

# Best Practice Statement

## Effective exudate management

2013



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Role of exudate in  
wound healing

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Assessment of  
wound exudate

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Management of  
excess exudate

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Impact of exudate  
on quality of life and  
patient wellbeing

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**BEST PRACTICE STATEMENT:  
EFFECTIVE EXUDATE  
MANAGEMENT (2013)**

**PUBLISHED BY:**

Wounds UK

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This document has been developed  
by Wounds UK and is supported  
by an educational grant from 3M  
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**How to cite this document:**

Wounds UK Best Practice  
Statement. *Effective exudate  
management*. London: Wounds UK,  
2013. Available to download from:  
[www.wounds-uk.com](http://www.wounds-uk.com)

# Developing Best Practice

Highly exuding wounds can affect people of all ages, with a variety of conditions, often causing distress and anxiety. As well as the human cost, managing these challenging wounds also represents significant costs for the NHS.

Inappropriate management of exudate can lead to complexities including skin damage, pain and poor patient wellbeing. Healing is prolonged, placing a burden on patients and NHS resources. For example, poorly managed exudate leaking onto surrounding skin can cause periwound maceration, breaching the skin's barrier against infection. Anti-microbial therapy and extra dressing changes will likely be required, at a cost to both the patient and the healthcare provider. Frequent dressing changes can also lead to skin stripping and further complications.

In today's NHS, driven by targets (often tied to payments) around safety, efficiency and patient satisfaction, the relationship between health economics and patient outcome is intricately linked. Good care provides patients with clinical solutions based on best practice, balanced when necessary by the need to optimise patient comfort and address concerns. One of the Government's High Impact Actions is 'Your Skin Matters', which suggests that there should be no avoidable pressure ulcers in NHS care. In severe cases, excess exudate can result in moisture-related skin damage, which is frequently incorrectly classified as pressure ulcers. Thus, inappropriate exudate management has a clear impact on whether providers achieve targets and receive their CQUIN payment.

A knowledge and understanding of best practice regarding wound exudate, assessment and dressing types is essential for effective management, good patient outcomes, as well as healthcare efficiency and productivity.

One method of supporting clinicians is the provision of best practice statements that deliver clear and concise guidance as to how to deliver optimal care. These types of statements were pioneered in the area of pres-

sure ulcers by NHS Quality Improvement Scotland (NHS QIS, 2009). In developing the Wounds UK Best Practice Statements, the relevant research has been reviewed, and expert opinion and clinical guidance is provided in a clear, accessible format.

The key principles of best practice (listed below) ensure that clinicians have an increased awareness, allowing them to exercise due care and process to promote the delivery of the highest standards of care across all care settings, and by all healthcare professionals.

- Best Practice Statements (BPS) are intended to guide practice and promote a consistent and cohesive approach to care.
- BPS are primarily intended for use by registered nurses, midwives and the staff who support them, but they may also contribute to multidisciplinary working and be of guidance to other members of the healthcare team.
- Statements are derived from the best available evidence, including expert opinion at the time they are produced, recognising that levels and types of evidence vary.
- Information is gathered from a broad range of sources to identify existing or previous initiatives at local and national level, incorporate work of a qualitative and quantitative nature, and establish consensus.
- Statements are targeted at practitioners, using language that is both accessible and meaningful.

The aim of this best practice statement is to provide relevant and useful information to guide those managing highly exuding wounds.

The Best Practice Statement: *Effective exudate management* has been developed by a team of specialists. During the peer review process, practitioners from across the UK have been invited to comment on the drafts.

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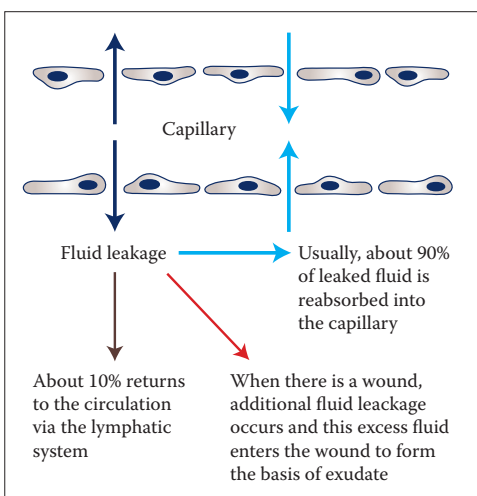
# Effective exudate management

Managing wound exudate effectively is essential as excessive amounts can lead to protein deficiency, periwound maceration and delayed wound healing for patients. Excessive exudate production can negatively affect the patients' quality of life. Frequent dressing changes, leakage from dressings onto the skin and clothing, and malodour can be distressing for patients and families/carers. In extreme circumstances this can lead to social isolation and depression (Lindahl et al, 2005). Delayed healing and negative effects on patients will also exert strain on healthcare resources.

## WHAT IS EXUDATE?

Wound exudate is fluid that has leaked out of blood vessels and closely resembles blood plasma. It contains molecules and cells that are vital to the wound healing process including electrolytes, nutrients (glucose), proteins (cytokines), inflammatory mediators, matrix metalloproteinases (MMPs), growth factors and various cell types including leukocytes, macrophages, neutrophils and platelets, as well as microorganisms (Cutting, 2004; White and Cutting, 2006).

In general, serous fluid leaks from capillaries into body tissues across the capillary walls; the amount is determined by the permeability of capillaries and the hydrostatic and osmotic



**Figure 1: Mechanisms underlying exudate production (Reproduced from WUWHS, 2007)**

pressures. This is balanced by approximately 90% of fluid leakage being reabsorbed into the capillaries and the remaining 10% being returned to the central circulation via the lymphatic system (Figure 1). When skin integrity is breached through development of a wound, an inflammatory response is initiated by the body whereby mediators, such as histamines, make the capillaries more permeable, leading to additional fluid entering the wound that forms the basis of exudate (Barrett et al, 2012; WUWHS, 2007).

In acute wounds, serous exudate is necessary for moist wound healing (it prevents the wound from drying out), but can become problematic in non-healing chronic wounds when the altered inflammatory process causes an increase in inflammatory mediators, a concurrent increase in vascular permeability and an increase in extra vascular fluid (White and Cutting, 2006). In the chronic wound, exudate may be regarded as a 'wounding agent' in its own right (Chen and Rogers, 1992).

Too much exudate, and/or its composition can delay or prevent wound healing, affecting patients' physical and psychological wellbeing, while placing increased demands on healthcare resources.

Effective exudate management can reduce time to healing, reduce dressing change frequency and nurse input, thereby optimising healthcare efficiency (Romanelli et al, 2010). Appropriate choice of wound dressing and involvement of the patient in the plan of care can help to eliminate exudate-related problems (Dowsett, 2008; International Consensus, 2012).

## This document focuses on:

- The role of exudate in wound healing and why it may become a problem
- Effective assessment of exudate and the role of standardised assessment tools
- How to manage exudate, including the importance of appropriate dressing selection
- The impact of exudate on quality of life and patient wellbeing and how to promote concordance with treatment plans.

## GUIDE TO USING THIS DOCUMENT

Each of the sections that follow offer advice managing exudate effectively and include a table with tips for application of best practice, namely:

- the optimum outcome
- the reason for, and how best to succeed in reaching this outcome
- how to demonstrate that best practice is being achieved.

In addition, each section identifies key points/challenges, and is supported by key references, where available.

## SECTION 1: ROLE OF EXUDATE IN WOUND HEALING

Exudate is produced as part of the inflammatory stage of the healing process to prevent the wound bed from drying out. When a wound is healing normally, the volume of exudate decreases as the wound heals, and is usually clear and straw or amber-coloured.

Not all exudate is bad and is known to assist healing by:

- Providing the correct medium for tissue-repairing cells to migrate across the wound bed
- Supplying essential nutrients for cell metabolism
- Enabling diffusion of growth factors for wound healing
- Promoting autolysis (WUWHS, 2007; Gardner, 2012).

Acute wounds healing by primary intention (sutured incisions) will sometimes leak small amounts of exudate if closure is incomplete. This usually reduces fairly quickly and wounds heal without complication. However, postoperative wounds that dehisce and go on to heal by secondary intention can produce large volumes of exudate.

In chronic wounds, exudate prolongs the inflammatory phase and can be detrimental to wound healing (Figure 2). Wound exudate, particularly from chronic wounds, contains not only water, but often cellular debris and enzymes (Chen and Rogers, 1992). This 'cocktail' can be corrosive to the intact skin surrounding the wound (Coutts et al, 2001).

