Wound care in the community: infection, exudate and conformability

Tracey Morgan

Community nurses require a wide skill set to deal with the variety of clinical presentations they meet in any given day. This includes wound care, which can present nurses with a range of management challenges, i.e. how to combat infection, which kind of dressings to use to control exudate volume and how to ensure that dressings provide patient comfort and do not further damage the wound or skin on removal. It is important, therefore, that community nurses have access to a range of versatile products that can be used in a variety of clinical situations and which are also cost-effective. This article examines some of the common wound care issues that community nurses can face, as well as looking at how a versatile wound dressing (Durafiber® Ag; Smith & Nephew) — which has a variety of applications in primary care — can help with some of these issues.

KEYWORDS: Wound care, Infection, Wound coverage, Exudate

Unlike in the hospital setting where nurses are often able to draw on a number of fellow expert professionals when presented with a particular clinical problem, in the community, nurses are more isolated and may be forced to make clinical decisions alone and without access to specialist opinion (Queen’s Nursing Institute [QNI], 2009).

Nowhere is this truer than in the realm of wound care, where treatment choice can have a serious effect on healing and nurses often have to make ‘on-the-spot’ decisions (Hallett et al, 2000). Whereas the inpatient nurse may have access to onsite infection control teams, tissue viability specialist nurses, link nurses and various medical specialties such as vascular, plastic surgery, surgical, etc, the community practitioner may have to act alone to identify and commence treatment in a range of wound complications — infection; excess exudate; correct dressing choice, to name but a few — without immediate recourse to wound care specialists. This was backed up by research from Drew et al. (2007), which found that over 70% of wound care was carried out in the community.

Similarly, while the inpatient nurse may have an in-depth knowledge of a particular specialty, the community nurse is required to have a wide understanding of many subjects — including different wound types and their treatments, ranging from burns, the compression therapy required in leg ulcers, through to the intensive techniques involved in managing diabetic foot ulcers, for example (Mahoney, 2014).

This article examines some of the common wound issues that the community nurse may have to assess and diagnose such as excess exudate, infection and patient concordance (Mahoney, 2014). The author also looks at a versatile wound dressing (Durafiber® Ag; Smith & Nephew), which has a variety of applications in primary care and can form a useful part of the community nurses’ wound care toolkit (Table 1; Figure 1).

WOUND CARE IN THE COMMUNITY

Due to the wide range of wound types seen in the community, it is important that community nurses have a working knowledge of some of the more common symptoms and/or problems that they are likely to encounter. However, with wound care being just one element of the extensive knowledge base required by community nurses, it can be hard to keep abreast of the latest developments and techniques (Nash Greally and Wardick, 2013). It is, therefore, crucial that community nurses have access to clear and concise wound care information, which will not only improve their knowledge of innovative equipment and techniques (Dowsett, 2009), but also make sure that patients continue to receive evidence-based care in order to prevent and manage complications.
Wound types commonly found in the community

Community nurses may be called upon to deal with a range of wounds in the community, including:
- Leg ulcers
- Pressure ulcers
- Diabetic foot ulcers
- Surgical wounds
- Traumatic wounds
- Donor sites
- Partial thickness burns
- Fungating wounds.

However, by far the most common wounds seen by community nurses will be chronic wounds that are struggling to heal, particularly, pressure ulcers, diabetic foot ulcers and venous leg ulcers (Health Service Executive, 2009). These wounds can involve ongoing treatment, and, while they all have their own particular treatment requirements, for example, leg ulcers require compression bandaging, pressure ulcers require regular repositioning etc, there are some issues that are common to all which community nurses need to identify and address, including:
- Infection risk
- Excess exudate production
- Ensuring that dressing choice is conformable and does not cause trauma or pain at dressing change.

Infection

It is normal for a wound to be contaminated with a certain number of organisms and most wounds go on to heal despite this (Butcher, 2013). However, understanding when a wound is about to become infected is not easy, as there is no ‘set’ number of bacteria for a wound to become infected. A diagnosis of wound infection is usually based on the presence of ‘classic’ signs and symptoms (Butcher, 2013; Cutting and Harding, 1994; World Union of Wound Healing Societies [WUWHS], 2008):
- Erythema (red skin colouration, resulting from capillary congestion and often due to inflammation)
- Wound pain
- Swelling
- Feeling of ‘warmth’ in the tissues
- Purulent wound discharge
- Malodour
- Fever.

There are a number of stages that lead to a wound becoming infected, which involve a delicate balance between the amount of bacteria present and the ability of the patient’s defenses to fight off infection (Butcher, 2013):
- Contamination: the presence in the wound of low numbers of bacteria
- Colonisation: the absence of effective patient defenses, which means bacteria can multiply
- Critical colonisation: where the numbers of bacteria begin to impact on wound healing.

