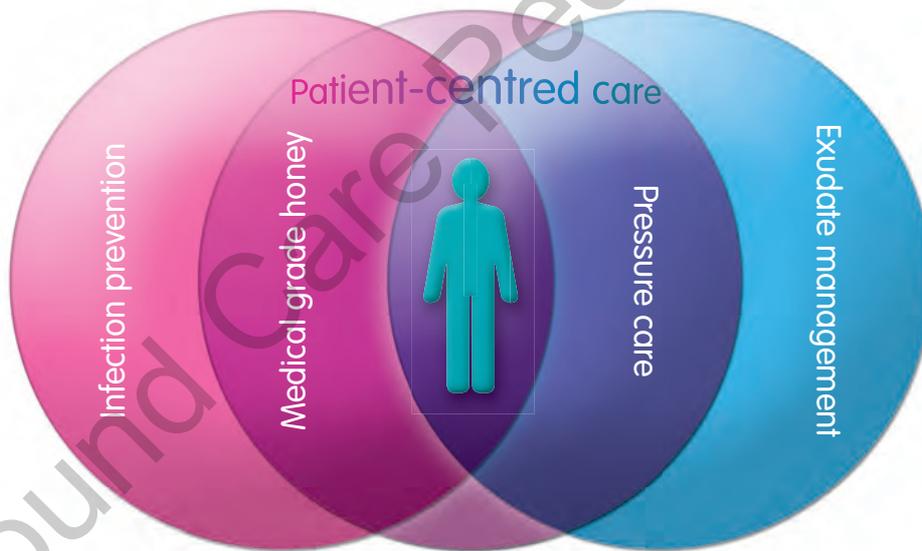


# Wound Care in the Community



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## Welcome to wound care in the community

I am delighted to introduce the JCN supplement, 'Wound Care in the Community', that focuses on the importance of providing patient-centred care. Community nurses are uniquely placed to provide such care because the environment is the patient's own home. It is known that patient participation in the development of their own care plans can improve patient outcomes and promote wound healing rates.



Wound care is not without its challenges in the community setting, where management of heavy exudate, and timely detection and prevention of infection can be difficult. Clinical decision-making in community-led wound management needs to be based on best practice guidelines and evidence-led, as well as specific knowledge of wound care products and their properties. Hence, keeping abreast of the latest wound treatments and techniques is pivotal to the provision of patient-centred care.

This supplement provides a clinical practice update on honey dressings; how to manage exudate using a hydrofiber dressing; an overview of care pathways in pressure ulcer care, as well as examining the benefits of appropriate dressing choices in nursing and care homes. It also looks at infection prevention and control measures that can be used in the home to minimise the risk of infection, as well as being a means of decontaminating the body before elective surgical procedures. I hope that you enjoy reading the supplement.

Kate Arkley, *clinical nurse specialist, tissue viability, Galway, Ireland; editorial board member, Journal of Community Nursing*

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## IN BRIEF

- There is an array of medical grade honey-based wound products available to community nurses.
- Honey dressings have multifactorial actions, being described as 'all-in-one' dressings for effective wound bed preparation.
- Evidence and information needs to be made available to patients and colleagues to inform choice and develop patient-centred care.

## KEYWORDS:

- Medical grade honey
- Patient-centred care
- Quality of life
- Action of honey dressings
- Evidence-based practice

# Medical grade honey: an effective dressing option for community settings

Julie Evans, Julie Scattergood, Elena Strinati

This article provides community nurses with the information required to make an informed choice in using medical grade honey as an effective wound management option to achieve positive outcomes.

Advances in wound care technology are continually progressing; however, this ultimately leads to more choice and can lead to more confusion. In recent years there has been resurgence in the use of honey as a topical treatment for a wide range of wounds (Table 1), resulting in it being a first-line product in some health organisations. This has led to a growing body of literature promoting the use of honey-based products in wound care. These demonstrate honey's efficacy, cost-effectiveness and positive record of safety in the community setting. However, some authors argue that the evidence available is of low quality (Moore et al, 2001). This argument could have occurred since the research projects were based on small clinical studies, as opposed to being a reflection on the effectiveness of honey itself. Overall, evidence of honey's proven effectiveness suggests that medical grade honey products have a definite

place in the wound care tool box for community nurses.

