The variety and complexity of wounds, as well as the many factors affecting healing, mean that wound care is an ongoing challenge for community nurses. Appropriate assessment and care-planning, plus the ability to understand when to refer on to other clinicians, are essential elements in effectively managing a wound.

It is not only the wounds themselves that are complicated — when it comes to treatment there are numerous wound dressings available and this breadth of choice can make it difficult for community nurses to select the correct dressings to ensure healing.

This is partly why accurate assessment of the wound is essential to identify aetiology, any barriers to healing, and to establish a realistic plan of care. There are many facets to accurate wound assessment including a good knowledge of the wound bed and surrounding skin, other wound-related factors such as infection and protection of the periwound skin, and connected areas such as nutrition and comorbidities. It is important that community nurses perform a full holistic assessment before planning any interventions, then, as care progresses, evaluate those interventions and reassess the patient and the wound.

The whole process of wound assessment involves a range of knowledge and skills including (Ousey and Cook, 2012):

- Anatomy and physiology, for instance, knowledge of the circulation is crucial in managing leg ulcers
- Knowledge of the wound healing process
- Ability to identify factors that may delay healing, such as poor nutrition
- Ability to interpret the information gained and transform this into a plan of care
- Ability to identify any patient-specific problems, for instance, if the patient has diabetes or is a smoker.

Using the ‘plan-do-study-act’ cycle there are five main steps identified that

![Diagram of the 'plan-do-study-act' cycle](image-url)
The use of

**Activon Manuka Honey®**

and **Eclypse®**

- Effective exudate management
- Maintains a moist wound healing environment
- Optimum Moisture Vapour Transfer Rate
- Unique range of sizes

- Viral and bacterial backing barrier
- Strike-through barrier
- Up to 7 days wear time

References (references relate to Advancis Manuka honey):

* taken from 'International consensus: Appropriate use of silver dressings in wounds'.
- Wounds International 2012

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Red Flag Infection

Any wound contains bacteria to different degrees, but if they begin to overload the patient’s natural responses, wound infection can be dangerous. The presence of bacteria in a wound can result in:

- Contamination: the bacteria do not increase and do not cause clinical issues
- Colonisation: the bacteria begin to multiply, but still do not represent a danger to the wound
- Infection: the bacteria multiply, healing is disrupted and wound tissues are damaged (local infection).

If left untreated, infection can produce problems close to the wound itself (spreading infection), or may even cause systemic illness, such as sepsis, which can be life-threatening (systemic infection).


Table 1: Assessing factors that can influence wound healing (Eagle, 2009)

<table>
<thead>
<tr>
<th>Factor</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Associated disease process:</td>
<td>Consider:</td>
</tr>
<tr>
<td>- Anaemia</td>
<td>Decreased oxygen supply due to lack of vascularity</td>
</tr>
<tr>
<td>- Arteriosclerosis</td>
<td>Loss of mobility</td>
</tr>
<tr>
<td>- Cancer</td>
<td>Underlying disease may complicate/delay healing process</td>
</tr>
<tr>
<td>- Diabetes</td>
<td>Disease processes that adversely affect metabolism are also likely to delay wound healing</td>
</tr>
<tr>
<td>- Immune disorders</td>
<td></td>
</tr>
<tr>
<td>- Inflammatory disease</td>
<td></td>
</tr>
<tr>
<td>- Jaundice, liver failure</td>
<td></td>
</tr>
<tr>
<td>- Rheumatoid arthritis</td>
<td></td>
</tr>
<tr>
<td>- Uraemia</td>
<td></td>
</tr>
<tr>
<td>Infection</td>
<td>Infection is caused by organisms that invade the host’s immunological defence mechanism</td>
</tr>
<tr>
<td>Age and body composition</td>
<td>Tissue capacity to repair reduces with age</td>
</tr>
<tr>
<td>Nutritional status</td>
<td>Reduced nutritional intake delays healing</td>
</tr>
<tr>
<td></td>
<td>Assessment of the patient’s nutritional status is essential to ensure a balanced diet that meets the wound requirements</td>
</tr>
<tr>
<td>Smoking</td>
<td>Reduces availability of oxygen, nutrients and cells essential for wound healing due to reduced peripheral blood flow</td>
</tr>
<tr>
<td>Medication and drug therapy</td>
<td>Steroids, non-steroidal anti-inflammatory drugs, immunosuppressive agents and antiprostoglandins may impair normal healing</td>
</tr>
<tr>
<td>Social environment</td>
<td>There is a link between poor social circumstances and ill-health</td>
</tr>
<tr>
<td>Lifestyle/psychological status</td>
<td>Factors such as stress, body image and pain can have a detrimental effect on healing</td>
</tr>
<tr>
<td>Care environment</td>
<td>Limited provision of resources, e.g. negative pressure wound therapy (NPWT) and the constraints of local formularies may impact on wound healing</td>
</tr>
<tr>
<td>Previous wound management</td>
<td>Patients’ experiences with previous wound management products may impact on current wound management regimens</td>
</tr>
<tr>
<td></td>
<td>Evaluation of current and previous treatment regimens is essential to maintain effective wound management</td>
</tr>
</tbody>
</table>