Many bacterial species can be involved in wound infection, with one study of 676 post surgical patients who had clear signs and symptoms of wound infection identifying a number of different bacterial strains, the most common being (Giacometti, 2000):
- *Staphylococcus aureus* (191 patients)
- *Pseudomonas aeruginosa* (170 patients)
- *Escherichia coli* (53 patients)
- *Staphylococcus epidermidis* (48 patients)
- *Enterococcus faecalis* (38 patients).

Table 1: What is Durafiber Ag?

Durafiber Ag is an absorbent, non-woven, silver-containing antimicrobial gelling dressing designed for use in a range of wounds, including chronic and acute, full thickness, partial thickness, or shallow granulating exuding wounds. For the community nurse who has to deal with a wide range of wounds, Durafiber Ag’s versatility is an asset, particularly as it can be used on the following:
- Leg ulcers
- Pressure ulcers
- Diabetic ulcers
- Surgical wounds
- Traumatic wounds
- Donor sites
- Partial thickness burns
- Tunnelling and fistulae wounds
- Wounds left to heal by secondary intention
- Wounds prone to bleeding, such as those that have been surgically or mechanically debrided
- Fungating wounds.

While Durafiber Ag assists in the management of wounds prone to minor bleeding, it is not intended to be used as a surgical sponge in heavily bleeding wounds.
When a wound becomes infected, this not only affects the patient negatively, but also has a deleterious effect on healthcare budgets, leading to higher treatment costs and rising numbers of inpatients (Cook and Ousey, 2011).

**Antimicrobial dressings**

Butcher (2013) points to guidelines on the management of wound infection (European Wound Management Association [EWMA], 2006; WUWHS, 2008), which suggest that topical antimicrobial dressings are useful in reducing wound bioburden. These dressings work in a variety of ways — some incorporate ingredients that interrupt the ability of bacteria to thrive; some are poisonous to cells; others ‘bind’ bacteria to the dressing, which is then removed at dressing change.

Studies have recommended antimicrobial agents such as iodine, silver, honey and polyhexamethylene biguanide (PHMB) and these are considered to be the first line of treatment in wound infection (Cooper, 2004), particularly as they act against multiresistant organisms such as meticillin-resistant *Staphylococcus aureus* (MRSA) (Sibbald et al, 2001) and do not effect the ‘healthy’ bacteria in other parts of the body, such as the gut.

**Silver**

Studies have shown the positive effects of silver as an antimicrobial in wound care (Gottrup et al, 2013). Essentially, silver destroys bacterial cells by disrupting the cell wall and causing cell leakage (Butcher, 2013). It also eliminates a wide range of bacteria, including antibiotic-resistant species such as MRSA and vancomycin-resistant Enterococci (VRE) (Parsons et al, 2005).

The use of silver in the manufacture of Durafiber Ag means that it provides antimicrobial action for up to seven days (in vitro) against a broad spectrum of common wound pathogens.

**EXUDATE**

Wound exudate is the fluid that oozes from the blood vessels in a wound as a response to inflammation (Wolcott, 2012). For something that causes so many issues in wound care, exudate is both a natural and necessary part of healing, preventing the wound bed from becoming too dry and providing the much-needed nutrients that enable healing to progress, such as electrolytes, proteins and growth factors, as well as various cells including neutrophils, platelets, leukocytes and macrophages (White and Cutting, 2006; World Union of Wound Healing Societies [WUWHS], 2007).

*The use of silver in the manufacture of Durafiber Ag means that it provides antimicrobial action for up to seven days (in vitro) against a broad spectrum of common wound pathogens.*

However, if the wound produces too much exudate it can begin to cause problems, chiefly maceration (softening and breaking down of skin) around the wound (Beldon, 2014). Exudate can be a management problem for the community nurse — causing leaking and ‘heavy’ dressings — as well as discomfort and malodour for patients (Beldon, 2014).

Exudate also provides clues to the condition of the wound. Factors like the volume, colour, viscosity and odour of the exudate indicate potential problems such as bacterial load and infection (WUWHS, 2007). Dressings that have just been removed can also be examined for their level of saturation, which provides clues to how well the chosen dressing is managing and if healing is progressing — for example, an infected wound will leave a purulent residue in the dressing (WUWHS, 2007).

Community nurses should also discuss the state of exudate with patients, as they may be anxious about the volume or smell (Beldon, 2014).

Many dressings are designed specifically to deal with exudate, for example, some form a gel on contact with wound fluid that absorbs excess fluid, locks exudate away from the wound and provides a moist environment to support autolytic debridement.