Certain MMPs present in chronic wound exudate are detrimental to the extracellular matrix, causing it to break down and preventing cells from migrating across the wound bed. Although present in the exudate of all wounds, these MMPs exist at elevated levels in chronic wounds (Schultz and Mast, 1999), which if left unaltered, can delay healing (Gibson et al, 2009). Chronic wound exudate also lacks the active growth factors found in acute wound exudate (White and Cutting, 2006).

High volumes of exudate can lead to fluid pooling in the wound, strikethrough on dressings and damage to the periwound skin. Dressings will often need to be changed more frequently and the challenge will be to remove excess moisture while maintaining an optimal moist wound environment for healing.

Conversely, too little exudate may delay healing, inhibit autolysis and indicate a systemic problem such as dehydration, hypovolaemic shock, microangiopathy (a disease of the capillaries that causes the capillary walls to bleed, leak protein, slow down normal blood flow due to thickening and weakening of the capillary walls), or may be a feature of ischaemic ulcers (WUWHS, 2007).

### CAUSES AND CONTRIBUTORY FACTORS

Exudate levels vary over time, usually reducing as a wound progresses through the normal stages of healing. The size of a wound plays a part, with more exudate being produced by large wounds (Thomas et al, 1996).

Some wounds are more prone to high exudate levels than others (Gardner, 2012), including:

- Chronic venous leg ulcers
- Postoperative dehisced wounds
- Fungating wounds
- Burns
- Inflammatory ulcers such as rheumatoid ulcers or pyoderma gangrenosum
- Skin donor sites
- Infected diabetic foot ulcers (International Best Practice Guidelines, 2013).

Underlying contributory factors, which make patients prone to high exudate levels must be addressed to manage exudate effectively. These can be divided into:

- Local (infection)
- Systemic (infection, venous insufficiency, lymphoedema, medication, malnutrition)
- Practical (heat, reduced willingness or ability to cooperate with treatment, inappropriate use of dressings) (Gardner, 2012) (see Figure 3, page 5).

### Key points:

1. Exudate is necessary for moist wound healing.
2. Exudate can be detrimental, prolonging inflammation and wound healing.
3. Certain underlying factors contribute to high volumes of exudate.
4. Levels of exudate vary over time, ie with wound healing stage.
5. Exudate levels cannot be controlled without investigating and addressing underlying contributory factors.
6. Some wound types are more likely to produce higher levels of exudate.

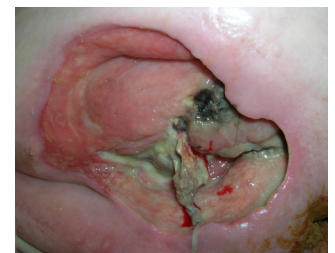


Figure 2: Chronic wound: pressure ulcer on the sacrum, with exposed bone, slough and granulation tissue

## Local

**Infection:** High levels of exudate are associated with bacterial colonisation of wounds (Cutting and White, 2002). Leakage and strikethrough can lead to bacteria breaching the wound. When a wound becomes infected, exudate will increase abruptly as a result of vasodilation and extravasation (White and Cutting, 2006), particularly in those with underlying comorbidities such as diabetes.

Discolouration and highly viscous exudate is often an indicator of infection, especially when the exudate changes from a pale amber colour to, for example, green which is indicative of the presence of *Pseudomonas aeruginosa*. However, a wound could be infected even if there is an absence of thick or discoloured exudate (Davies, 2012), and some conditions can mask local infection (eg diabetes).

Infection may be local to the wound or systemic, which will require treatment with antibiotics and/or topical antimicrobials to control the wound bioburden and reduce exudate levels.

## Systemic

Comorbidities such as venous disease, lymphoedema, cardiac failure or prolonged immobility can lead to oedema, particularly in the lower leg. Patients with conditions that cause oedema may also have increased wound exudate levels due to fluid overload. These conditions need treatment in order to effectively manage exudate volume.

**Lymphatic disease:** If the patient has lymphatic failure, referral to a lymphoedema specialist to establish the cause may be appropriate (Bianchi, 2012). Patients with

lymphoedema will benefit from compression therapy (Doherty, 2006).

**Cardiac/venous disease:** Grossly oedematous legs that leak exudate can be a symptom of chronic heart failure; diuretic therapy may be required to treat the heart failure, in conjunction with compression bandaging and leg elevation. However, care must be taken to ensure that the cardiac system is not overloaded by a large quantity of fluid being suddenly pushed from the interstitial spaces of the skin into the circulation (Adderley, 2008).

Venous hypertension can lead to excessive amounts of exudate in venous or mixed aetiology leg ulcers (Adderley, 2008). Reversal of venous hypertension through compression bandaging and leg elevation, providing there is an adequate arterial supply, can aid exudate reduction (WUWHS, 2007). An ankle brachial pressure index (ABPI) assessment should be performed and recorded prior to compression being applied by a suitably qualified competent practitioner to exclude significant arterial disease (SIGN, 2010).

Other systemic conditions contributing to oedema include underlying conditions that increase capillary leakage, for example, cardiac, renal or hepatic failure, endocrine and nutritional factors (Gardner, 2012).

## Practical factors

Patients are sometimes unwilling or unable to comply with treatment or their situation can affect treatment choice (eg the patient that sleeps in a chair) and this can contribute to high exudate levels.

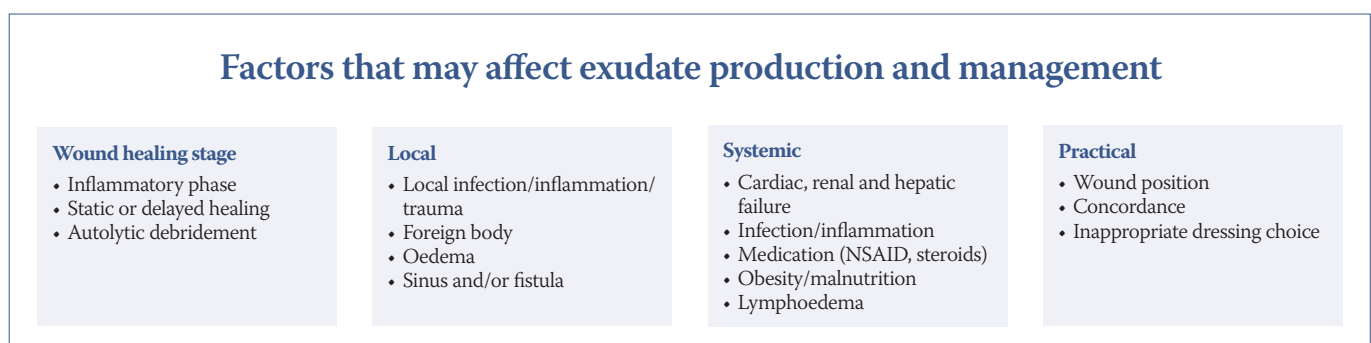


Figure 3: Things to consider when assessing a wound (Acknowledgement: Wicks, 2012)

## SECTION 2: ASSESSING WOUND EXUDATE

### HOLISTIC WOUND ASSESSMENT

An in-depth holistic assessment of the patient and wound will establish the underlying cause of the wound, comorbidities, medication, nutritional status and concordance with treatment. This, in turn, will inform the treatment plan and product selection.

#### Wound bed

Observing the tissue in the wound bed will provide useful information regarding expected time to healing (wound healing stage) and the risk of complications (Ousey and Cook, 2012) leading to high exudate levels. For example, necrotic tissue is usually black in appearance, full thickness, dry and hard and can be due to ischaemia. Removing the tissue by debridement can result in an increase of exudate. Yellow tissue is generally slough (Figure 4), which may be dehydrated and stuck to the wound bed or loose and stringy when there is a high level of moisture. New patches of slough, undermined wound edges, odour and sometimes bright red granulation tissue may indicate infection. However, red granulation tissue is usually a sign that angiogenesis is taking place (Ousey and Cook, 2012).

#### Periwound skin

Careful inspection of the skin and early intervention with skin protection strategies are essential to prevent skin breakdown in vulnerable patients. When fluid is trapped against the skin for sustained periods of time, it becomes soft and at risk of damage from the protein-digesting enzymes contained in exudate. The periwound skin should therefore be assessed for evidence of:

- Maceration
- Excoriation
- Erythema
- Loss of colour
- Spongy texture
- Loss of skin integrity.

Early identification of tissue damage is essential to prevent the wound increasing in size and further delaying healing (Dowsett, 2009). In addition, it is important to observe

the periwound skin at each dressing change for erythema, or maceration. The patient may also complain of pain or irritation.