## SOURCE OF MEDICAL GRADE HONEY

In the UK, the most widely used medical honeys are sourced from New Zealand and Australia and are formed by bees feeding on the *Leptospermum scoparium* plant. This plant is a variety of myrtle and is also known as Tea Tree, Manuka, Goo Bush and Jelly Bush (Thompson, 1989). The concentration of honey can vary from wound dressing product to product, which can affect the dressing's antibacterial potency and efficacy. To ensure that it best meets the desired clinical need, community nurses should consider the

Are you using honey as a wound care dressing? If yes, have you considered the evidence underpinning the use of honey and the range of products available?

strength of the honey concentration when choosing a honey dressing. Honey for wound care is available in a variety of forms such as liquids, ointments and impregnated into tulle/ nets, hydrocolloids, foams, hydrogels, alginates in order to ease application for different wound types. Community nurses need to be aware that not all medical grade honeys are 100% honey, as some are mixed with carriers and the

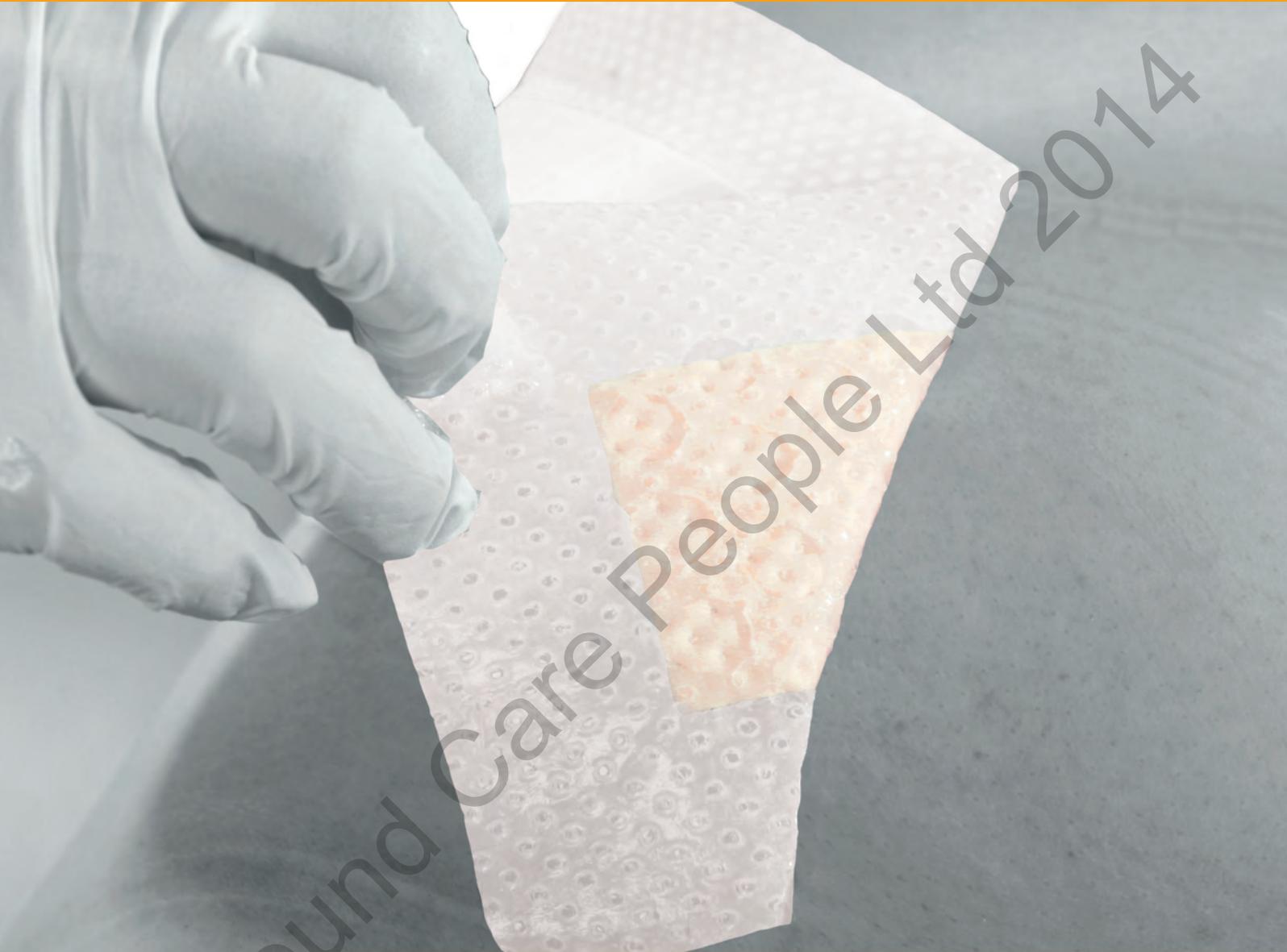
## THE SCIENCE

Only medical grade honey is registered as a pharmaceutical or medical device, and, therefore, can be used for the purposes of wound management. Honey is a composition of water and sugars in the form of glucose and fructose, protein, fatty acids, trace minerals and vitamins (White, 1978). Medical grade honey will have been sterilised by gamma irradiation, offering a standardised antibacterial activity. Regulation ensures that medical grade honey is free from impurities, synthetic pesticides and bacterial microbes. For example, the bacterial spores *Clostridium botulinum* exist in the soil, air, dust and raw agricultural products in which honey is produced. The sterilising process removes the risk of *Clostridium botulinum* contaminating the final honey product and making it detrimental to the patient's health.

