissue, sometimes removing healthy tissue from the wound margins, until a healthy, bleeding wound bed is achieved
- Generally associated with higher costs and can be painful (requiring anaesthesia)
- **Care setting:** Requires a procedure room with appropriate resources to manage potential complications, such as bleeding
- **Skill level:** Physician, surgeon, podiatrist or specialist nurse with appropriate training and skills.

Patient factors

Wounds have a significant detrimental effect on patients' quality of life. Patients report that there can be a perception that a wound is not as 'serious' as some other chronic conditions, and so there is less empathy in the care provided (World Union of Wound Healing Societies Meeting [WUWHS], 2020). Wherever possible, treatment should aim to heal. All clinical decision-making should keep this in mind and prioritise the patient's healing above all else.

It is of course important to establish the patient's preferences and concerns, taking action accordingly, which may involve symptom management as a priority (e.g. reducing exudate or odour, managing pain, increasing patient comfort). It is also vital to consider the duty of care to every patient and make the best possible evidence-based treatment choices.

Challenging patient behaviours, especially in individuals with dementia or learning disabilities, often result in reduced tolerance to wound debridement due to pain, fear, or inability to understand the procedure. This can lead to suboptimal debridement or delays in wound healing.

Setting objectives and viewing the bigger picture should encompass the individual goals of the patient, which may change over time. Removing barriers to healing includes those relating to psychosocial issues, overall wellbeing and quality of life.

Pain

Pain is a key consideration in patient quality of life, having a potentially huge effect on the patient and all facets of their everyday life, affecting mood, sleep and overall wellbeing. Pain has also been widely reported as potentially contributing to anxiety around treatment (WUWHS, 2020).

Pain can result directly from wound treatment (i.e. at dressing change or during debridement) and, as such, should be a factor in treatment decision-making.

Malodour

Malodour in wounds can have a significant effect on patient wellbeing and quality of life. As wound healing stalls, necrotic tissue, biofilm and/or infection can develop and produce significant odour.

Additionally, malodour may be associated with the debridement process itself. When a wound is debrided using dressing products, a previously dry, black, necrotic wound can turn soft and stringy and produce a strong odour. Once the soft stringy material is removed, the malodour should reduce considerably.

It should be noted that wound odour can be very distressing for patients, caregivers and healthcare professionals. The presence of wound odour can often lead to social isolation for patients and feelings of guilt for caregivers. Healthcare professionals face the challenge of controlling odour and providing supportive education for suitable wound care to help improve the patient's quality of life (Black and Berke, 2020).

Supported self-care

Self-care for patients has been a much-debated issue in wound care, particularly since the COVID-19 pandemic. While any form of self-care should be carefully considered, supported self-care for suitable patients is a necessity in the current healthcare climate, where numbers of chronic wounds are rising, and resource and staffing provision is often limited (Fletcher et al, 2024).

Additionally, for some patients, self-care is the preferred option, allowing more autonomy, convenience and engagement with treatment (WUWHS, 2020).

The availability of products that can facilitate self-care where suitable and appropriate will help to reduce the increasing load on clinicians and healthcare systems, while potentially empowering patients in their care.

Multidimensional dressings include components that can address more than one treatment aim

Patient factors *(Continued)*

within one dressing (e.g. cleansing, debridement, exudate management, infection control). These dressings are simple enough for patients to be shown how to use, therefore can form a useful element of supported self-care plans. From this perspective, the multidimensional action of the dressings means that patients can receive effective treatment with one product, which simplifies the process and enables self-care. It should be noted that close monitoring by a clinician is needed when devitalised tissue is present and the patient is at high risk of infection. Some patients may not be suitable candidates to engage in self-care and a risk assessment should be undertaken.

Education about the principles and importance of WBP, including protection of the surrounding skin, can form a good foundational knowledge for patients choosing to engage in supported self-care regimens.

Health equity

Health equity means understanding that everyone does not start from the same place or require the same interventions, acknowledging disparities in social determinants of health, bias (such as race, ethnicity and gender), chronic exposure to stress, and generational traumas.

Evidence shows that the conditions in which people are born, grow, live, work and age have profound influence on health and inequalities in health in childhood, working age and older age (Marmot, 2017).