Any dressing required to absorb exudate requires some of the following characteristics (Adderley, 2008; Stephen-Haynes, 2011):

- High absorbency, thereby reducing dressing frequency
- The ability to ‘lock away’ exudate within its structure
- Ability to be used under compression bandaging
- Easy to remove, thereby minimising trauma and pain at dressing changes
- Conformity to the wound site.

Durafiber Ag is specifically designed to form a gel on contact with wound fluid, absorbing excess exudate, and ‘locking’ it away from the wound (Dowler, 2010). This provides a moist environment to support autolytic debridement (Myers, 2012) and means that the dressing conforms to the wound bed (Forlee et al, 2014).

**ADDITIONAL DRESSING CHARACTERISTICS**

The following factors need to be considered by community nurses when choosing a dressing that will protect the full extent of the wound area.

**Conformability**

The conformability of a dressing — or how well it ‘fits’ the wound site and is able to deal with elements such as pain on removal, leakage, patient positioning and ‘wear and tear’ — is crucial, particularly as no one wound is the same. Wounds can be a range of sizes, depths, in different anatomical positions, as well as forming cavities or skin flaps where exudate and bacteria can collect, greatly increasing the risk of infection (Bowler et al, 2010).

**Coverage**

Dressings also need to provide adequate coverage of the wound bed, both to promote a moist wound healing environment, and prevent
CASE STUDY

Elaine Forster, community staff nurse, 5 Borough Partnership, Knowsley

This case study was undertaken to demonstrate the efficacy of Durafiber Ag on a clinically infected venous leg ulcer.

Patient
Patient A was a 61-year-old woman with a trauma wound to the gaiter area of her left leg. She had a history of underactive thyroid, previous venous leg ulcers and reports of multiple dressing allergies. She was referred to the leg ulcer clinic and an assessment confirmed venous aetiology.

Wound history
With regards to her latest venous leg ulcer, patient A had been self-caring for four weeks until a district nurse suspected wound infection. She was then admitted to hospital for a 10-day course of intravenous (IV) antibiotics. On discharge, she attended the local treatment room service and the wound was managed with absorbent dressings and crepe bandages. After three weeks however, she was referred to the leg ulcer clinic.

Wound assessment
At presentation at the leg ulcer clinic, patient A's venous leg ulcer exhibited 100% slough and was difficult to measure, being described as circumferential. She was also experiencing a considerable amount of pain, which required regular analgesia. The wound was infected and exhibited malodour with moderate volumes of exudate and erythematous surrounding tissue.

Wound progress
As mentioned above, in February and early March of 2014, patient A was at home and self-caring. Then on 10 March she was admitted to hospital and given IV antibiotics for a wound and leg infection. When she was sent home on 4 April the plan was that the district nurse would visit to continue the care programme for the venous leg ulcer.

Subsequently, on 11 April patient A attended the clinic treatment room and it was decided to use an absorbent dressing (Urgo™ Clean; Urgo Medical) and a crepe bandage to manage the wound.

On 9 May, patient A had an appointment at the leg ulcer clinic for assessment. The venous leg ulcer now had a circumferential length of 18cm and exhibited 100% slough. It was decided to use Durafiber and reduced compression. The dressing was to be changed at the twice-weekly home visits by the district nurse.

At a further visit to the clinic on 16 May, the wound was described as clinically infected. Patient A was experiencing increased pain, exudate and malodour. The care plan was, therefore, amended to include Durafiber Ag and reduced compression.

On 23 May, it was noted at the leg ulcer clinic that the symptoms were reducing. The team decided to continue with Durafiber Ag and reduced compression. Patient A was informed that she now only needed weekly attendances at the leg ulcer clinic.

On 13 June, she once again visited the leg ulcer clinic and it was noted that her symptoms were resolving further — there was no pain or odour and the ulcer had reduced, now comprising two smaller ulcers with 80% granulation tissue. Finally, on the last visit to the leg ulcer clinic, it was decided that the use of Durafiber Ag had resolved the symptoms to a point where it could be discontinued. This meant that patient A was able to start full compression, with the aim of facilitating complete healing.
leakage of exudate from the wound bed onto the surrounding skin (Davies and Rippon, 2010). Coverage can be an issue with some dressings, which shrink or expand when they come into contact with moisture such as wound exudate (Aramwit et al, 2010).

Pain and trauma at dressing change
Application and removal of dressings are also important considerations, both for ease of use for the nurse and to avoid unnecessary trauma to the wound bed and periwound skin.