### EXUDATE ASSESSMENT

The assessment of exudate forms a vital part of any wound assessment (Ousey and Cook, 2012). This should include observing the following characteristics of exudate in the wound bed:

- Colour
- Consistency
- Odour
- Amount (WUWHS, 2007).

#### Colour

The type/colour of the exudate provides information needed for a correct diagnosis (see Table 1, and Figures 4 and 5). A change in colour may be indicative of infection and this should be acted on quickly.

#### Consistency

Consistency can give an indication of factors delaying wound healing. Low viscosity (thin and watery exudate) indicates low protein content. This could result from venous or congestive cardiac disease or malnutrition. It also suggests a urinary, lymphatic or joint space fistula. Highly viscous exudate (thick and sometimes sticky) indicates a high protein content, pointing towards infection or the inflammatory process. Other causes of exudate with high protein content are the presence of necrotic material, and enteric fistula and residue from dressings or topical preparations (WUWHS, 2007).

#### Odour

An unpleasant odour can indicate bacterial growth/infection, necrotic tissue and the presence of a sinus/enteric or urinary fistula (WUWHS, 2007). Wound odour can be a significant issue for the patient, contributing to distress, embarrassment, social isolation and disturbed sleep, leading to low self-esteem. Assessing odour is difficult to quantify, and can be subjective. Table 2 and Figure 6 (page 8) offer a guide to assessment. The cause of the odour will need to be identified and the wound managed appropriately (WUWHS,

#### Key points:

1. The patient and the wound must be assessed to establish the underlying cause of exudate production.
2. Observing exudate should form part of any wound assessment.
3. Exudate colour, consistency, odour and amount must be observed for an accurate diagnosis.
4. Exudate must be observed at every dressing change and interventions must be appropriate to changes or problems observed.



Figure 4: Diabetic foot wound with slough and two necrotic digits



Table 1: Types and descriptions of exudate (based on Benbow, 2007 and WUWHS, 2007)

Type	Description	Considerations
Serous	Clear, amber, thin and watery	Often considered normal, but may be associated with infection by fibrinolysin-producing bacteria such as <i>Staphylococcus aureus</i> ; may also be due to fluid from a urinary or lymphatic fistula
Fibrinous	Cloudy and thin, with strands of fibrin	A response to inflammation — fibrinous exudate, may indicate the presence of fibrin strands Possible infection — purulent exudate containing white blood cells and bacteria
Serosanguineous	Clear, pink, thin and watery	Due to the presence of red blood cells. This indicates capillary damage — sanguineous or haemorrhagic exudate Postoperative Traumatic dressing removal
Sanguineous	Reddish, thin and watery	Low protein content due to: <ul style="list-style-type: none"> <li>• Venous or congestive cardiac disease</li> <li>• Malnutrition</li> </ul> Urinary, lymphatic or joint space fistula
Seropurulent	Yellow or tan, cloudy and thick	Presence of infection Liquefying of necrotic tissue Material from enteric or urinary fistula
Purulent	Opaque, milky; sometimes green, thick	May be indicative of bacterial infection eg <i>Pseudomonas aeruginosa</i>
Haemopurulent	Reddish, milky and viscous	Established infection. May contain neutrophils, dying bacteria, inflammatory cells, blood leakage due to dermal capillaries, some bacteria
Haemorrhagic	Dark red, thick	Infection, trauma. Capillaries break down easily and bleed

2007; Jones et al, 2008). This might involve referral to the multidisciplinary team (MDT).

### Volume

Describing the amount of exudate (see Table 3, page 9) in a clear and measurable way will ensure that nurses choose the most appropriate product to manage the wound. As with odour, patients need to feel confident that the wound will not leak or strikethrough occur, as this can significantly impact their lives (Bishop et al, 2003).

### Importance of ongoing assessment

Once the exudate characteristics have been assessed, the effectiveness of the current wound product and the need for alternative treatment options must be considered at each dressing change. If there is an increase in odour, consistency or exudate production, consider underlying contributor factors that may be preventing progress

(WUWHS, 2007). Regular reassessment allows emerging problems to be identified.

### Assessing the current dressing

Exudate should be reassessed at each dressing change to determine whether the product and the wear-time of the dressing remain appropriate (Davies, 2012). Dressings removed from the wound should be observed as part of the assessment.

Soiled dressings provide information on the amount, colour, consistency and odour of exudate (WUWHS, 2007). This begins while the patient is wearing the dressing (eg Is there visible strikethrough?) and continues during dressing change (eg Is there odour? Is the dressing easy to remove? Is the absorbency of the dressing right? Are there any exudate-related skin problems?). This information can inform the management plan and the next intervention.

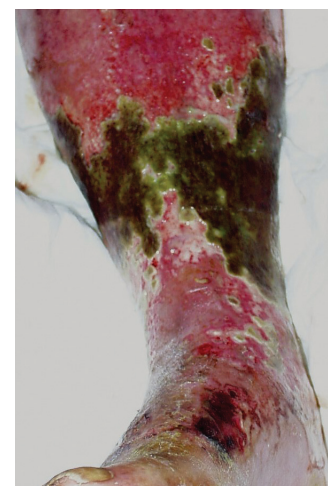


Figure 5: Leg ulcer infected with *Pseudomonas*

Table 2: Classification of exudate odour (WUWHS, 2007)

Low	Wound odour present after removal of primary dressing
Moderate	Odour present when removing secondary dressing May require more frequent dressing changes
High	Odour present prior to dressing change and patient aware Treat wound infection and/or remove necrotic tissue if clinically indicated
NB: some dressings, such as hydrocolloids, may produce a characteristic odour	

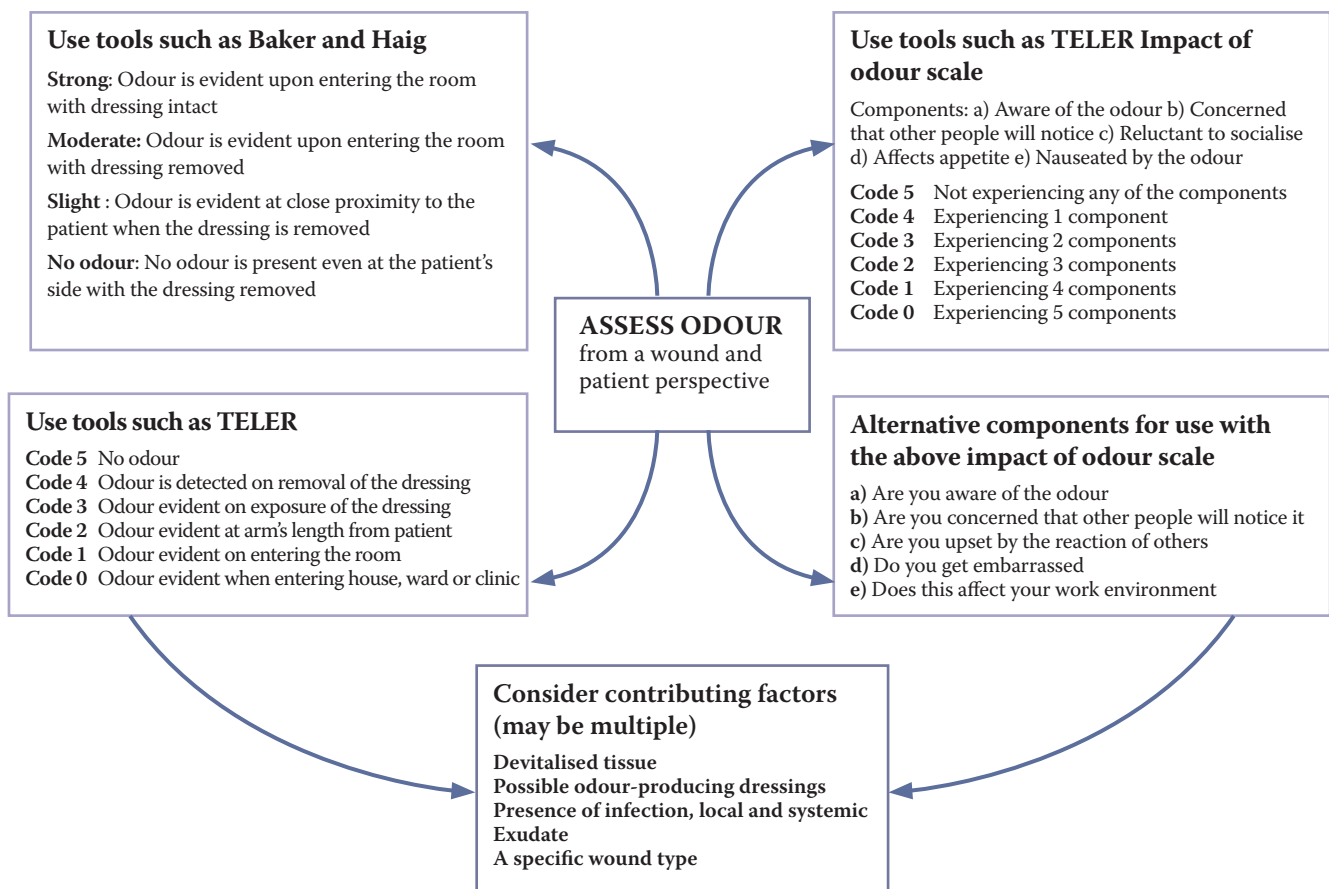


Figure 6: Systematic assessment tools offer a structured approach to assessing odour as part of an exudate assessment and should be standardised across the MDT. The TELER tool can be licensed. (Acknowledgement: 3M)