Julie Evans, tissue viability nurse, Abertawe Bro Morgawwg University Health Board, Swansea; Julie Scattergood, sister; Elena Strinati, staff nurse, both at Aneurin Bevan University Health Board

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**Table 1:** Wound types appropriate for honey dressings

- ▶ Chronic ulcers (diabetic, venous leg, pressure)
- ▶ Infected wounds
- ▶ Necrotic wounds
- ▶ Sloughy wounds
- ▶ Malodorous wounds
- ▶ Donor and recipient graft sites
- ▶ Burns
- ▶ Surgical wounds
- ▶ Superficial wounds

concentration of honey within these applications can vary from 20–100%.

### ACTION OF MEDICAL GRADE HONEY

Medical grade honey products are an excellent resource for community nurses because of the multifactorial actions that the dressings provide, often leading to them being described as ‘all-in-one’ dressings for effective wound bed preparation. These include:

- ▶ Antimicrobial action
- ▶ Deodorisation
- ▶ pH-modulating agent
- ▶ Debridement
- ▶ Anti-inflammatory action
- ▶ Scar reduction
- ▶ Stimulation of new tissue growth (angiogenesis)
- ▶ Biofilm control effect
- ▶ Pain management.

#### Antimicrobial action

Honey has a proven broad spectrum of activity against many bacteria and

#### Red Flag Honey dressings

Do not use:

- ▶ On patients that have a known sensitivity to honey or any other component parts specific to each dressing (always check manufacturers’ information)
- ▶ To control bleeding.

And:

- ▶ Use with caution in patients who have a known allergy to bee venom.

fungi (Molan, 2005), which delay wound healing and can result in active wound infections. Some medical grade honey contains high levels of phytochemicals associated with antibacterial activity (Molan, 2001). Honey’s antibacterial property is attributed to the osmotic effect on its high sugar content and low moisture content (Weston, 2000; Khan et al, 2007; Mavric et al, 2008). By a process of evaporation and enzymatic action, sugar molecules in the honey bind up the water molecules, denying any microbes a fuel source for survival (Cooper, 2005). The enzyme glucose oxidase in the honey converts glucose to gluconic acid, making the honey too acidic for microbes to grow in (Weston, 2000; Mavric et al, 2008; Khan et al, 2007). The activation that oxidises glucose to gluconic acid also generates hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>). When diluted, this also creates an antimicrobial activity (Bang et al, 2003).

However, not all honeys, including Manuka honey, generate H<sub>2</sub>O<sub>2</sub>, instead they contain phytochemical components which produce the antimicrobial activity (Simon et al, 2009). Honeys that exhibit a standard antibacterial activity are confirmed by *in-vitro* testing methods (Bang et al, 2003).

#### Deodorisation

The antimicrobial action of honey has a positive effect in eradicating malodour in wounds by removing the bacteria that potentially create it. Having a wound that is malodorous can have far-reaching effects on an individual’s wellbeing, causing social isolation and distress (Persoon et al, 2004; Briggs and Flemming, 2007). Malodour, especially in malignant wounds, longstanding leg ulceration and deep pressure damage, is commonly due to the presence of necrotic tissue in combination with both aerobic and anaerobic bacteria within the wound, which can be, although not always, a result of infection (Bowler et al, 1999). This impedes wound healing (Enoch and Price, 2004).

Bacteria-producing malodorous substances are the result of amino acids being metabolised from decomposed serum and tissue proteins. However, this is when honey

### Practice point

Community nurses can be asked by patients with wounds if they can use honey to help their wound heal. It is essential that wound care is approached with a person-centred care philosophy that allows patients with wounds to be active partners in the planning, assessment and management of their wound care. This ensures that the strategies planned meet their needs and the collaborative approach results in better outcomes for patients. In this respect, community nurses need to educate patients in the importance of using medical grade honey and not honey bought every day from shop shelves.

is most effective, as its high glucose content provides an alternative fuel source to the bacteria. This results in the bacteria metabolising the high glucose content in preference to amino acids in the body, thus suppressing odour and deodorising wounds rapidly (White and Molan, 2005).

#### pH-modulating agent

Chronic wounds fail to heal if the pH level in the wound environment is elevated. The surface pH of chronic wounds has been reported to range from 7.15 to 8.94 (Gethin and Cowman, 2008). Once medical grade honey, with a low pH of 3.5–4.5, is present in the wound bed, it has a localised effect, reducing the high pH in the wound to levels comparative with that of the honey, resulting in an environment more ideal for promoting wound healing.