Access to effective wound care is a vital component of health care, yet not all patients receive it equally; recent studies have shown that vulnerable groups in the UK face notably poorer outcomes in wound management due to multiple barriers to accessing standard health care services (Nair, 2024). Access to not only advanced therapies but standard of care is not equitably distributed across populations.

Evidence shows that there is unwarranted variation in wound care across the UK, with an underuse of evidence-based practices and overuse of interventions supported by little to no evidence (Gray et al, 2019; NHS Digital, 2019; Fletcher et al, 2023). We must be mindful that many patients present with challenging wounds due to chronic health conditions and have already been subject to failed prevention strategies in health and social care. There is no justification for withholding evidence-based care.

If care is evidence-based, patients have the best chance of receiving the correct treatment. When a product has a high level of supporting evidence, it should be considered a first-line treatment. Restricting some products as 'specialist' or only a 'last resort' can result in patients being denied access to effective therapies. The best possible product should always be used at the earliest opportunity to support healing as quickly as possible. Integrated care pathways not only streamline the treatment process but also ensure continuity of care, which is critical for chronic wound management (Nair, 2024). Ineffective wound treatment also contributes to elevated NHS costs, with unhealed wounds disproportionately increasing expenses and adding to the overall burden on healthcare systems (Guest et al, 2020).

If healing is not expedited, this further adds to the burden on the patient – e.g. practical and financial burden, attending more appointments with associated time and transport costs, ability to work – as well as their overall wellbeing and quality of life. This can create a vicious cycle whereby health inequalities are compounded.

No patient should have to wait for the optimum treatment for their wound or face unnecessary barriers to healing. Basic principles of preventing harm and taking accountability should be applied to all patients.

Ethical considerations

It is important that the patient understands treatment and gives informed consent whenever possible. Wounds in patients unable to give informed consent may require special consideration. Valid consent from the patient should be obtained before debridement,

particularly in more invasive methods such as sharp debridement. If the patient is unable to provide consent, the next of kin may be approached. Verbal consent is typically sufficient for a single procedure or treatment; however, for more extensive debridement procedures, such as those involving deeper structures (e.g. tendons and bones), written consent is recommended (Nair et al, 2024).

End-of-life care

If a patient is at end-of-life, with the goals of treatment being palliative care, the focus should be primarily on symptom control and preserving quality of life. Communicating with the individual and listening to them about their own concerns and preferences is key to any treatment. Working through this process with the individual, communicating honestly about treatment options, should involve being realistic with them (and their family, friends and informal carers) about what is – and is not – possible (Ousey et al, 2024).

Paediatric patients

Debridement can be a daunting prospect when caring for younger patients, particularly from a pain perspective.

Autolytic debridement is generally ideal for paediatric and neonatal wounds, to balance minimising the impact on the patient with ensuring that non-viable tissue is effectively debrided (Allaway et al, 2024).

When choosing a method of debridement, clinicians should consider the patient's age, size of the wound, type of wound, location of the wound, selectivity of the method, the pain management that will be required and the length of the procedure, as well as the clinician's level of competence with debridement methods (Allaway et al, 2024; Mayer et al, 2024). It should be noted that many products that are suitable for paediatric use are not suitable for use in very young neonates, for example, certain antimicrobial dressings containing silver may not be recommended for premature or low birthweight infants due to absorption risks.

Promoting wound healing with a multidimensional approach

Effective WBP comprises multiple steps – including cleansing, debridement and treating infection and biofilm – and has traditionally required multiple products to address these elements. This leads to a demand on scarce resources and can lead to delays in care (i.e. waiting for a specialist to sharp debride, or for access to multiple different products and devices).

More recently, increasing advances in dressing technologies have led to the development of multidimensional products, which have a combined action of continuous cleansing and debridement of the wound in addition to antimicrobial action (through agents such as silver) and can be used to effectively treat local infection and biofilm (Dowsett, 2023). These products may not be suitable for all wounds, but may be a useful option in suitable patients. Use of multidimensional dressings is also associated with decreasing waste and cost, in terms of financial burden and clinical time.