The World Union of Wound Healing Societies (WUWHS) (2007) suggests considering the following during dressing assessment:

- Evidence of leakage — the floor, shoes, clothes, furnishings can provide visual clues. Has the patient made any adaptations to contain leakage?
- Secondary dressings/bandages — is there strikethrough? Assess the wetness of the dressing, colour, consistency, odour
- Assess the primary dressing *in situ* and after removal
- Frequency of dressing change — is it appropriate for the wound and patient? Has the frequency changed recently? How long has the current dressing been in place? After how long did any leakage/ strikethrough occur?
- Dressing type and fixation — is the dressing comfortable and conformable? Is the fixation appropriate for the patient's skin? Is there skin damage? Does it remain in place? Is the current dressing type appropriate?

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

Details should be documented at every dressing change to ensure continuity of care and that any changes are acted upon effectively. An unexpected change in exudate characteristics should prompt re-evaluation of the wound treatment plan/management strategy.

### TOOLS FOR ASSESSMENT

Inadequate wound assessment may lead to incorrect diagnosis and inappropriate use of wound management products, delayed symptom control and wound healing. All patients with a wound should expect a good minimum standard of care and documenting wound assessment is key to its delivery (DH, 2010a). Where appropriate, reference to national guidance for specific wound types, such as diabetic foot wounds (NICE, 2004), should be considered and documented in patient records. For example, the University of Texas classification system is useful when assessing diabetic foot ulcers (Oyibo et al, 2001). For pressure ulcers, the Pressure Ulcer Scale for Healing (PUSH) tool, which assesses size, exudate and tissue type, is recommended (NPUAP, 2013).

The accuracy and standardisation of assessment is vital to maintain consistency and clarity between healthcare staff treating the wound. Where the rationale for implementing a treatment strategy is unclear there is a risk that it will not be adhered to. Using an appropriate assessment tool and common language across the multidisciplinary team (MDT) to describe exudate characteristics will ensure that any changes to the amount of exudate are recognised swiftly and appropriate action taken to treat the cause.

Often descriptors such as ‘exudate++’ or ‘wet’ are used (Dowsett, 2008), but these are highly subjective and it has been shown that estimating exudate amount is difficult even for experienced practitioners (Thomas, 1997) (Figure 7, Table 3). There is currently no standardised assessment tool for exudate, while the WUWHS (2007) advises an integrated approach (Figure 8).

Fletcher (2010) proposed a wound assessment tool based on 33 individual assessment forms used in practice and a group consensus, and was driven by the need for nurses to measure and understand what they do. In producing this there was considerable discussion around the descriptors included in assessment forms, particularly around exudate. Other scoring systems exist but observing the characteristics (colour, odour, consistency, volume) of the exudate and considering their causes is still believed to be the most

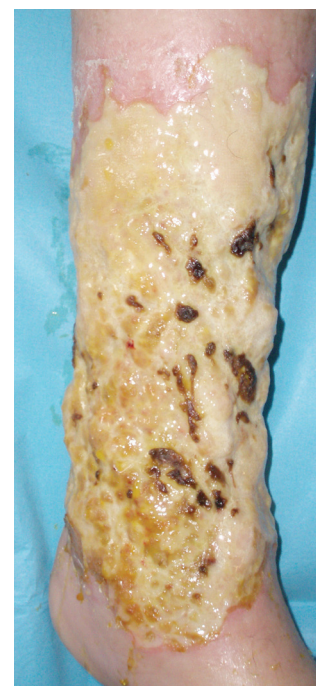


Figure 7: Leg wound covered in slough

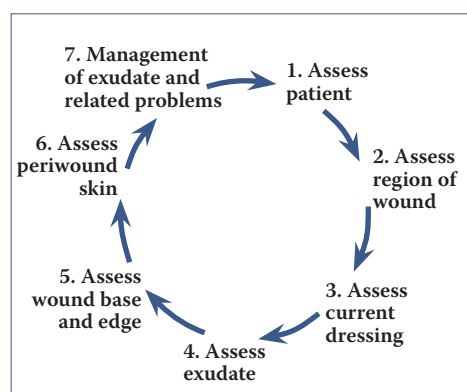


Figure 8: An integrated approach to exudate assessment. It is important to understand the factors influencing exudate formation at each stage (from WUWHS, 2007)

useful option (Dowsett 2011). For complex wounds that are difficult to manage clinicians might choose a more sophisticated tool such as Le Roux's treatment evaluation method (TELER) (Browne et al, 2004) (Figure 6, page 8).

The TIME framework (EWMA, 2004; Schultz et al, 2004; Dowsett and Newton, 2005; Leaper, 2012) is a commonly

used structured approach for assessing and managing wounds, and in particular, in optimising moisture control (Box 1). Alternatively, the 6Cs (cause, control, components, containment, correction and complications) suggested by Vowden and Vowden (2004) may also be a useful aid.

Whichever tool is used, a systematic approach should be taken (Dowsett, 2008).

### Box 1: TIME Framework

T Tissue management  
I Infection/inflammation  
M Moisture management  
E Epithelial advancement  
(EWMA, 2004)

### DBPS APPLICATION TO PRACTICE: ASSESSING WOUND EXUDATE

Best practice statement	Reason for best practice statement	How to demonstrate best practice
Exudate cannot be effectively controlled without addressing underlying factors. Too much exudate, and/or its composition, can delay or prevent wound healing	Poorly controlled high exudate levels negatively impacts patients' quality of life and delays healing, which is detrimental to physical and psychological wellbeing. Too little exudate can delay healing and reduce autolysis. Prolonged healing times also affect healthcare resources	Assess the whole patient, and exudate characteristics (colour, consistency, odour, amount) at every dressing change using a standardised wound assessment tool. Act appropriately. Refer if necessary. Document findings and actions
Assess the periwound skin to determine the risk of damage from wound exudate and apply a barrier product based on risk	Early identification of skin changes will ensure use of protective barrier creams/sprays to prevent/minimise skin damage	Apply barrier products early to prevent skin damage occurring. Document condition of periwound skin and action taken to prevent/treat damage at each dressing change
Effective management of wound exudate requires accurate assessment, clear documentation and consistent management	A consistent approach to wound management will optimise healing and maintain patient confidence. Early detection of adverse effects of exudate will ensure action is taken to progress the wound to healing and minimise harm, such as periwound skin damage	Document all assessments, findings and rationale for interventions Consider active debridement and refer to a competent practitioner if necessary (Wounds UK, 2013)
Ensure an integrated approach to management of the wound across the MDT	Clear communication between individuals and teams translates into better management decisions about and outcomes for the wound. Records will be easily understood and acted on by another health professional	Use a standard tool and language for documentation across the MDT. Liaise with relevant members of the MDT – including specialist nurses, medical staff, dietitians, podiatrists, pain specialists – where appropriate, and document what was said/done
Reassess at regular intervals or when the patient's condition changes	Early identification of deterioration in patient and wound condition will ensure any complications are minimised	Document any changes in patient's condition and what actions were taken
Assess the suitability of the wound dressing at each dressing change, along with any other wound management products used. Ensure the dressing's exudate management characteristics match the aims for the wound	Products that promote moist wound healing and manage the adverse effects of excess exudate will improve patient comfort and enhance healing rates (DH, 2010). The management plan must react to changes in the wound	Document the capacity of the current wound product to manage the effect of exudate and any variations in treatment. Include monitoring the timescale and amount of strikethrough, and how this compared with what was expected
Assess patient satisfaction and reported outcome measures	Continually assessing interventions and practice will improve the quality and effectiveness of interventions	Record data and feedback. Document changes made to practice and continue to record outcomes ongoingly

## SECTION 3: MANAGEMENT OF EXCESS EXUDATE

Effective exudate management requires advice from the MDT and the implementation of individualised treatment plans in order to achieve a moist, but not wet wound bed (Figure 9).

