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Wound exudate: what GPNs should know

Highly exuding wounds can affect people of all ages, often causing distress, anxiety and social isolation. Managing these challenging wounds can also represent a significant cost to the NHS. This article looks at exudate and the difference between normal and excessive exudate and examines the causes of a high volume of exudate and its effect on the patient. Exudate assessment is an important part of holistic assessment, which is also explored in the article. Strategies GPNs can employ to manage exudate, including wound dressings and other devices, are then discussed.

KEY WORDS:

- Exudate
- Assessment
- Chronic wounds
- Periwound skin

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Managing wound exudate is a complex challenge faced by many healthcare professions on a daily basis. Exudate management can often be overlooked during the busy daily workloads of healthcare professionals (Geraghty, 2016). For patients whose wounds produce excess exudate, it causes malodour, and feelings of disgust, self-loathing and low esteem (Herber et al, 2007). It is essential, therefore, that general practice nurses (GPNs), who manage wounds on a regular basis, understand what wound exudate is, and when it is normal or abnormal. An awareness of the importance of holistic assessment and effective management is also vital.

WHAT IS WOUND EXUDATE?

Exudate is derived from fluid that has leaked out of blood vessels and closely resembles blood plasma (World Union of Wound Healing Societies [WUWHS], 2007). It is

produced as a normal and essential part of the wound healing process (Lloyd Jones, 2014). However, overproduction of wound exudate, in the wrong place or of the wrong composition, can adversely affect wound healing (Moore and Strapp, 2015; WUWHS, 2019). Exudate is best defined as:

Exuded matter; especially the material composed of serum, fibrin, and white blood cells that escapes into a superficial lesion or area of inflammation.

(WUWHS, 2019)

IMPORTANCE OF WOUND EXUDATE

In wounds which are healing naturally through the normal, recognised phases, exudate supports

the healing process by (WUWHS, 2019):

- Maintaining a moist environment
- Maintaining diffusion of immune mediators and growth factors across the wound bed
- Allowing the migration of tissue-repairing cells
- Delivering essential nutrients for cell metabolism
- Facilitating debridement by the body's own mechanism of autolysis.

Table 1 outlines a simple overview of the normal wound healing process and the main events that occur in each phase.

It is important to remember that wound healing is a dynamic process and that phases can overlap and do

not occur in isolation of each other (Timmons, 2006).

When associated with wound healing, exudate is often perceived in a negative way, despite being an important part of the wound healing process when present in the optimal volume (Tickle, 2017).

EXUDATE IN CHRONIC WOUNDS

In chronic wounds, the inflammatory process is extended and exudate volume increases with harmful consequences (Nichols, 2016). Chronic wound exudate contains higher numbers of matrix metalloproteases (MMPs), which break down newly formed healthy tissue and lacks the growth factors needed to facilitate timely healing (Nichols, 2016).

Therefore, the amount of exudate and its composition can delay or prevent wound healing, affecting patients' physical and psychological wellbeing, and also placing increasing demands on healthcare resources (Wounds UK, 2013).

REASONS FOR A HIGH VOLUME OF WOUND EXUDATE

In typical wound healing, exudate volume will decrease as healing occurs (Adderley, 2008). However, there are reasons why some wounds produce excessive exudate (Table 2), and why others are typically affected (Table 3) (Gardner, 2012).

IMPACT OF EXCESS EXUDATE

A high volume of exudate can be distressing to patients and their carers because of malodour, leakage, pain and discomfort, and increased soiling



Practice point

Poor nutritional status can have a direct effect on wound healing. Patients with highly exuding wounds will benefit from a full nutritional assessment and protein, vitamin, mineral and trace element replacement.

Table 1: A simple overview of the phases of normal wound healing (Brown, 2015)

Phase of wound healing	Main events that occur
Phase 1: inflammation	<ul style="list-style-type: none"> 0–3 days Haemostasis followed by vasodilation carrying the cells necessary for healing process Classic signs of inflammation — redness, heat, swelling and pain
Phase 2: destruction	<ul style="list-style-type: none"> 1–6 days Cleaning the wound, preventing infection and providing the best conditions for wound healing
Phase 3: proliferation	<ul style="list-style-type: none"> 3–4 days New tissue is regenerated and constructed by fibroblasts consisting of new blood vessels, collagen and other connective tissue
Phase 4: maturation	<ul style="list-style-type: none"> 21 days and two years Epithelial cells move over newly formed granulation tissue and reduce the size of the wound by contracting and pulling the edges together Macrophages re-organise the collagen within the newly healed wound to form a scar

of clothes and bed linen (Adderley, 2008; WUWHS, 2019). Malodour has been reported to cause great distress and makes patients and carers feel isolated (Gethin et al, 2014).

The consequences of a high volume of exudate combined can lead to patients becoming dissatisfied with exudate management delivery and even cause depression (Beldon, 2016).

A high exudate volume can also contribute to malnutrition. This is not only due to malodour reducing a patient's appetite, but also because exudate is rich in protein, which could need replacing to prevent protein deficiency (Adderley, 2008).

Excessive wound exudate also results in frequent dressing changes to ensure containment and help prevent potential wound infection and biofilm development (WUWHS, 2019). This inevitably involves more nursing time and resource and impacts on a patient's normal activities of daily living.