A key feature of these dressings is their continuous cleansing action, which typically lasts for the full 7-day wear time (Dalac et al, 2016). This is particularly important in the management of leg ulcers, where compression therapy is often applied and not disturbed for 7 days (Dowsett, 2023). If used in the presence of infection, careful monitoring is required during wear time to assess for signs of spreading infection, manage exudate and address any malodour.

The multidimensional dressing includes:

- **TLC-Ag matrix**, which forms a gel on contact with wound exudate, creating a moist environment that promotes wound healing (Dowsett, 2023)
- **Hydro-desloughing polyacrylate fibres** that absorb excess exudate and trap sloughy residues, facilitating continuous debridement capability (Meaume et al, 2012; 2014).

The additional cleansing and debridement actions of the dressing may improve the efficacy and availability of the silver, resulting in improved outcomes and cost savings (Fletcher et al, 2021). Using one product instead of several products to achieve a healthy wound bed also simplifies the process of dressing selection and can potentially reduce cost (Dowsett, 2023). It is important to be mindful of antimicrobial stewardship (AMS) principles when assessing suitability for use (see section below).

Can multidimensional dressings be used for debridement?

The debridement element of multidimensional dressings provides an evidence-based and effective method of autolytic debridement in suitable wounds. Debridement through dressing use provides an ideal step in WBP that can be carried out in all settings by all staff, simplifying practice and improving outcomes.

The significant autolytic debridement properties of the polyabsorbent fibres have been demonstrated compared with a relevant control group in a randomised controlled trial (RCT; Meaume et al, 2014).

The dressing's enhanced autolytic debridement properties mean that the physical barriers to healing can be removed in a continuous action, as opposed to a one-off clinical procedure.

Multidimensional dressings for biofilm management

A key principle of biofilm-based wound management is that continuous disruption of the biofilm is required to prevent reformation, whether non-viable tissue is present in the wound or not (IWII, 2022). Therefore, a dressing that promotes autolytic debridement is an ideal option, as it facilitates ongoing biofilm disruption through its continuous debridement mechanism (Desroche et al, 2016, Dalac et al, 2016).

After initial biofilm disruption, quick action is needed with further measures to eradicate the biofilm, such as a topical antimicrobial. Dressings that provide both autolytic debridement to physically disrupt the biofilm, plus an antimicrobial agent (e.g. silver) are ideal for full biofilm management with one product (Nair et al, 2024). Antimicrobial agents are able to work more effectively if the wound bed is clean, so the synergistic action of cleansing

and debridement create ongoing benefits that contribute to healing.

Antimicrobial resistance

Antimicrobial resistance (AMR) refers to the ability of microorganisms (e.g. bacteria, viruses, fungi and parasites) to evolve to develop immunity to the effects of antimicrobial treatments, making infections harder to treat and increasing the risk of disease spread, severe illness and death.

In response to the threat of AMR, AMS is a topic becoming increasingly important in wound care, making it more important than ever to ensure optimal use of treatments and to avoid overuse or misuse of antimicrobial products. AMS-based wound care strategies emphasise the importance of physical cleansing and debridement to optimise the use of antimicrobials, particularly in wounds where biofilm may be present (Fletcher et al, 2020; EWMA, 2022).

Appropriate, targeted use of silver products can be a good option for AMS-based wound care, as bacterial resistance to silver appears to be rare and there is no evidence to suggest that silver contributes to the development of resistance (Fletcher et al, 2021). For more information about the use and potential benefits of silver in practice, see **Box 5**.

To ensure antimicrobial products are used effectively, and infection risk managed appropriately, clinicians should be aware of the signs and symptoms of infection, so that these can be monitored and action taken promptly when necessary. It should also be noted that not all wounds will need an antimicrobial, so assessment should ensure that use is appropriate.

The IWII (2022) wound infection continuum describes the various stages of microbial presence in a wound that increases in severity, from contamination to colonisation, local infection (covert and overt) extending to spreading and systemic infection, providing signs and symptoms to monitor at each stage **[Figure 2]**.