Table 1: Assessing factors that can influence wound healing (Eagle, 2009)

- Associated disease process, e.g. anaemia, arteriosclerosis, cancer, diabetes
- Infection
- Age and body composition
- Nutritional status
- Smoking
- Medication and drug therapy
- Social environment
- Lifestyle/psychological status
- Care environment
- Previous wound management
- Pain.

Treating the ‘whole’ patient and not just the ‘hole’ in the patient (International Consensus, 2012) is essential in wound management and any comorbidities should be identified at the onset, i.e. rheumatoid arthritis can lead to a prolonged inflammatory response within the wound bed, in turn leading to delayed healing.

It is also essential to record the patient’s current medication as this not only has a potential impact on wound healing (Table 1), but also on the causation of the wound, i.e. nicorandil-induced ulcers (nicorandil is a vasodilatory drug used to treat angina, but has also been associated with peristomal, vulval and perianal ulceration) (Patel and Harding, 2010).

A full medical and nursing history will help to create a complete picture.

Figure 1: Wound Infection in Clinical Practice: an international consensus.

Available at: www.woundsinternational.com.

Figure 2. Necrotic tissue.

STEP 1: PATIENT AND WOUND ASSESSMENT

There are many factors that must be considered when assessing the patient with a wound (World Union of Wound Healing Societies [WUWHS], 2008) and which may influence the progress of the wound towards healing, including (see also Table 1):
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- A discussion forum for members
- Links to conference dates, education courses, our archived educational booklets, best practice documents and the websites of our sponsors

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- Act as a significant voice for tissue viability
- Provide advice and guidance for members

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of the patient’s health and wellbeing and will identify any factors that may delay or hinder healing (International Consensus, 2012).

A full history of the wound is essential to determine how long it has been present and any factors that may have contributed to its formation, e.g., surgery or trauma. Assessment of the actual wound site will also provide information that is relevant in three areas:

- Type of wound: is it acute or chronic; healing by primary or secondary intention
- Stage of wound healing: what kind of tissue is present in the wound bed, e.g., is it dead necrotic material, fresh granulation, or new epithelial tissue (see below for more detail)
- Wound size: what is the surface area; is there sinus formation, undermining, tracts or fistulae?

Acute wounds generally occur as a result of surgery or trauma and usually have a short, uneventful healing time. Chronic wounds usually have an underlying aetiology, e.g., leg ulcers (venous insufficiency), pressure ulcers, diabetic foot ulcers and malignant wounds (cancer).

Chronic wounds take longer to heal and are prone to infection and a prolonged inflammatory phase leading to higher exudate production (Eagle, 2009). It is important to note that all wounds have the potential to become chronic if they are poorly managed.

Identifying the tissue in the wound bed will help with product selection. Wounds are often classified by the type of tissue present in the wound bed and there may be more than one type of tissue present, including:

- Necrosis: dead or devitalised tissue with no blood vessels
- Slough: a soft, yellow, glutinous substance that covers/fills the wound and also comprises dead tissue
- Granulation: a fresh network of newly-formed capillaries
- Epithelial tissue: a superficial pink/white tissue that is formed by thin sheets of cells.

**Necrotic tissue**

Necrotic tissue (Figure 2) occurs as a result of tissue death and is characterised by a hard eschar (dead or devitalised tissue), which is usually black/brown in colour (Gray et al, 2005). This eschar provides a focus for infection and needs prompt removal to move the wound along a healing trajectory. It is also important to remember that debriding the wound can reveal its true extent and it may be deeper or extend further than at first suspected.