### TREATING CONTRIBUTORY OR UNDERLYING FACTORS

For effective management, wound products should not be considered in isolation for the control of wound exudate (WRAP, 2004; Grocott et al, 2005); the underlying causes (see pages 4 and 5) of high exudate production should be explored and managed where

possible. For example, in some cases a patient who has developed a highly exuding foot ulcer for the first time can be indicative of undiagnosed diabetes.

Similarly, chronic lower limb oedema can lead to compromised skin and leakage of fluid. This condition affects over 100,000 people in the UK, with a similar prevalence to leg ulceration (Moffat et al, 2003). While the selection of wound management products is important for exudate management in this group of patients, compression therapy with an appropriate bandage or garment system is an effective

### Key points:

1. Wound management products alone will not effectively manage excess exudate. The underlying cause must be diagnosed and addressed.
2. Optimising the wound bed will help progress the wound towards healing.
3. Debridement has been associated with a reduction in exudate.
4. Dressing choice should be tailored to volume and type of exudate, skin condition and lifestyle factors.
5. Periwound skin damage can occur around chronic wounds as a result of excessive moisture.
6. Appropriate measures, eg application of an appropriate skin barrier, should be taken early to prevent skin breakdown.
7. NPWT is an effective exudate management option for highly exuding wounds, particularly for postoperative incision management and for patients at high risk of infection.

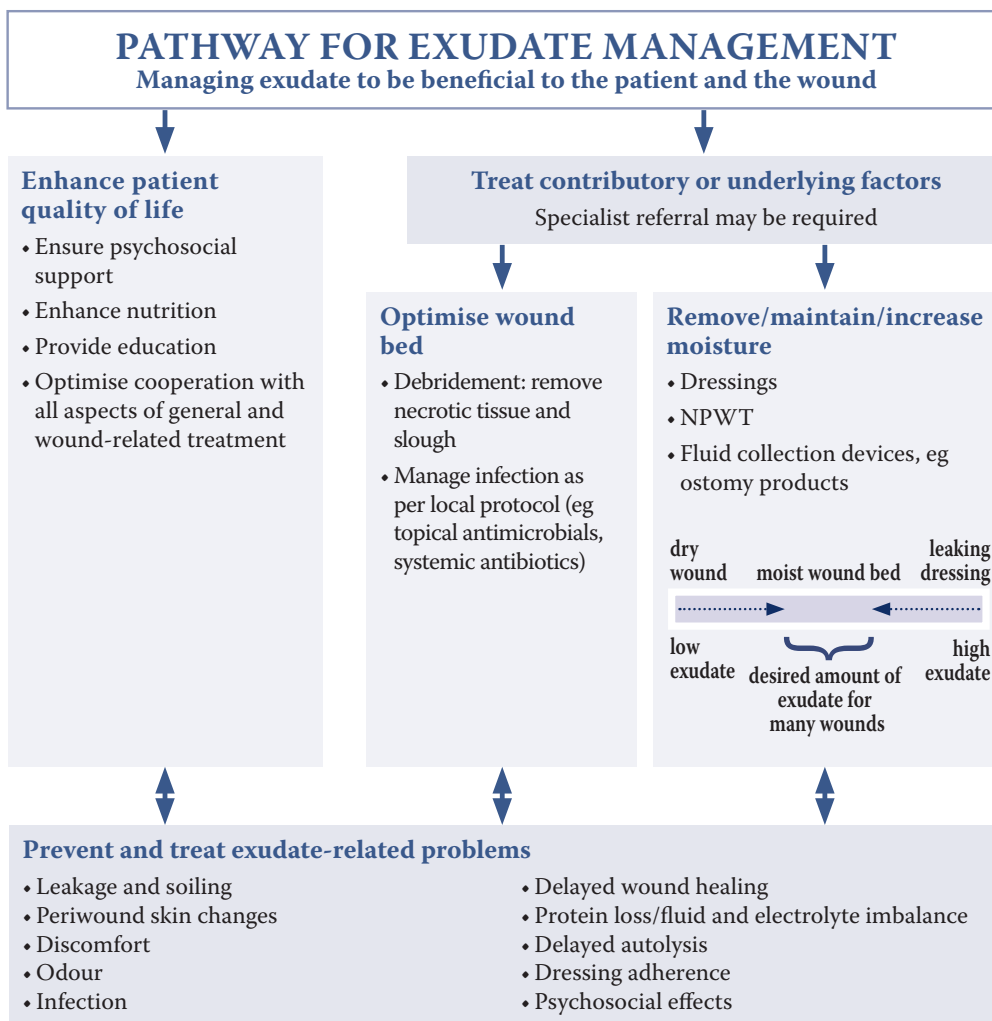


Figure 9: The importance of exudate in wound healing makes achieving a moist but not macerated wound bed important. NB For a patient with a malignant wound, the formation of a crust or scab and no exudate production may be appropriate goals. For an uninfected ischaemic non-viable digit, mummification may be desirable to prevent wet gangrene. (Reproduced from WUWHS, 2007)

method of controlling wound exudate in patients with venous disease (SIGN, 2010) and those with lymphoedema (Lymphoedema Framework, 2006). Wound dressings will need to be selected based on absorbency level and suitability for use under compression (Cook, 2011; Wicks, 2012).

For patients with systemic infection, a course of antibiotics should be started. If the infection is local to the wound, antimicrobial dressings should be applied (Best Practice Statement, 2011).

### OPTIMISING THE WOUND BED

Successful optimisation of the wound bed involves debridement of necrotic/non-viable material, managing inflammation/infection and moisture control (EWMA, 2004; Wounds UK, 2013).

Debridement of devitalised tissue is vital to remove a potential locus for infection and prolonged inflammation (Vowden and Vowden, 2002), and can be achieved in a number of ways, including autolytic, mechanical, larval, ultrasonic, hydrostatic, sharp or surgical debridement. However, advice should be sought for ischaemic limbs and high risk areas (Wounds UK, 2013). Effective debridement has been associated with a reduction in exudate levels (Falabella, 2006; Vowden and Vowden, 2011).

The presence of infection and inflammation in the wound will influence the amount of exudate produced. It is important to manage the wound bioburden and to control the moisture for wound healing. Some dressings trap the bacteria and exudate components in a process called sequestration, influencing the composition of the exudate in the wound (WUWHS, 2007).

Choice of dressing can affect wound margins. A healthy wound bed will support migration of epithelial cells, whereas an undermining or raised wound edge as exhibited in some chronic wounds will delay healing and may need further investigation (Figure 10) (Leaper et al, 2010; Ichioka et al, 2005).

Too frequent dressing changes may lead to trauma and skin stripping due to adhesive properties of the dressing. Inadequate absorptive capacity of dressings can result in

maceration (Figure 11) and excoriation of the surrounding skin leading to delayed wound healing. Difficulty containing exudate, managing infection or protecting periwound skin should prompt consideration of an alternative dressing or intervention (WUWHS, 2007).

### SELECTING THE MOST APPROPRIATE DRESSING

Selecting the correct dressing is key to effective exudate management. The right dressing will optimise the wound environment, not merely 'mop up' (Dowsett, 2008) and will take the patient's preferences into consideration (eg comfort/avoidance of strikethrough).

Dressings vary in the materials they are made of and their ability to handle moisture. Modern wound dressings rely both on absorbency and evaporation, measured by moisture vapour transmission rate (MVTR), to create a moist wound environment. Properties that should be offered by the ideal dressing choice include:

- Is highly absorbent
- Prevents leakage between dressing changes
- Prevents strikethrough
- Provides protection from excoriation/maceration
- Can be used under compression
- Stays intact and can be left in place for long duration (exceptions are where regular inspection of the wound is necessary to detect subtle early signs of infection, for example diabetic foot ulcers)
- Minimises trauma and pain on removal
- Comfortable and conformable
- Cost-effective (Gardner 2012).

It is important to select products based on an assessment of the wound, the patient and level of exudate (Figure 12). The level of exudate will change over time. Where exudate levels are reducing, it is important to select a less absorbent dressing to prevent the wound from drying out, while a highly exuding wound will require a superabsorbent dressing or NPWT. Effective exudate management depends upon a knowledge and understanding of the products, combined with the clinical skills of estimating exudate volume and viscosity.