Box 5. Overview of use and benefits of silver in practice (Fletcher et al, 2021)

- The aim of treatment with silver dressings is to reduce wound bioburden, treat local infection and prevent systemic spread
- Studies have shown that silver is safe for use and non-toxic
- Silver-containing dressings are generally easy to apply, provide sustained availability of silver, and often need less frequent dressing changes than other products
- Additional benefits include management of excess exudate, maintenance of a moist wound environment and facilitation of autolytic debridement
- Large-scale studies have shown the effectiveness of silver dressings on infected wounds, plus its beneficial effects on wound management and outcomes, quality of life and patient experience when silver is appropriately used
- Silver has multiple actions against microbial cells, reducing the chance that resistance to silver will develop
- It should be noted that silver dressings are not generally more expensive than other antimicrobial dressings and are associated with other overall cost benefits.

Contraindications of silver dressings include:

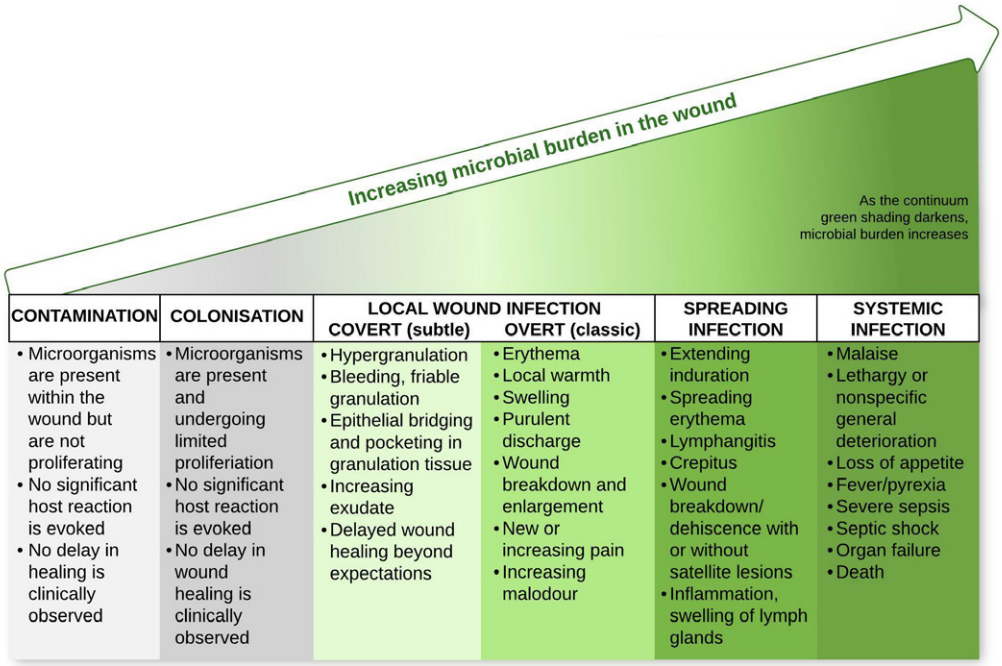
- Absence of signs of localised (overt or covert), spreading or systemic infection
- Clean surgical wounds at low risk of infection (e.g. donor sites, closed surgical wounds)
- Chronic wounds healing as expected according to comorbidities and age
- Small acute wounds at low risk of infection
- Patients who are sensitive to silver or any of the dressing components
- Wounds already being treated with enzymatic debridement
- During pregnancy or lactation
- When contraindicated by the manufacturer – for example, some manufacturers recommend that their silver dressings are not used during magnetic resonance imaging (MRI), or on/near body sites undergoing radiotherapy.

Cost benefits of multidimensional dressings

Using one product that fulfils three functions in practice results in practical and cost benefits, in addition to clinical benefits to clinicians and patients. Single product use also contributes to simplicity and ease of use, making clinical decision-making and the dressing change process more efficient.