The most common ways of debriding this eschar in the community include:

- Sharp debridement using a scalpel: normally only carried out by skilled practitioners
- Autolytic debridement: involves the use of rehydrating wound dressings that use the body’s own enzymes to dissolve the necrotic material
- Larval therapy: this uses mesh bags of maggots that secrete an enzyme, dissolving the necrotic material so that it can then be ingested. Maggots can also be applied ‘free-range’ although this is less common.
Table 2: General wound care checklist (Eagle, 2009)

<table>
<thead>
<tr>
<th>Factor</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wound bed/ stage of healing</td>
<td>Identifying the tissue type in the wound bed is essential in dressing selection and to evaluate wound progress</td>
</tr>
<tr>
<td>Wound site</td>
<td>Site of the wound will influence dressing selection</td>
</tr>
<tr>
<td>Wound size</td>
<td>Look at the following:</td>
</tr>
<tr>
<td></td>
<td>› Measure length, width and depth</td>
</tr>
<tr>
<td></td>
<td>› Determine if there are any sinuses, tracts or cavities</td>
</tr>
<tr>
<td></td>
<td>› Examine for undermining</td>
</tr>
<tr>
<td></td>
<td>› Evaluate increase or decrease in size</td>
</tr>
<tr>
<td></td>
<td>› Take regular measurements (at least weekly)</td>
</tr>
<tr>
<td></td>
<td>› Wound healing is demonstrated by a reduction in wound size</td>
</tr>
<tr>
<td>Exudate</td>
<td>Check exudate production: low, medium, high?</td>
</tr>
<tr>
<td></td>
<td>Check consistency: pus, blood-stained, serous?</td>
</tr>
<tr>
<td>Odour</td>
<td>None? Offensive?</td>
</tr>
<tr>
<td>Pain</td>
<td>Evaluate the cause, site, frequency, severity of pain all the time, not only at dressing change Provide appropriate analgesia</td>
</tr>
<tr>
<td>Wound edge/margin</td>
<td>May be rolled, sloping, regular, irregular, raised</td>
</tr>
<tr>
<td>Surrounding skin</td>
<td>Dry, macerated, erythematous?</td>
</tr>
<tr>
<td>Clinical infection</td>
<td>Consider and assess other influencing factors, including management strategies such as type of dressing being used</td>
</tr>
</tbody>
</table>

Cardinal signs of infection:
› Heat
› Pain
› Swelling
› Redness
› Loss of movement

General breakdown of wound resulting in a change in size or shape
Wound bleeds easily on contact
Cellulitis (not to be confused with varicose eczema)
Bridging of tissue in the base of the wound
Purulent exudate — increased odour

Address underlying aetiology
Support surfaces for pressure ulcers
Compression therapy for venous leg ulcers
Offloading for diabetic foot ulcers
Referral to vascular specialist for arterial ulcers

Wound care/ management
Ensure it is appropriate for the needs of the particular wound

Dressing selection
Always follow manufacturers’ instructions
Refer to local policies and guidelines

Wound temperature
Do not expose wound for long periods as this cools the wound bed and delays healing
If the wound needs to be left exposed cover with clingfilm

Dessication (drying out)
Select the appropriate dressing to provide moist wound-healing environment

Maceration (too wet)
As above

Malignancy
Refer and collaborate with multidisciplinary team

Referral
If in doubt, refer to either a more senior nurse or a specialist
Delays cost time and money and reduce the patient’s quality of life

Necrotic tissue on the feet should be treated with caution, particularly if the patient has peripheral vascular disease — due to reduced blood flow this can lead to a poor host response to infection. Similarly, it is important to assess the pedal pulses and/or perform a Doppler assessment before debriding any wound or applying any compression, especially in patients with diabetes who often have atherosclerosis, again causing reduced blood flow to the feet. In the author’s clinical experience, these wounds should be covered with a dry antimicrobial dressing to prevent over-rehydration, maceration and an increased risk of infection. Urgent referral to a diabetic foot clinic or vascular surgeon is recommended here, as the patient could be in danger of developing a severe ulcer, which may even result in amputation.

Slough
‘Sloughy’ tissue (Figure 3) is usually present in the wound as a soft, yellow, glutinous covering of devitalised tissue (Tong, 1999). Slough should not be confused with pus, which is a thick viscous discharge associated with infection and which, unlike slough, can be removed by simple irrigation.

Although sloughy wounds can become infected, the presence of slough in a wound is part of normal wound healing and does not automatically mean that the wound is infected. Sharp debridement should be used with caution here, and only by those suitably qualified — instead, dressings should be used to encourage autolytic debridement and the formation of granulation tissue.

Granulation
Granulation tissue is characterised by its red/pink granular appearance (Figure 4), which is due to a network of newly-formed capillary vessels, and granulation tissue that bleeds easily may indicate localised infection (WUWHS, 2008). The aim of wound management when granulation tissue is present is to:
› Optimise moist wound healing
› Remove and manage exudate
› Protect the wound from infection
› Reduce factors that may delay healing
› Encourage the growth of new tissue.