#### Debridement

The reduction in pH also aids the body’s natural processes for debriding, assisting in the removal of necrotic tissue. Often wound types, such as pressure ulcers, leg ulcers, diabetic foot ulcers, contain necrotic or devitalised tissue which needs to be debrided rapidly to identify the extent of tissue damage. Literature suggests that medical grade honey is an effective debriding agent (Stephen-Haynes, 2004; Gethin and Cowman, 2009; Evans and Mahoney, 2013).

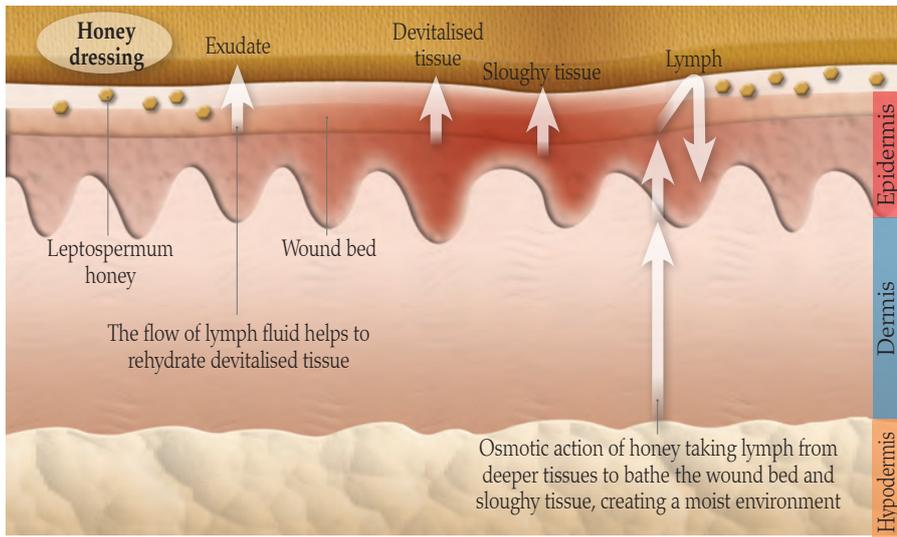


Figure 1. Osmotic action of honey.

The autolytic debriding action of honey comes from its ability to convert inactive plasminogen in the wound matrix to the active enzyme, plasmin (Molan, 2005). Honey helps debridement by creating an ideal moist wound environment to facilitate autolysis by drawing out lymph fluid from the wound tissues through its strong osmotic action (Figure 1). This osmotic action also rehydrates devitalised tissue (Gethin and Cowman, 2008). This offers a plentiful supply of plasminogen to the interface of the wound bed and overlying slough, washing the surface of the wound bed from beneath. The activation of proteases by  $H_2O_2$  also offers an explanation for the rapid debridement observed when honey is used (White and Molan, 2005). The debriding action of honey can be faster than other dressings (Molan, 2005).

### Practice point

Most chronic wounds are 'stuck' in a non-healing stage resulting in defective granulation tissue formation, and ultimate failure of the wound to progress through the proliferation phase of healing (Boyd et al, 2004). Faced with chronic wounds on a daily basis, the ultimate aim of community nurses is to develop a wound treatment plan that will 'kick-start' the healing process by providing an environment which encourages angiogenesis.

### Anti-inflammatory action

Inflammation is a normal response to injury or infection and makes up the early stages of wound healing (Hutchinson, 1992). A prolonged inflammatory reaction can inhibit healing, cause hypertrophic scarring, prolong discomfort, increase exudate and formulate chronic hard-to-heal wounds (Stephen-Haynes and Callaghan, 2011). The mechanism by which honey reduces excessive inflammation is not clearly understood. It has been suggested that it may be linked to the high levels of antioxidants contained in honey 'mopping up' free radicals (Molan, 2005).

### Scar reduction

The potent anti-inflammatory action created by honey appears to have no known adverse effects on cells and actually has the potential to stimulate tissue growth. The anti-inflammatory action of medical grade honey can reduce some scarring and contractions (Subrahmanyam, 2001). One explanation for this is that a prolonged inflammation phase causes fibrosis which manifests as hypertrophic scarring in wounds (Molan, 2005). If the inflammatory phase is interrupted by the anti-inflammatory action of honey, normal wound contraction occurs resulting in reduced scarring.

### Angiogenesis

Angiogenesis is the formation of new blood vessels resulting in renewed supply of new cells and a variety of growth factors and cytokines — these regulate the healing process.

### Practice point

During initial use of honey dressings, the high osmotic action may contribute to increased exudate volume, which could lead to maceration if the excess moisture is not managed appropriately. Manage additional moisture by adding an absorptive cover dressing and/or adjusting the frequency of dressing changes. This initially increases exudate in the short term. This should be clearly explained to the individual with the wound, who may well perceive the increase in exudate as deterioration in their wound.

Angiogenesis is stimulated due to honey's anti-inflammatory effect, which results in decreased oedema and a consequent decrease of pressure on capillaries allowing for improved blood flow and supply of oxygen to the regenerating wound tissues. Alongside this action, honey stimulates the growth of fibroblasts which are essential components in supporting normal wound healing (Bainbridge, 2013).