Copious exudate can also have a significant impact on the skin surrounding the wound. The periwound area is defined as within 4cm of the wound edge (Dowsett and Allen, 2013) and can show signs of (Young, 2017):

- Maceration, pale in colour or red if inflamed (the first stage of maceration is sometimes referred to as over or hyper-hydration,

which is said to be reversible [WUWHS, 2019])

- Excoriation, which is a skin erosion and often partial thickness.

Periwound moisture-associated dermatitis is one of the four clinical manifestations covered by the umbrella term moisture-associated skin damage (MASD), namely:

- Incontinence-associated dermatitis (IAD)
- Intertriginous dermatitis
- Periwound moisture-associated dermatitis
- Peristomal moisture-associated dermatitis (Young, 2017).

EXUDATE ASSESSMENT

Assessment of wound exudate should take place in the context of holistic wound assessment, considering the whole patient and comprising at least the generic wound assessment minimum data set (Coleman et al, 2017; Wounds UK, 2018), including:

- Overall health of the patient
- Current wound management
- Patient/carer concerns
- Periwound region
- Wound and exudate assessment
- Risk of further wound development (WUWHS, 2019).

Exudate assessment should consider the type, colour, consistency, and volume being produced and if there is any odour

Table 2: Why some wounds produce a high volume of exudate (Gardner, 2012)

■ Size and position of the wound
■ Underlying conditions that increase capillary leakage, e.g. cardiac, renal or hepatic failure
■ Pathology of the wound
■ Failure of the lymphatic system
■ Increased bacterial burden
■ Medication, e.g. steroids
■ Presence of oedema

Table 3: Wounds that are typically affected (Gardner, 2012)

■ Chronic venous leg ulcers
■ Postoperative dehisced wounds
■ Fungating wounds
■ Burns
■ Inflammatory ulcers, such as rheumatoid ulcers and <i>pyoderma gangrenosum</i>
■ Skin donor sites
■ Infected diabetic foot ulcers

present (WUWHS, 2019) — all of which provide useful indicators of the stage of healing and possible wound-related problems (Table 4).

For example, too much or too little exudate can delay healing and so clinicians need to judge the stage of healing with the exudate volume. Determining the amount of exudate is generally subjective, such as the simple system of +, ++ and +++ and low, moderate, high because of a lack of defined criteria for what each means (Kerr, 2014; WUWHS, 2019).

In addition, examining the dressing or device on removal provides valuable information about the nature of the exudate and the performance of the dressing/device (WUWHS, 2007). For example, is the dressing leaking, or saturated? Some dressings incorporate a measure so that you can track the exudate on the back of the dressing, helping to ensure that it is left in place for as long as possible and not changed too early.

Underlying conditions that result in fluid overload may also increase

volume of exudate (Wounds UK, 2013). These include conditions that lead to oedema, such as congestive cardiac failure and chronic oedema (WUWHS, 2019). It is important that treatment of these conditions continues with caution where necessary, following best practice guidelines (Wounds UK, 2019).

EXUDATE MANAGEMENT

Wounds which are producing a copious volume of exudate can be clinically challenging, cause pain and distress to the patient, and be costly to manage (Vowden et al, 2015).

The focus of exudate management will depend on the results of holistic assessment, but should include (WUWHS, 2019):

- Managing factors that are giving rise to the high exudate volume, e.g. removal of wound biofilm and managing local wound infection, optimising the patient's condition and any wound-related symptoms to improve quality of life
- Providing patient and carer education
- Conducting further investigations and making specialist referrals, as required
- Optimising the condition of the wound bed and periwound skin, e.g. by wound debridement
- Improving the wound bed moisture level

Practice point

Why not reflect on a patient with a chronic wound with excess exudate. Consider if you have selected the correct dressing to meet their individual needs.

- Preventing and treating any exudate-related problems.

WOUND DRESSING SELECTION

There are a number of wound dressings available to manage exudate, some of which are designed specifically for a high volume. Selection should be based on the most appropriate product for the individual patient, wound site and underlying aetiology, as well as the volume of exudate being produced (Beldon, 2016). Selection will also need to be based on availability and local wound dressing formularies.

Although dressings are the main option for managing exudate, there are other devices that can be useful, such as negative pressure wound therapy (NPWT) (Gardner, 2012; Nichols, 2016; WUWHS, 2019), and wound care bag systems or stoma bags (Beldon, 2008; Nichols, 2016; WUWHS, 2019).

In general, dressings manage fluid by absorbing it and/or allowing it to evaporate from the dressing's

Table 4: Significance of exudate type (adapted from Vowden et al, 2015; WUWHS, 2019)

Type	Consistency	Colour	Significance
Serous	Thin, watery	Clear, amber	Often considered normal, but increased volume may indicate infection
Fibrinous	Thin, watery	Cloudy	May indicate presence of fibrin strands
Serosanguinous	Thin, slightly thicker than water	Clear, pink	Presence of red blood cells indicates capillary damage
Sanguinous	Thin, watery	Reddish	Low-protein content due to venous or congestive cardiac disease, malnutrition
Purulent	Viscous, sticky	Opaque, milky, yellow or brown, sometimes green	Presence of white blood cells, bacteria, slough or other materials
Haemopurulent	Viscous	Reddish, milky	Established infection
Haemorrhagic	Viscous	Dark red	Bacterial infection Capillary damage indicating trauma