Promoting wound healing with a multidimensional approach *(Continued)*

Figure 2. *IWII wound infection continuum (IWII, 2022)*



CONTAMINATION	COLONISATION	LOCAL WOUND INFECTION COVERT (subtle)	LOCAL WOUND INFECTION OVERT (classic)	SPREADING INFECTION	SYSTEMIC INFECTION
• Microorganisms are present within the wound but are not proliferating • No significant host reaction is evoked • No delay in healing is clinically observed	• Microorganisms are present and undergoing limited proliferiation • No significant host reaction is evoked • No delay in wound healing is clinically observed	• Hypergranulation • Bleeding, friable granulation • Epithelial bridging and pocketing in granulation tissue • Increasing exudate • Delayed wound healing beyond expectations	• Erythema • Local warmth • Swelling • Purulent discharge • Wound breakdown and enlargement • New or increasing pain • Increasing malodour	• Extending induration • Spreading erythema • Lymphangitis • Crepitus • Wound breakdown/ dehiscence with or without satellite lesions • Inflammation, swelling of lymph glands	• Malaise • Lethargy or nonspecific general deterioration • Loss of appetite • Fever/pyrexia • Severe sepsis • Septic shock • Organ failure • Death

The cost savings associated with single product use should be considered in the context of overall/total costs of treatment, not individual unit costs. Using cheaper products, or relying on multiple products to achieve the same outcomes, can often be a false economy if they do not expedite healing. This can increase overall costs due to clinician time, longer time to healing and complications such as infection (Moore and Probst, 2023). It should be standard practice to select 'the right dressing for the right patient at the right time' and taking every measure possible to ensure proper WBP based on the evidence and the patient's individual needs (Dowsett, 2023).

See pages 14–16 for guidance on making the case for multidimensional products from a cost perspective.

Sustainability and environmental benefits

While the climate crisis is not new, it has escalated to the point where it is widely acknowledged that action needs to be taken. The Intergovernmental Panel on Climate Change (2022) has warned that the window of opportunity to save the planet is quickly closing and that the rise in temperature is now having a direct impact on all living things. It has previously been estimated that the NHS produces 5.4% of all UK carbon emissions; it is estimated that 60% of the NHS's carbon emissions relate to the use of equipment and consumables (Health Care Without Harm and Arup, 2019).

The NHS aspires to be the world's first net-zero health service; its Standard Contract now requires all NHS organisations to have both a sustainability lead and a green plan (NHS England and NHS Improvement, 2020).

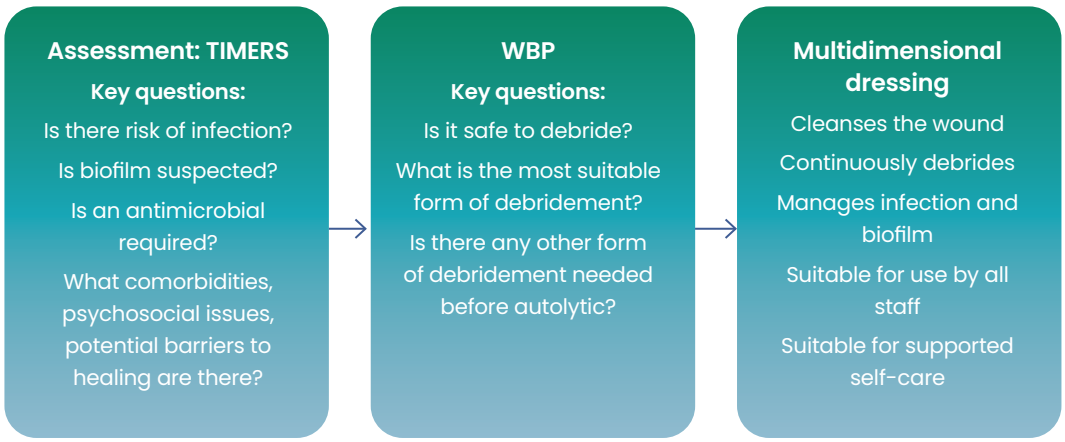
Using one effective product, rather than several products – plus quicker time to healing – reduces waste and contributes to environmental benefits, which can form part of sustainability plans. The most effective way of addressing sustainability in wound care has been identified as being primarily about improving care pathways and overall efficiency, as opposed to using 'environmentally friendly' dressings (Morton et al, 2022). Many existing pathways currently use multiple products of variable materials that are not environmentally friendly (e.g. curettes), so being more environmentally conscious and meeting sustainability targets may be a factor to consider in selecting treatment pathways to use in practice.