### Other actions of honey which effect the stimulation of new tissues

Hydrogen peroxide produced enhances cutaneous blood flow in ischaemic tissues and the stimulation of new tissue growth, which normally starts the healing process (Molan, 2005).

### Biofilms

The antimicrobial action of honey cannot be discussed without also considering its action on biofilms. Growing evidence supports the recognised link between the presence of biofilms in a wound to chronicity (Merckoll et al, 2009) and impeded wound healing (Phillips et al, 2010). Research has found that honey can prevent biofilm formation and in higher concentrations has the ability to break down established biofilms (Seckam and Cooper, 2013).

### Pain management

Literature suggests that the use of honey wound dressings may be painful due to acidity (Alswayeh and



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## Practice point

Individual pain should be considered when starting honey treatment. A clear explanation should be given to the patient as to the possibility of increased pain, this has been described as 'a drawing or stinging sensation' (Pieper, 2009). Pain levels may increase when starting the use of honey dressings, due to the initial increased osmotic action of the fluid being drawn out of the tissues and a reduction in pH on the wound bed. If the pain the individual experiences persists and cannot be managed with an analgesic, remove the dressing, cleanse area and discontinue use.

Ali, 1998; Jull et al, 2008) and osmotic action. However, there is a breadth of evidence disputing this claim (Dunford and Hanano, 2004; Gethin and Cowman, 2008), suggesting that honey products do not increase the pain experienced and can in fact reduce pain (Evans and Mahoney, 2013). Infection, size of the ulcer, chronicity of the ulcer or the type of honey used can influence pain experience (Betts, 2009).

### IS THERE A RISK OF ANTIMICROBIAL RESISTANCE TO HONEY?

The resurgence of resistant strains of bacteria such as meticillin-resistant *Staphylococcus aureus* (MRSA) or multidrug-resistant Gram-negative bacteria create a risk to antimicrobials. This results in ineffective prevention and treatment of an ever-increasing range of wound infections caused by bacteria, parasites, viruses and fungi (World Health Organization [WHO], 2012). This can jeopardise patient outcomes (European Wound Management Association [EWMA], 2013).

Trials to date have demonstrated honey-resistant strains of bacteria cannot be isolated at present (Blair et al, 2009; Cooper et al, 2010). Although the results suggest that the development of future bacterial strains that are resistant to honey is unlikely, they do not exclude this possibility.

As with any topical antimicrobial, it is essential that community nurses appropriately choose honey based on a patient-centred holistic assessment of the individual's wound, with the goal of preventing and eradicating infection and promoting wound healing (Best Practice Statement, 2013).

### CONCLUSION

This article demonstrates that honey has a multifaceted effect with the ability to encourage autolytic debridement, reduce odour and inflammation and act as an antimicrobial, while providing an ideal medium to promote a moist wound healing environment.

When community nurses choose a honey dressing, they need to be assured that the honey is of a medical grade, is registered as a medical device and is safe to use. They need to consider that the variety of honey-based wound dressing products available offer different concentrations of honey and have different consistencies for use in different wound types. Importantly, community nurses need to identify that the medical honey chosen has an evidence base which supports the manufacturer's claims. Additionally, supporting research and information should be made available to patients and colleagues in order to inform choice and develop patient-centred care. This ensures that the practitioner delivers the most appropriate care for the patient in the community setting. **JCN**

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Top tips:

- ▶ Medical grade honey products can be used in varying stages of wound healing. Do not leave it too late to start using honey on a wound.
- ▶ If there is no response to treatment after 14 days, an alternative approach should be considered.
- ▶ Only honey that has been regulated as being medical grade honey should be used as a wound care product.
- ▶ Consider what quality each dressing contains in order to achieve a desired therapeutic effect.
- ▶ Choose the appropriate method of delivery for different wound types (i.e. use the ointments or gels in cavity wounds to ensure that the honey is able to reach the wound bed).
- ▶ If used (i.e. not an already combined dressing) ensure that the secondary dressing will control the exudate volumes produced by the effects of the honey. However, do not use too high an absorbent dressing, otherwise you risk absorbing the honey into the secondary dressing before it has a chance to spread onto the wound bed.
- ▶ Change the dressings frequently enough to prevent the honey being washed away or excessively diluted by wound exudate.
- ▶ When using honey to debride hard eschar, scoring the eschar may allow better penetration of the honey.
- ▶ Protect the skin around the wound to avoid maceration. Apply a skin protectant barrier wipe or barrier ointment. (An initial increase in exudate may occur as a result of the highly osmotic effect of honey.)
- ▶ Choose a honey dressing that is appropriate to the exudate volume.
- ▶ Expect an initial increase in fluid — which should subside after the initial osmotic action. In the community setting, this may result in a planned increase in dressing changes for a short period of time, or use of a secondary dressing.
- ▶ Excess heat may inactivate the glucose-oxidising enzyme in honey. Use products as per manufacturers' instructions and do not heat products to increase flexibility, as body temperature should be adequate to achieve this action.