In the author’s clinical experience, the above is usually achieved by applying an adhesive foam dressing.

Epithelial tissue
Epithelial tissue (Figure 5) is a thin covering of fresh cells with a superficial pink/white appearance. Epithelial tissue migrates from the wound edges, hair follicles and
sweat glands across the wound bed to close the defect (Cutting and Tong, 2003).

Wound infection
The cardinal signs of wound infection include localised heat, pain, swelling, redness and loss of function (Figure 6), but there are a number of other signs that depend on the type of wound:

- Increased exudate: all wounds, but special notice should be taken of those closed by primary intention
- Increased bridging: often seen at the base of the wound in sinus/cavity wounds, i.e. pilonidal sinus
- Pockets of purulent fluid: seen in cavity wounds especially diabetic foot wounds
- Discolouration and pain in the wound (European Wound Management Association [EWMA], 2005).

Odour can also be indicative of wound infection, as can bone pain (although the latter is associated with osteomyelitis and usually occurs much later).

If the infection is left untreated, the patient may begin to feel hot and generally unwell due to the systemic spread of infection, which may require intravenous antibiotics and possible hospitalisation.

Documentation
Documentation of the percentage of tissue types within the wound is a marker of wound improvement or deterioration, for instance, an increase in the amount of pink epithelial tissue would indicate a successfully healing wound.

Several systems exist to help nurses assess the tissue types in a wound including TIME (a theory that involves tissue management; control of infection and inflammation; moisture imbalance; and advancement of the epithelial edge of the wound (Schultz et al, 2003), and applied wound management (AWM), a method of wound assessment and documentation that seeks to facilitate clinical decision-making, communication between health professionals, and clinical audit (Gray et al, 2005).

STEP 2: AGREE TREATMENT OBJECTIVES
Once a full assessment has been carried out, a plan of care needs to be established for the actual management of the wound, which — depending on the type of wound — may include a period of debridement; a choice of various dressings (dependent on the amount of exudate being produced, the presence of infection, whether compression is required, etc), and/or the use of advanced technology such as negative pressure wound therapy (NPWT), which uses a vacuum to promote negative pressure at the wound site, removing exudate and increasing blood flow to the area.

Any plan should address all the health and/or social factors that may be affecting wound healing, e.g. nutritional status and pain (Table 2). Treatment objectives should be agreed following discussion with the patient (Ousey and Cook, 2012) and focusing on his or her stated needs with regard to the wound’s management, for instance, patients with a leg ulcer and lower limb oedema will require compression therapy, but they may prefer a four-layer bandage, a two-layer bandage or a two-piece stocking kit, which offer differences in compression but also comfort and wearability (see also section on Wound dressing selection below).

STEP 3: REFER TO SPECIALISTS
Following wound assessment, nurses should be able to recognise any limitations in their wound care knowledge or skill, and if necessary refer the patient for specialist input (Eagle, 2009).

There is no such thing as a ‘simple’ wound and all wounds can become ‘complex’ if not managed correctly (i.e. where the wound is not healing within the expected timeframe).

For the inexperienced community nurse it may be that referral to a more senior colleague is appropriate after the first patient visit, particularly where there might be unusual or unexplained changes in the wound, e.g. spreading infection or cellulitis; or changes in the colour or vascularity of a limb. Similarly, the wound may require skills that the community nurse simply does not possess, for example sharp debridement, knowledge of specialist dressings, or the ability to apply complicated compression bandaging.

Other colleagues that the community nurses may need to refer to include:

- Tissue viability: for advice on complex wound problems or wounds that are failing to progress
- Diabetes/podiatry: for diabetes/footwear-related ulceration on the foot

Figure 6.
A wound demonstrating severe infection.
Kickstart wound healing with PICO

- New PICO Multisite softport dressing makes therapy more accessible for wounds in awkward areas¹
- Pioneering design improves fit and seal to anatomical areas such as heels¹

www.smith-nephew.com/wound

Reference
Vascular specialist: either a vascular consultant for concerns about the circulation itself; or leg ulcer/vascular nurse specialists
Leg ulcer specialist: for advice on lower-limb ulceration and oedema, particularly compression
Dietitian: where there is concern about the patient’s intake of essential nutrients to enhance healing; or where the patient needs additional energy and nutrients, i.e. these can be lost where there are high volumes of exudate leakage
Dermatology: for advice on skin conditions, rashes and contact allergies
Continence nurse advisor: for continence assessments and management, including body-worn incontinence products (such as penile sheaths), and/or advice when urine/faeces are contaminating the dressing
Lymphoedema specialist: for the assessment and management of chronic oedema, which can lead to/exacerbate lower-limb ulcers. Oedema will often need to be brought under control before wound healing can occur.