Framework for a multidimensional approach to wound healing

Standardised frameworks and pathways are needed to reduce discrepancies in care and facilitate health equity, with the right treatments and products being made available to the right patients at the right time. These frameworks must be simple and efficient, designed to ease workloads rather than increase them. The framework below highlights key challenges that can be addressed through the use of a multidimensional dressing.

To ensure this care is delivered to patients, it is increasingly important that treatment can be carried out by clinicians across all levels of seniority. The ability of all caregivers, regardless of grade or experience, ensures right-time care. Cost considerations also play a key role; making affordable products widely available without unnecessary restrictions helps prevent treatment delays and promotes equitable access to effective care.

Linking assessment and WBP to multidimensional products for suitable patients will help to embed this option into team mindsets and practices. Multidimensional dressings are evidence-based and therefore should be used in practice where necessary.



Driving and measuring quality improvement

An overall change to the way in which care is delivered will help improve patients' quality of life and free up time for clinicians; therefore, a change in mindset is essential, including (Fletcher et al, 2023):

- A proactive approach that emphasises preventative measures and early intervention, rather than treating problems as they arise
- A shift from basing decisions on 'what happens to be in the dressing cupboard', rather than an objective assessment and clinical rationale
- A move away from choosing products because 'this is what we have always used'
- A person-centred, holistic and individualised approach.

Moving away from ritualistic practice and towards a more cohesive evidence-based approach requires being able to lead and advocate, and to promote change in practice.

Lord Darzi's independent investigation of the NHS in England reported that, among the measures needed to improve the NHS, standardisation and evidence-based care are key, identifying that the current picture on quality of care is mixed (Darzi, 2024).

The NHS Quality Improvement Framework (NHS England, 2023) aims to ensure high-quality, safe, and effective healthcare services by fostering a culture of continuous improvement and evidence-based decision-making. The foundation of the framework is formed by the following principles:

- Continuous improvement
- Patient-centred care
- Evidence-based practice
- Accountability and responsibility.

Measuring outcomes

Pre-defined goals should be set to determine the success of new pathways at the outset. Clinicians need to be clear about what success looks like and who will report on it (Fletcher et al, 2023). To evaluate and measure effectiveness, clinicians should consider patient outcomes and healing rates, which products are being used most, in what quantities, and whether they are being chosen appropriately. Other measures should include patient and clinician satisfaction and any adverse events. Costs should be evaluated over the long term, as initial expenses may rise, but overall cost and resource use typically decrease as wounds heal. Time to heal and healing rates provide a comprehensive measure of the total cost of care (Fletcher et al, 2023).

When introducing new products and care pathways, outcomes must be monitored and measured to demonstrate the effectiveness of the pathway, build the evidence base and contribute to best practice.

Making the case for multidimensional products

When conveying the need for a product to procurement, it is essential that clinicians present a compelling argument that highlights the clinical, operational and financial benefits of the product (Fletcher et al, 2023). As primary users of products, clinicians are best placed to judge whether they are fit for purpose (Chapman and Hudson, 2021).

Clinicians should inform procurement of exact product specifications, how products work together, the challenges faced when using specific products in practice and how these problems can be addressed with the help of procurement (Fletcher et al, 2023). For example, the benefits of multidimensional products may be presented as simplifying practice (through use of one product rather than three separate products), associated cost benefits and time savings, as well as evidence for improved outcomes and patient wellbeing.