Pain and damage to the fragile periwound skin are both considerations for the community nurse at dressing change (Hollinworth, 2002). Exudate can soak into a dressing and then cause trauma when it dries out and ‘binds’ to the dressing, causing problems on removal (Edwards, 2013). Dressings that have dried out while in place are one of the most common causes of wound pain (Bell and McCarthy, 2010). Other researchers have agreed with this, citing the most widespread causes of wound pain as dressings that have adhered to the wound bed, skin stripping through the use of dressings with adhesive borders, and maceration of the periwound skin through exudate leakage (Davies and Rippon, 2008).

Dressings with a variety of wound contact layers have been designed to reduce the amount of adherence to a drying wound (Thomas, 2003). These include soft silicons (Edwards, 2013) and gelling fibres, which retain moisture and lock in exudate on contact, thereby reducing the amount of trauma on removal (Greenwood and Grothier, 2012). Community nurses should consider any option that will improve the quality of life and reduce pain and trauma for the patient.

Similarly, a dressing that is easy to apply and remove will involve less nursing time than one that is more difficult to use (Davies and Rippon, 2010). Ease of removal and application, therefore, can have significant time and budgetary benefits and these, factors that community nurses should also consider when choosing a dressing.

With regards to patient comfort, the high integral wet strength of Durafiber Ag also means that it can be removed from moist wound beds and cavity wounds in one piece, thereby reducing trauma and pain (Dowler, 2010).

**Using Durafiber Ag in the community setting**

Like any other wound dressing, Durafiber Ag should be changed when clinically indicated, for example, where there is leakage or excessive bleeding. Community nurses should exercise professional judgement in assessing this.

Similarly, in the first stages of treatment, the dressing should be frequently inspected.

However, crucially for the time management of community nurses is the fact that once established as a treatment, Durafiber Ag can be left in place for up to seven days (Dowler, 2012; Forlee et al, 2014).

**See Table 2 for guidelines on how to apply Durafiber Ag (Dowler, 2012; Forlee et al, 2014).**

**CONCLUSION**

Community nurses require a wide skill set in order to deal with the variety of clinical presentations that they may encounter in any given day. This includes wound care, which can present nurses with a range of management challenges, including how to combat infection, which kind of dressings to use to manage exudate and how to ensure that any dressing provides patient comfort and does not further damage the wound or skin on removal. It is important, therefore, that community nurses have access to versatile products that can be used in different clinical situations, while also being cost-effective.

Durafiber Ag has a range of applications, including the ability to manage excess exudate and a composition that helps to ensure conformability and patient comfort (Dowler, 2010). Durafiber Ag also provides the ability to manage infection. It can also be left in place for a significant amount of time, crucial to the community nurse (Dowler, 2012). This means that for the busy nurse with a range of patients and clinical presentations, Durafiber Ag represents a useful addition to the clinical armoury.

**REFERENCES**


**Table 2: How to apply Durafiber Ag**

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cleanse the wound according to local clinical protocol</td>
</tr>
<tr>
<td>2</td>
<td>Select appropriate dressing size</td>
</tr>
<tr>
<td>3</td>
<td>Remove the Durafiber Ag dressing from pack, using a clean technique. Cut to shape if necessary.</td>
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<tr>
<td>4</td>
<td>Apply the dressing to the wound and allow for a 1cm / 1/3in. dressing overlap onto the skin surrounding the wound.</td>
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<tr>
<td>5</td>
<td>When using Durafiber Ag in deep cavity wounds, use whole dressings where possible and leave at least 2.5cm/1in. of each piece outside the wound for easy removal</td>
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<tr>
<td>6</td>
<td>Loosely pack deep wounds up to 80% capacity, as Durafiber Ag will expand on contact with wound fluid</td>
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<tr>
<td>7</td>
<td>Secure Durafiber Ag with a moisture-retentive dressing or other appropriate secondary retention</td>
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<tr>
<td>8</td>
<td>The dressing can be removed in one piece using sterile tweezers, forceps or a gloved hand</td>
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<tr>
<td>9</td>
<td>The dressing may adhere if used on lightly exuding wounds. If the dressing is not easily removed, moisten or soak the dressing in sterile saline to assist removal and avoid disruption of the healing wound</td>
</tr>
</tbody>
</table>
Five-minute test

Answer the following questions about this article, either to test the new knowledge you have gained or to form part of your ongoing practice development portfolio.

1 – What types of wounds are commonly found in the community?
2 – What constitutes an infected wound?
3 – What are some of the properties of wound exudate?
4 – Why is conformability important in a wound dressing?
5 – Can you explain why some dressings contain silver?


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Myers D (2012) The clinical and physical properties of DURAFIBER Ag, the moist wound environment and the autolytic debridement. Smith & Nephew, data on file