Case report



Figure 2. 9 June 2014.



Figure 3. Two weeks after applying Actilite.

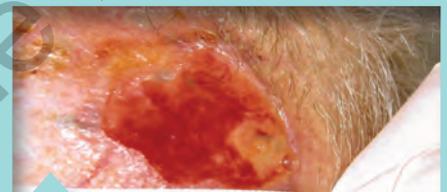


Figure 4. Three days after applying Algivon Plus.



Figure 5. Further improvement.



Figure 6. Wound noticeably shrinking.



Figure 7. Wound almost healed.



Figure 8. Healed wound after eight weeks' treatment with honey dressings.

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This 92-year-old male patient fell in September 2012 and sustained a wound to his forehead. The wound did not show the usual signs of healing and the GP suspected squamous cell carcinoma (SCC). In November, an urgent dermatology referral was made as the wound was increasing in size and depth. A biopsy was taken in May 2013, with the result confirming a diagnosis of SCC and the patient was referred to the maxillofacial unit. In July 2013, the carcinoma was removed and a skin graft applied, which unfortunately did not take. The patient continued to visit the maxillofacial unit three times a week and various silver dressings were applied. In March 2014, the patient's care was transferred to his local community hospital and dressings continued to be applied as suggested by the maxillofacial unit. In April 2014 the patient was reviewed by the tissue viability nurse and the outpatient wound care leads. The wound had now been non-healing for 10 months, was prone to bleeding and gelatinous in appearance. The patient felt self-conscious due to the constant presence of a wound dressing on his forehead.

## Method

Following review by the tissue viability nurse and outpatient wound care leads, a silver dressing was applied for a further two weeks. However, as there was little response, the patient and his wife started looking for alternative treatments and with the support of the team asked the GP to prescribe a collagen wound dressing, which was applied for a subsequent two weeks. This dressing donated an increased amount of silver to the wound bed than the previously used silver dressings.

After another month there appeared to be little improvement and, therefore, a biopsy was requested to check for any residual/recurring carcinoma.

In May 2014, the team decided to start treatment with Actilite (Advancis Medical; 99% Manuka honey, 1% Manuka oil) to prevent infection while waiting for the biopsy result. This result showed no evidence of any cancer cells. After two weeks of using Actilite, the decision was made to change to Algivon Plus (Advancis Medical; 100% pure Manuka honey-impregnated alginate-based dressing, comprising 60% calcium alginate and 40% Tencel), as the dressing has more honey impregnated than Actilite and it was felt that this might accelerate the healing process. The range of honey dressings were listed on the health board formulary. The Advancis company representative provided education and training to the clinical staff, the patient and his wife on Actilite and Algivon Plus honey dressings, which included the mechanism of action and method of application and removal. The patient was seen weekly for dressing changes and monitoring of the wound's progress at the hospital outpatient department by the outpatient wound care leads and the tissue viability nurse. During this period, the wound was redressed twice-weekly, with the patient's wife completing the interim dressing changes.

## Results

After two weeks of using Actilite, the wound responded and appeared to be reducing in size and was less gelatinous and red in appearance. Further noticeable improvements were seen soon after changing to Algivon Plus. The wound's margins reduced further; granulation tissue was evident and there was no bleeding at dressing change. In early August 2014, after eight weeks of treatment with Manuka honey dressings, the wound healed and the patient was discharged (Figures 2–8).

## Discussion

The collaboration of the outpatient clinical staff, tissue viability specialist nurse and company representative resulted in a positive outcome for this patient. He and his wife were wholly engaged with their treatment plan and with every dressing change felt buoyed by the improvements they could see in the condition of the wound. They found the honey dressings easy to apply. The patient was delighted with the outcome and has an improved quality of life now that his wound has healed and his face is dressing-free. This demonstrates the effectiveness of team-working, especially when the team extended beyond the healthcare personnel. Actilite and Algivon Plus Manuka honey dressings were well-tolerated, cost-effective and accelerated healing of this chronic wound.

## Conclusion

This case report demonstrates how collaborative working took an individual with a chronic wound that had been non-healing for just under two years to healed within eight weeks. At times, it is healthcare personnel that undertake decisions regarding wound management, however, in this case, the patient and his wife were equal partners in the care process and decision-making. The support from the industrial colleague was essential to ensure all were educated in the correct and optimal use of honey dressings. The patient's quality of life was positively affected, not only through the healing of the wound, but also by being involved in its treatment.