Procurement case preparation checklist – have you considered the following?	✔
1. Defining the problem	
Have you clearly defined and articulated the challenge or problem the product addresses?	
Have you used real-world examples or statistics to demonstrate the significance of the issue?	
2. Demonstrating clinical and cost-effectiveness	
Have you provided robust evidence of clinical and cost-effectiveness?	
Have you included data from clinical trials, RCTs, case studies, or NICE technology appraisals?	
3. Highlighting patient benefits	
Have you clearly outlined the benefits to patients (e.g. improved outcomes, higher quality of care, increased satisfaction)?	
4. Addressing long-term cost savings	
Have you highlighted the potential for long-term cost savings the product could offer?	
5. Considering environmental and sustainability impact	
Have you provided evidence of environmental gains (e.g. faster healing, reduced product usage)?	
Have you consulted your sustainability lead for carbon reduction calculations?	
Have you demonstrated how this product could replace multiple others?	
6. Engaging clinicians and stakeholders	
Have you collaborated with other clinicians to build a stronger case?	
Have you involved key stakeholders to show broad clinical support?	
7. Anticipating procurement concerns	
Have you considered concerns procurement may raise?	
Have you prepared clear responses and proposed mitigation strategies?	
8. Communicating the case clearly	
Have you used plain, jargon-free language that's easy to understand?	
Have you included visual aids like graphs and charts?	
Have you told stories with your data (e.g. patient success stories)?	

Case studies

The following case studies, present the use of UrgoClean Ag, a silver-containing dressing with absorbent and debriding properties, within a wound infection management pathway.

The first case involves a patient with a chronic venous leg ulcer and a history of cellulitis and varicose eczema. The second, courtesy of Hollie Robinson, Tissue Viability Service Lead, South Warwickshire University NHS Foundation Trust, describes a wound to the hand caused by a cannula in an elderly patient recently discharged into a care home.

Both cases document wound progression over time and report on dressing tolerance, pain levels, and visible signs of infection. Clinicians selected this multidimensional dressing due to its combined antimicrobial, debriding and absorbent actions, which offered a simplified approach to managing infection and WBP.

Key benefits highlighted include improved dressing tolerance, ease of use, potential for reduced dressing changes and confidence in patient safety through sustained antimicrobial activity.

Case 1: Managing a chronic venous leg ulcer with UrgoClean Ag and TLC-NOSF Technology in a patient with cellulitis and varicose eczema

- **Patient:** 59-year-old man
- **Medical history:** Cellulitis and varicose eczema
- **Presentation:** Recurrent venous leg ulcer of five months duration
- **Wound size:** 3cm (length) x 3cm (width)
- **Wound bed:** 90% slough, fragile granulation tissue, moderate exudate
- **Self-reported pain score:** 6 (on a 0–10 scale)
- **Infection status:** Clinical signs suggestive of local infection; localised pain, malodour
- **Treatment initiated:** UrgoClean Ag on 20.06.23.

6 weeks after the start of treatment

- **Wound size:** Wound reduced to 2cm (length) x 1.5cm (width)
- **Wound bed:** 20% slough, clean and debriding wound bed; reduced exudate
- **Self-reported pain score:** 2
- **Infection status:** No clinical signs of infection
- UrgoClean Ag discontinued
- Commenced on a technology lipido-colloid with nano-oligosaccharide factor (TLC-NOSF) matrix dressing UrgoStart Plus Pad with compression therapy.

Week 9 after the start of treatment

- **Wound size:** Wound slowly reducing in size 1.5cm (length) x 1cm (width)
- **Self-reported pain score:** 0
- Progressing to healing without infection and further complications
- Wound expected to achieve full healing by 12 weeks.

Case 2: Managing a cannula-associated hand wound in an elderly patient using UrgoClean Ag

- **Patient:** 80-year-old wome
- **Setting:** Discharged from hospital with a wound to her hand into a care home in community
- **Wound origin:** Injury caused by cannula insertion
- First assessment identified signs of local wound infection
- High levels of pain
- Couldn't tolerate cleansing of the wound or debridement of the scabs
- **Treatment initiated:** Applied UrgoClean Ag due to its debridement, fast acting silver with wound infection, cleaning fibres and ease of application. The product was used in line with the local wound infection management pathway.

Day 9 after the start of treatment

- Patient reported reduced pain
- Signs and symptoms of infection started to resolve
- Scabs started to lift and debride
- Patient remained unable to tolerate wound cleansing, though pain had decreased.

Day 12 after the start of treatment

- Wound now started to debride; no scabs remained
- Pain reduced significantly
- Erythema and signs/symptoms of wound infection no longer visible
- Patient can now tolerate wound hygiene.

Day 28 after the start of treatment

- Wound infection fully resolved and wound almost healed.

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