Figure 10: A heavily exuding pressure ulcer

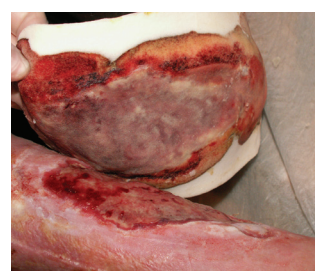


Figure 11: An exudate-soaked dressing at removal

## GUIDE TO DRESSING SELECTION

### Assess exudate colour

#### Clear/straw coloured

- Considered normal
- Lymphatic/urinary fistula

#### Cloudy/milky/creamy

- A response to inflammation
- Possible infection

#### Red/pink

- Postoperative
- Traumatic dressing removal
- Possible infection

#### Green/yellow

- Bacterial infection
- *Pseudomonas aeruginosa*

#### Yellow/brown

- Infection/possible infection
- Liquefaction of necrotic/sloughy tissue
- Possible infection

### Assess exudate viscosity

#### Thin and watery

#### Low protein content

- Chronic oedema
- Venous or cardiac disease
- Malnutrition
- Urinary, lymphatic or joint fistula

### Assess exudate odour

- Remove necrotic tissue if clinically indicated
- Reduce bioburden and manage underlying infection
- Review frequency of dressing change
- Some dressings may produce a characteristic odour

#### Thick and sometimes sticky

#### High protein content

- Infection and/or inflammatory process
- Necrotic material
- Enteric fistula

#### Dry

- No visible moisture
- Not an ideal wound healing environment
- May be ideal for ischaemic wounds (consider vascular referral)
- Consider hydrating eschar
- Consider potential dressing adherence
- Surrounding skin may be scaly, atrophic and hyperkeratotic

#### Moist

- An ideal wound healing environment
- Dressing may be lightly marked
- Wound bed could appear glossy
- Reduced dressing change frequency
- Surrounding skin may be intact and hydrated

#### Wet

- Dressing may be extensively marked
- Potential fragmented areas of maceration
- Consider appropriate periwound protection
- Select dressing with appropriate fluid handling properties

#### Saturated

- Free fluid is visible
- Primary dressing is wet and strikethrough may occur
- If exudate escapes and/or frequent dressing changes are required, use high fluid handling capacity dressing
- Risk of macerated/denuded periwound skin
- Use appropriate periwound protection

#### Leaking

- Free fluid is visible
- Dressings are saturated, with exudate leaking from primary and secondary dressings
- High risk of extensive periwound maceration
- Superabsorbency products are necessary
- Use appropriate periwound protection/NPWT

### Dressing options

- Film
- Hydrogel
- Hydrocolloid

- Adhesive foam
- Non-adhesive foam
- Contact material
- Clear absorbent acrylic

- Adhesive foam
- Non-adhesive foam
- Alginate
- Clear absorbent acrylic
- Barrier film

- Adhesive foam
- Alginate
- Superabsorbent dressing
- Barrier film

- Superabsorbent dressing
- NPWT
- Barrier film

Any alteration in exudate levels and characteristics may indicate a change in wound status and as such wound management should be reassessed as necessary.

Figure 12: Guide to dressing selection for effective exudate management (based on Wicks, 2012). (Acknowledgement: 3M)

Dressings that absorb exudate and allow loss of moisture through evaporation have been developed with the aim of increasing their 'fluid handling' properties. In practice, dressings should be selected based on the volume of exudate, the presence or absence

of infection, wear time, wound location, tissue type, previous dressings used, individual sensitivities, and the requirements of the wound (ie need for debridement), as well the preferences of the patient. Balancing all of these factors, which are different

in each patient, can be challenging and will require healthcare professionals to have a detailed understanding of wound care products. Failure to select the most appropriate dressing can have devastating effects on the patient and their wound.

### UNDERSTANDING DRESSING TYPES AND INTERVENTIONS FOR EXUDATE MANAGEMENT

Types of absorbent dressings and interventions that can be used to manage exudate include:

- Foams
- Gel-forming fibrous dressings/alginate
- Superabsorbents
- Negative pressure wound therapy (NPWT).

#### Foams

These comprise simple absorptive materials which hold fluid in their structure like a sponge. However, when placed under pressure, fluid is released and the dressing may leak out. If the wound requires frequent dressing changes to manage the exudate, the level of absorbency could be stepped up to a superabsorbent dressing. Consideration should also be given to their performance under compression.

The generic category ‘foam dressings’ comprises many variations — adhesive and non-adhesive, silastic, hydrocellular as well as composites, which incorporate other materials. Most are made of polyurethane foam but the variations in each give them different characteristics. For example, with adhesive foams, the adhesive agent also varies and its strength/type will determine whether a dressing is suitable for use on fragile skin at risk of excoriation. The speed with which foam dressings absorb moisture varies, as does their ability to retain it. They wick moisture away from the wound laterally or vertically (aided by moisture vapour transmission rate), which determines fluid handling.

While the literature includes many reports on the clinical efficacy of foam dressings, including some randomised controlled trials (RCTs) (Fletcher, 2005; Vogensen, 2006; Kirby, 2008; Bianchi et al, 2011; Dumville et al, 2011), there has been debate about their role in wound management (White et al, 2012) largely around how well they retain

moisture. Schulze et al (2001) in a study on moderate to heavily exuding venous leg ulcers, found maceration at 20% of dressing changes. This has led to their withdrawal from some dressing formularies (White, 2012).

#### Gel-forming fibrous dressings/ Alginates

These dressings comprise 100% carboxymethylcellulose (CMC) or 100% alginate, or a combination of alginate and CMC, which is transformed into a gel-like sheet when exudate is absorbed. These dressings can be used on moderate to heavily exuding wounds and must be changed when fully saturated — ie when the dressing is saturated beyond the wound margins. They can be used under secondary dressings to increase absorbency. Patients may occasionally experience a ‘drawing’ sensation as the exudate is absorbed, and they have been known to stick to wound edges (Beldon, 2010). They should be used cautiously on fragile skin or skin at risk of damage. Moistening at removal minimises skin trauma. If used inappropriately on wounds that are not highly exuding they are at greater risk of drying out, highlighting the importance of accurate assessment of exudate. These dressings are available combined with silver for antimicrobial activity.

#### Superabsorbents

These dressings are useful when dressing changes are frequent due to the volume of exudate. They vary in the way they absorb fluid, retain it and how they function under compression. Some superabsorbents can lock fluid inside the dressing. This may contain bacteria and proteases, which can be harmful to the wound. Because of their enhanced fluid handling capacity and absorbency, designed for longer wear times and to reduce maceration, they can reduce the frequency of dressing changes (Wicks, 2012).

#### NPWT

NPWT has proved effective in ‘well-wound management’ of high-risk incisions where incisional oedema and potential haematoma or seroma formation threaten to evoke infection or wound dehiscence (Atkins et al, 2009). It is often seen as a ‘step up’ in terms of managing exudate. Incision



dehiscence (Figures 13 and 14) has recently been highlighted as a growing problem that nurses will face (HPA, 2011). Infection rates vary with types of surgery and are known to be high for some procedures, such as Caesarean section (Wloch et al, 2012). Where risk factors are present, such as obesity, infection and dehiscence rates are considerable. Where NPWT is used after incision closure, incidence of dehiscence and infection have been shown to be lower (Reddix et al, 2009; DeCarbo and Hyber, 2010; Stannard et al, 2012).

NPWT is increasingly used to support wound healing (Figure 15) and manage high volume of wound exudate against a backdrop of increasingly challenging and complex wound management scenarios requiring more than conventional strategies (Vig et al, 2011). Healthcare providers need to have increased awareness of the associated economic impact of delayed wound healing. However, delayed healing and infection often arises after discharge and is dealt with by community nurses. There is limited provision for reporting this, so the economic impact may not be clear to the budget holder of acute services (Trueman, 2013).

Timely and cost-effective use of advanced wound management technologies will be a necessary focus going forward. NPWT can have economic benefits as well as a positive influence on patients' quality of life (Dowsett et al, 2012). In addition, advances in single-use disposable devices can help maintain patients' quality of life (Dowsett et al, 2012). However, NPWT is not available in all localities (Timmons and Dowsett, 2012).