## IN BRIEF

- Wound fluid, or exudate, is a normal consequence of healing.
- Excess exudate can be a challenge to clinicians and cause distress, anxiety and embarrassment to patients.
- There is a risk of maceration and excoriation of surrounding skin.
- Comprehensive holistic assessment and appropriate dressing selection plays an important role in maintaining moisture balance locally.

## KEYWORDS:

- Exudate
- Moisture
- Quality of life
- Patient-centred care
- Alginate dressings

# Effective exudate management improves patient wellbeing

Jackie Griffin

Managing exudate volume is a key component of wound bed preparation but can prove challenging to clinicians, who are tasked with ensuring cost and clinical-effectiveness, as well as providing a positive patient experience which, in turn, will have a beneficial impact on the patient's physical, social and emotional wellbeing (Bianchi, 2013).

## WHAT IS EXUDATE?

Exudate is wound fluid produced by tissues surrounding the wound during the inflammatory phase of healing and is part of the body's natural response to tissue damage (Dowsett, 2008). Healthy wound fluid in acute wounds consists of:

- ▶ Essential nutrients
- ▶ White cells
- ▶ Enzymes
- ▶ Inflammatory mediators.

It is seen as part of the healing process, as by bathing the wound it creates a healthy moist wound environment to promote autolytic debridement of necrotic and sloughy tissue and the transportation of

essential nutrients for epithelial cells (World Union of Wound Healing Societies [WUWHS], 2007; Dowsett, 2011). It also prevents the wound bed from drying out, which would cause further deterioration. As the wound heals, the volume of exudate lessens.

However, in chronic wounds, such as venous leg ulcers, pressure ulcers and diabetic foot ulcers, the story is different, as exudate also becomes chronic, containing substances that are detrimental to and suppress the wound healing process (Dowsett, 2011). The fluid becomes unhealthy with high levels of inflammatory mediators and activated matrix metalloproteinases (MMPs), which can damage the wound bed and intact periwound skin (WUWHS, 2007; Menon, 2012).

There is also a corresponding rise in exudate volume, which, if not managed appropriately, can have a negative impact on patient wellbeing and quality of life (Beldon, 2014). Excess exudate not only saturates and damages the wound bed and periwound skin, which can increase the size of the wound (Dowsett, 2011), but also causes pain and discomfort, and potential embarrassment and inconvenience to the patient if it soaks through dressings and bandages. Such

strikerthrough increases the risk of infection, although it should be remembered that wound infection can also be the cause for an increased volume of exudate (Panca et al, 2013).

Thus, clinicians need to ensure that they undertake a comprehensive holistic assessment of the patient, as well as assessing the reason for any excess exudate, so that the patient receives a management plan tailored to their individual wound, preferences (e.g. dressing type) and lifestyle, which also provides the best outcome (Grothier, 2013).

## PATIENT ASSESSMENT

As well as assessing the actual wound, to ensure that care is patient-centred, holistic assessment of the individual should consider the psychosocial impact that a heavy volume of exudate might be having (Dowsett, 2008, 2011; Menon, 2014).

### Top tip:

Remember: patient preference is important and influences concordance with treatment, so clinicians should have a flexible approach and select dressings with which patients are happy.

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This added psychosocial dynamic arises because of:

- ▶ Soiled clothing
- ▶ Having to wash clothes and clean furniture more frequently (both practical and financial effects)
- ▶ Malodour
- ▶ Leakage of dressings
- ▶ Social isolation due to embarrassment.

Such factors lead to a loss of personal control and self-esteem. Patients may even become depressed and lose confidence in their healthcare provider (Moffatt et al, 2008; Ousey, 2013). Malodour, for example, may both deter them from socialising, a potential trigger for depression (Davies, 2012), and/or affect their appetite and result in malnutrition (Adderley, 2008).

It is important that clinicians listen and empathise with how the patient is feeling (Grothier, 2013), encouraging them to become involved and engaged with their own care so that they feel in control of their lives and involved in reducing or eliminating problems associated with excess exudate (Dowsett, 2008).

Patient assessment should also look at:

- ▶ Other comorbidities, e.g. congestive cardiac failure
- ▶ Medication
- ▶ Mobility
- ▶ Nutritional status
- ▶ Dressings used (Menon, 2014).

## EXUDATE ASSESSMENT

This involves assessing the volume, colour, consistency and presence of odour.

Assessing the volume of exudate is not easy in clinical practice and is only subjective, unless dressings are actually weighed before and after use which is neither accurate nor contributes to patient care (Benbow and Stevens, 2010). Assessing the frequency of dressing changes and if there is any strikethrough present are probably more appropriate ways of measuring the volume of exudate. The condition of the periwound skin, whether it is macerated and/or excoriated, is also a gauge as

to how well the current dressing is managing the exudate being produced (Vuolo, 2004).

The colour of exudate can vary according to its composition (Table 1), while its consistency can be thin and watery, or thick.

If there is malodour present, this could be a sign of infection, e.g. *Pseudomonas aeruginosa*.