STEP 4: WOUND-DRESSING SELECTION

Dressings are designed to work with the wound to create the optimum environment for healing, therefore failing to choose the right dressing can unnecessarily delay the wound-healing process.

Accurate assessment of the wound’s position and size, exude volumes, and surrounding skin condition will also help community nurses choose the correct dressing. For instance, in the case of position, a sacral dressing will differ in shape from that of a dressing designed to be applied to a patient’s finger. Similarly, the wound’s size and depth will determine if a wound filler is required (such as an alginate dressing); a dry wound will require a moist dressing (such as a hydrogel); while a ‘wet’ wound will need an absorvent dressing (such as a foam).

Pain is also a factor in dressing selection (Young, 2007) and some dressings are specifically designed to address the issues of pain during application, wear time and removal (e.g. silicone dressings, cooling gel dressings or those that contain topical analgesia).

If an occlusive dressing (i.e. an air-tight adhesive foam dressing) is to be used, it is important to consider the fragility of the surrounding skin with regard to the type of adhesive incorporated into the dressing; i.e. many of the newer foam dressings use a silicone-based adhesive designed to be less traumatic to the skin on removal.

Interactive wound management products include alginates, foams, films, hydrocolloids, hydrofibres and hydrogels, and — depending on the stage of healing and tissue type — these will all help to create or maintain the optimum-healing environment (Collier, 2003). Some dressings also contain growth factors such as epidermal growth factor (EGF), or platelet-derived growth factor (PDGF), which stimulate the wound and help to promote healing. Then there are the newer technologies, including:

- Hyperbaric oxygen: this has several specific biological actions which can enhance the wound-healing processes, such as facilitating the hyperoxygenation of tissue and vasoconstriction
- Low-level laser therapy: a medical procedure used to treat pain and speed up wound healing using low-level lasers to alter the healing process at a cellular level. It is thought to diminish inflammation by reducing the number of cellular chemicals and enzymes linked to pain and inflammation
- NPWT (see explanation above).

It should be noted here that no one intervention will take the wound through to complete healing or epithelialisation, and that the nurse’s skills and patient’s ability and motivation to comply with treatment are also important healing factors, as are the patient’s particular comorbidities.

Community nurses should always follow the manufacturer’s instructions when using any dressing product, as well as adhering to local wound management policies.

STEP 5: REASSESS

Ongoing assessment and review are important to ensure that the correct treatment is being used to aid wound healing. A wound assessment chart that is filled-in at regular intervals would make this process clearer for nurses and help them to identify if a wound is improving, has become static, or is deteriorating over time.

A typical chart would include criteria such as wound measurement, percentage of different tissue types in the wound, volume of exudate, pain assessment, condition of surrounding skin, and any clinical signs of infection. The chart would also take note of any changes to the management plan, problems with the dressing, and frequency of dressing change.

Reassessing the wound completes the ‘plan-do-study-act’ cycle (Figure 1) and ensures an ongoing process until the treatment objective is achieved. As an example, if the wound dimensions of a leg ulcer were increasing despite following the treatment plan, this could be due to infection, underlying comorbidity or a change in the patient’s underlying condition.

The community nurse might consider whether the patient was receiving the correct compression; if he or she was complying with the chosen method of compression; or if a different compression system might be better tolerated. If in doubt, the community nurse should always consider referral to the relevant specialist, in this case a tissue viability specialist.

CONCLUSION

Accurate holistic assessment of the patient and the wound will provide the community nurse with an understanding of the wound itself, the patient’s specific needs and the primary treatment objectives. This will result in improved patient outcomes and reduced costs, both in terms of the patient’s quality of life.
Conversely, suboptimal care based on a poor assessment can lead to delayed healing, increased infection and inappropriate use of wound dressings, all of which impact negatively on the patient's quality of life.

### REFERENCES


Cutting KF, Tong A (2003) *Wound Physiology and Moist Wound Healing*. Medical Communications Ltd, Holsworth


### KEY POINTS

- Wound care forms a major part of any community nurse’s workload.

- With more acute patients being discharged earlier from hospital it is more important than ever that nurses are confident in assessing and care-planning effective wound care.

- As ever, accurate assessment of the patient and the wound is the starting point and will help nurses choose the most effective treatment.

- Poor wound care can lead to delayed healing, increased infection and inappropriate use of wound dressings, all of which impact on patients quality of life.

- In this article, the author outlines five main steps to consider in providing evidence-based, effective wound care.

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