### PREVENTING EXUDATE-RELATED PROBLEMS

The most important function of the skin is to provide a semi-permeable barrier to protect the body from the outside world (Arne and Bianchi, 2013). Conditions which affect the skin's integrity, such as those often underlying in patients with highly exuding wounds, will have a detrimental effect on the skin's barrier function. Pro-inflammatory cytokines in chronic wound fluid cause additional damage to the stratum corneum, further reducing skin barrier function (Wolcott et al, 2008). Effective management of chronic wound exudate prevents build

up or pooling that can lead to breakdown of the extracellular matrix and damage to the periwound skin.

Exudate-related problems include:

- Frequent dressing change: discomfort, pain, trauma, skin stripping
- Periwound skin damage: maceration, excoriation
- Infection
- Leakage and strikethrough
- Odour
- Social and psychological effects
- Delayed healing: breakdown of extracellular matrix
- Protein loss/fluid and electrolyte imbalance: systemic problems.

### Preventing periwound skin damage

A good understanding of the different causes of periwound skin damage will help identify risk, initiate appropriate treatment strategies or allow referral to appropriate services (Bianchi, 2012). Causes of periwound skin damage include:

- Infection
- Skin changes due to treatment for underlying aetiologies such as compression for venous insufficiency and oedema: these may present as discolouration, dryness and itching, induration, lipidodermatosclerosis (Anderson, 2008)
- Saturated wound environment, leading to maceration
- Inappropriate dressing choice (leading to pooling of exudate and strikethrough, or a 'drawing' effect, resulting in maceration or skin stripping)
- Damage caused by too frequent dressing removal
- Topical applications such as adhesives, acrylates
- Sensitivities to products applied, such as lanolins, parabens.

### Damage caused by frequent dressing removal

Highly exuding wounds often require frequent dressing changes. Adherence of dressing material to the wound bed and periwound skin can damage newly forming cells and cause distress to the patient. Dykes and Heggie (2003) found repeated application and removal of adhesive dressings led to damage to the skin's surface and stripping of the skin's



Figure 13: Dehisced abdominal surgical wound 3 weeks postoperatively. Internal sutures visible, sloughy wound bed



Figure 14: Dehisced abdominal wound, 2 weeks postoperatively. Dusky wound bed, high volume exudate



Figure 15: A granulating abdominal wound post-NPWT

barrier (stratum corneum). This initiates an inflammatory skin reaction, oedema and pain (Langøen and Lawton, 2009). Where possible, non-adherent dressings should be used to minimise trauma (Meuleneire and Rücknagel, 2013).

Skin damage of this nature can occur at any age. However, skin thins as it ages (Cooper et al, 2008), and therefore elderly patients' skin may be particularly susceptible to external trauma (Bianchi and Gray, 2011). Neonates also have fragile skin that is susceptible to trauma, has poor barrier properties, is vulnerable to infection (Van Onselen, 2001) and requires gentle care.

Choosing an appropriate dressing based on accurate assessment of exudate can result in fewer dressing changes, progress towards healing and improved patient comfort (EWMA, 2002).

### **Maceration and excoriation**

When a wound produces high levels of exudate that are not adequately managed, the moisture on the wound bed leaks outwards onto periwound skin. Over time, the skin becomes soggy, causing it to soften and break down, making infection more likely (Figure 16).

If this moisture is trapped underneath the dressing, and the skin is in contact with excess moisture for a prolonged period, the

epidermal cells become waterlogged which can lead to excoriation or skin stripping.

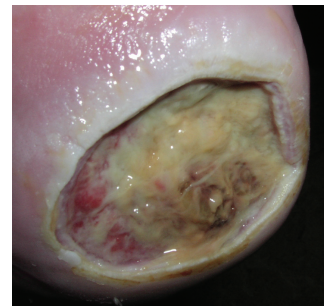
The use of an appropriate dressing can help to reduce the amount of moisture in the wound and help prevent periwound maceration, excoriation and strikethrough (Langøen and Lawton, 2009). Dressings with a superabsorbent components give good protection against maceration and allow longer wear time, although some dressings can become bulky.

The cause of maceration should be determined and application of a barrier film or cream considered to prevent further breakdown of the skin (Coutts et al, 2001). These can also help by sealing healthy skin from bodily fluids and should be applied as soon as risk of breaching skin integrity is identified.

In addition, non-soap cleansers and/or steroidal creams/ointments can be used to manage the symptoms of contact dermatitis caused by the excess exudate.

### **Protein loss/fluid and electrolyte imbalance**

Excess exudate can add to the challenge of maintaining fluid and electrolyte balance in postoperative patients on acute wards. Exudate contains high levels of proteins and the resulting protein loss and electrolyte imbalance can cause dehydration, poor clotting and complications.



**Figure 16: Pressure ulcer to the heel. The surrounding white tissue indicates the presence of maceration**

DBPS APPLICATION TO PRACTICE: MANAGEMENT OF EXCESS EXUDATE

Best practice statement	Reason for best practice statement	How to demonstrate best practice
Optimise the wound bed for healing	To manage exudate (Vowden and Vowden, 2011) and progress a wound towards healing	Assess the wound using, for example, the TIME framework, and document each stage
Debride if necessary to optimise the wound bed for healing	Debride to remove necrotic/devitalised tissue which provides a medium for bacteria Active debridement can accelerate wound healing (Wounds UK, 2013)	Choose the debridement method most appropriate based on clinical need, document why it is necessary and discuss with the patient Refer to a competent practitioner where necessary (Wounds UK, 2013)
Protect wound edges from excess moisture and dressing-related skin damage	This will prevent maceration, excoriation, pain and discomfort, and aid migration of epithelial cells across the wound bed	Choose most appropriate dressing for the wound and periwound skin to avoid skin trauma and pain Document why the product was chosen Apply barrier products if there is a risk of maceration/excoriation
Where skin is macerated or excoriated, determine the cause through assessment and consider applying a barrier cream or film to prevent further skin damage	Applying a skin barrier and preventing further skin damage will ease patient discomfort and help guard against an increase in wound size	Document the assessment, cause of maceration, barrier product used and frequency of reapplication Ensure the barrier product does not affect dressing adhesion
Ensure the underlying cause of the wound is treated appropriately to manage exudate effectively	Tackling systemic contributors to excess exudate is essential to reduce moisture at the wound	Assess the patient, seek input from the MDT and/or refer as appropriate to diagnose underlying disease processes Formulate wound management plan and treat appropriately
Choose effective primary and secondary dressings suited to the volume and type of exudate	To remove excess moisture from the wound bed while creating an environment for moist wound healing Avoidance of exudate leakage and excessive strikethrough by the appropriate selection of dressing product	Assess the wound, patient and current dressing Choose dressing product after discussing with patient and carers Reassess dressing suitability at each dressing change
Frequency of dressing change should be matched to wound care product fluid handling properties and individual patient needs	Choosing a dressing that minimises strikethrough, odour, pain and trauma to the skin will improve concordance, wellbeing and healing Consider risk of skin stripping Reduced frequency of dressing changes can minimise costs and maximise patient comfort and mobility	Reassess frequency of dressing change at each dressing removal Select a more appropriate product and alter frequency of dressing changes if desired outcomes not seen Ensure instructions on dressing removal are shared with all healthcare professionals to avoid skin stripping where adhesive products are used
Antimicrobial dressings should be used when indicated. Identify and treat infection as a contributory factor to increased exudate	Appropriate dressing choice helps move the wound along the wound healing continuum Prompt treatment of localised infection will minimise detrimental effects	Monitor clinical signs of infection Use aseptic non-touch technique where appropriate Reassess in a timely manner and at each dressing change Document appropriate use of antimicrobials and systemic therapy (Wounds UK, 2011)

## SECTION 4: IMPACT OF EXUDATE ON QUALITY OF LIFE AND PATIENT WELLBEING

Wounds impact upon all areas of a person's life (Moore and Cowman 2009; Gorecki et al, 2012a) and the effects of high levels of exudate have a human cost attached to them. Many chronic non-healing wounds producing large amounts of exudate cause patients considerable distress (EWMA, 2008) which can have an adverse and sometimes devastating impact on an individual's quality of life and wellbeing (Gorecki et al, 2012b; International Consensus, 2012). Excess exudate is associated with leakage and strikethrough, malodour, pain and discomfort — wellbeing-related factors that can lead to low self-esteem and social isolation. Accurate assessment and dressing choice can help to alleviate these.

Inappropriate assessment of exudate and the wrong dressing choice can result in wet and soggy periwound skin, which can lead to an increased wound size with negative implications for patients who want their wound size to diminish (Briggs and Fleming, 2007; Wicks, 2012).

Leakage and strikethrough can cause embarrassment, feelings of being unclean leading to loneliness, as patients seek to avoid coming into contact with others. Saturated dressings can also become bulky and uncomfortable to wear. In a qualitative study of people with Epidermolysis bullosa, individuals commented on how exudate contributed to anxiety, particularly in relation to dressings becoming saturated and slipping (Grocott et al, 2013).

Exudate-saturated dressings can become malodorous. This odour along with excessive exudate can act as a constant physical reminder to the patient of their wound (International Consensus, 2012) and can affect how patients feel about themselves (Lindahl, 2005; Leonard and Vuolo, 2009). Leg ulcer patients have reported that exudate and odour resulted in feelings of disgust, self-loathing and low self-esteem, and as a consequence they sought to avoid social contact with others resulting in isolation and loneliness (Herber et al, 2007; Jones et

al, 2008). The culmination of the effects of exudate can be both psychologically and socially crippling for an individual.

Stress and anxiety caused by these factors, and contributed to by the associated pain and discomfort, may delay healing further (Norman, 2003).

The financial implications of uncontrolled exudate are often overlooked and this can be an additional burden for patients (Gorecki et al, 2012b). The need for frequent dressing changes can restrict people's ability to work and also impact nursing time and healthcare resources (Romanelli et al, 2010).

### Holistic approach

Effective exudate management includes not only the prevention and treatment of exudate-related physical problems, but addressing patient concerns and quality of life (Dowsett, 2011). This can enhance a patient's wellbeing (Dowsett, 2008; Jones, 2008; Romanelli et al, 2010).

It is important to remember that there may be a mismatch in priorities between the clinician, who may focus on wound healing, and individual patients whose focus might be reducing the pain and odour, strikethrough and problems associated with wearing bulky dressings (Gorecki et al, 2012b; International Consensus, 2012). There are a number of tools available for measuring quality of life and wellbeing, such as the Cardiff Wound Impact Scale (Price and Harding, 2004; International Consensus, 2012).

Appropriate dressing selection plays an important part in patient comfort, helps maintain mobility, social activities and employment, allowing patients to maintain as normal a life as possible. The World Union of Wound Healing Societies (2007) encourages clinicians to involve patients in treatment choices so that they are able to voice their concerns about leakage, odour, discomfort, pain, emotional distress, sleep disturbance, and related social and financial difficulties. This process should provide

### Key points:

1. The effects of excess exudate can negatively affect how a patient feels about themselves and how they interact with others.
2. A patient's quality of life and wellbeing plays an important part in patient concordance.
3. Demonstrating the benefits of an innovative wound care product on patient quality of life strengthens evidence in support of a product.

an insight into how well a person is coping with their wound and the effects of excess exudate (WUWHS, 2007), as well as ensure the right product is chosen for the individual.

### Concordance

Failure to effectively control exudate will have an adverse impact upon a patient's concordance, which increases the likelihood that the wound won't heal (EWMA, 2008), incurring further costs to the NHS and patient. Patient choice is prominent in the government's agenda: 'no decision about me without me' is the ideal and should be embedded within patient care (DH, 2010a). Involving patients in decision-making about treatment will equate to improved patient experience, greater concordance and better outcomes (Moffatt, 2004; Price, 2003).

The development of a therapeutic relationship between the patient, often extending to carers and family, will have a significant influence on individuals' capacity to concord with treatment (Gray et al, 2012). Patients must have confidence in the ability of the healthcare professional, who needs to have the relevant up-to-date knowledge and skills, understanding of national and local treatment protocols, and provide effective management options for those patients with heavily exuding wounds.

The provision of harm free, quality and cost-effective care are essential requirements for healthcare professionals today, underpinned by a multitude of government policies over recent years (DH 2009a; 2009b; 2010a; 2010b; 2012). Effective exudate management and wellbeing can be clearly aligned to the quality agenda, in the form of Patient Reported Experience Measures (PREMs). Poor exudate management, including inappropriate dressing choice (Dowsett, 2008), can lead to delayed healing, which will undoubtedly have a negative impact on the patient's experience, and increase the cost of treating the wound (Shorney and Ousey, 2011; Gardner, 2012; Wicks, 2012). Effective exudate management is fundamental to successful outcomes for the patient, healthcare professional and the healthcare organisation.

To ensure that the consequences of poor exudate management are avoided, healthcare professionals must have a good understand-

ing of wound care products available and be able to select appropriate products to meet patients' individual needs (Dowsett, 2011). It is imperative that healthcare professionals complete a holistic patient assessment that informs the correct care pathway. For example, exudate management for patients presenting with venous leg ulcers would be optimised with compression therapy (SIGN, 2010) and not rely on wound dressings alone. A multidisciplinary approach is also an important aspect of management — seeking advice can be a positive intervention, particularly for patients with complex wounds and needs, such as patients with diabetic foot wounds.

### Cost-effective wound care

Selecting the correct treatment option affects treatment outcomes and carries financial implications, which may be related to national and local commissioned targets (DH, 2010b) or directly relate to wound care product budgets at a service or organisational level. Efficiency savings have, in many areas across the NHS, resulted in access to wound care treatments being aligned to Quality, Innovation, Productivity, and Prevention (QIPP) (DH 2010b) agenda. Locally, across many parts of the NHS, wound care formularies have been developed, streamlining access to modern wound care products. This has created both opportunities and challenges for healthcare professionals.

Opportunities exist to raise the profile of the importance of wound care to managerial and commissioning hierarchy demonstrating effective use of resource with the potential for service development. Creating seamless services across community and secondary care and from regional perspectives should also be harnessed. Yet, it is these very opportunities that create challenges. Healthcare professionals need to ensure they attain the business acumen required to have an impact within our ever-changing healthcare society.

Healthcare professionals must have an understanding of the local healthcare economy to influence decisions and ensure products that are accessible meet population demand. Senior healthcare professionals with responsibility for wound care standards within an organisation must be able to work collaboratively across providers, procurement, and

commissioning services to influence organisational decisions in relation to product choice. Ensuring a review process is incorporated into decision making from the outset will enable evaluation of products to be based on clinical requirements and not price alone.

For example NPWT is a safe and useful wound treatment option for effective management of heavily exuding wounds associated with improved healing outcomes (Molnar, 2004) and quality of life for patients (Moffatt, 2004). Yet access to NPWT is fragmented across community provider services due to the perception that the therapy is expensive. This belief has been challenged by Dowsett et al, (2012) who concluded that the average cost of treating complex wounds using NPWT is significantly less than with

conventional dressings within the patient's own home.

Accessing innovative and advanced wound care products may provide challenges similar to those faced by some community services for NPWT. Healthcare professionals will need to establish robust evaluation processes that include gathering clinical and cost-effective evidence in support of a product, that should include patient experience. They will need to build effective channels of communication with their local commissioning organisations, and be willing to share best practice along with their experiences to plan services. This will require good working relationships and networks within their own organisations and beyond to ensure optimal management of patients with highly exuding wounds.

#### DBPS APPLICATION TO PRACTICE: CONSIDERING PATIENT WELLBEING FOR EFFECTIVE EXUDATE MANAGEMENT

Best practice statement	Reason for best practice statement	How to demonstrate best practice
Document and analyse patient recorded outcome measures (PROMs) and patient recorded experience measures (PREMs) to gain insight into how well exudate has been managed	The feedback from PROMs and PREMs analysis can be used reassess the way in which high exudate is approached Services can be redesigned in line with wound and patient needs Exudate management practices can be modified where necessary	Have a variety of ways that patients can complete PROM and PREM questionnaires: paper, digital Collate information for analysis and ensure staff understand the importance of this
Consider patients' views and needs when choosing a product to manage exudate (Dowsett, 2008)	Balancing a patient's needs with the physical requirements of the wound will reduce impediments to progress, compliance and concordance, such as stress	Build a therapeutic relationship with the patient during accurate assessment Discuss treatment options and reasons for choosing them with patients Provide and share information as required Accept that patient priorities might differ from those of clinicians and balance these Reconsider dressing choice if odour, strikethrough and pain persist (WUWHS, 2007)
Minimise dressing changes	To facilitate moist wound healing and optimise quality of life Being tied to dressing change times can restrict patients movements, social interactions and ability to retain employment	Consider wear time and balance this with the needs of the wound and patient
Monitor wellbeing ongoingly, analyse results and alter interventions accordingly	The results of monitoring the impact of treatments and interventions on a patient's wellbeing can be used to make sure the most appropriate choices are being made in relation to the patient and wound	Implement and document discussion of patient wellbeing, for example, using trigger questions and answers (International Consensus, 2012), and how the information has been acted on

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