## EXUDATE MANAGEMENT

The findings of comprehensive patient and wound assessment should guide treatment choice. The WUWHS (2007) maintain that effective exudate management should include:

- ▶ Treating any contributory/ underlying factors
- ▶ Improving patient quality of life (preventing and treating exudate-related problems)
- ▶ Providing a moist wound-healing environment
- ▶ Optimising the condition of the wound bed.

Taking these factors into account, as well as the patient's wishes, clinicians should choose the most appropriate dressing to manage the volume of exudate being produced, with properties that meet the following criteria (WUWHS, 2007; Dowsett, 2011):

- ▶ Being able to absorb and retain wound fluid
- ▶ Being acceptable to the patient
- ▶ Being comfortable to wear, without interfering with activities of daily living
- ▶ Being easy to apply and remove
- ▶ Reducing pain
- ▶ Reducing odour

### Top tip:

Successful exudate management goes a long way to minimising the psychosocial effects that chronic exuding wounds have on patients (Jones et al, 2008).

- ▶ Being clinically and cost-effective
- ▶ Being available in a variety of sizes.

Clinicians should be knowledgeable about the variety of dressings available, their fluid-handling capacities, if they can be worn under compression therapy (Vowden and Vowden, 2003), wear time, sizes available, patient comfort and if they adhere to the wound. Thus, once the patient's individual needs have been identified during the assessment process (including their concerns), the most appropriate dressing can be chosen (Benbow, 2008).

If excess exudate is not adequately controlled, this will result in delayed healing, which increases the risk of infection with a subsequent 'knock-on' effect on nursing time and dressing costs (Vowden and Vowden, 2003).

Ongoing assessment is also important, because as the wound heals, the volume of exudate will decrease and possibly necessitate a change in management plan (Dowsett, 2008; Timmons, 2008).

While there are many dressings available that offer standard care, with foams possibly being the most popular, there are now superabsorbent dressings which have added 'extras' to help improve the

Table 1: Significance of exudate colour (adapted from WUWHS, 2007)

Colour	Potential cause
Clear, amber	▶ Considered to be normal but can be associated with infection, such as <i>Staphylococcus aureus</i>
Cloudy, milky or creamy	▶ May be a sign of fibrinous exudate, as a result of inflammation, or infection, i.e. purulent exudate with blood cells and bacteria
Pink or red	▶ This is due to red blood cells and may be a sign of infection, underlying bleeding or trauma
Green	▶ May be a sign of infection, such as <i>Pseudomonas aeruginosa</i>
Yellow or brown	▶ May be the result of sloughy tissue or material from a fistula
Grey or blue	▶ May be due to the use of silver-containing dressings

## Did you know...

Alginate dressings are dry until they come into contact with the wound, whereupon they 'up-take' fluid into the space between their fibres, and into the fibres themselves, helping to absorb exudate. Once they have formed into a gel, alginates can also aid healing by promoting the growth of fresh epidermis (Timmons, 2009). The gel formed helps to stop the wound from drying out and aids debridement.

wound healing environment, offering more than just 'soaking up' wound fluid (Dowsett, 2011). For example, it has been recognised that hydrofiber and alginate dressings are suitable to wear under compression therapy and absorb exudate and form a gel which helps to reduce damage to the periwound skin (WUWHS, 2007).

Alginate dressings have also been found to have haemostatic properties (Kaneda et al, 2008), making them an appropriate choice if exudate is assessed as containing blood and serous fluid (serosanguinous) or pus (purulent).

They are also appropriate for treating deep, cavity wounds, as the gel they form is conformable, fitting with the shape of the wound (Timmons, 2009).

An example is Activheal Aquafiber® (Advanced Medical Solutions), which is designed to

### THE SCIENCE

Alginates are a 'natural' form of dressing manufactured from different types of algae and seaweed.

Alginate dressings can help autolytic debridement, as they maintain a moist wound environment where debridement is promoted through the body's own enzymes (Gibbs, 2010).

When an alginate dressing comes into contact with a wound, calcium ions are released. Calcium is a natural element in coagulation, which means that alginates can help to regulate blood flow in a wound (Timmons, 2009). Calcium also helps the wound by stimulating cytokines, which are needed for wound healing to occur (Thomas, 2000).

Table 2: Projected potential cost-savings from introducing an alginate dressing\*

	Current hydrofiber dressing on formulary	Aquafiber			
		100% concordance	80% concordance	60% concordance	40% concordance
Two months	£8,036.15	£6,096.29	£6,484.26	£6,872.23	£7,260.21
Six months	£24,108.45	£18,288.87	£19,452.79	£20,616.70	£21,780.62
12 months	£48,216.90	£36,577.74	£38,905.57	£41,233.40	£43,561.24
Annual saving		£11,639.16	£9,311.33	£6,983.50	£4,655.66
% of annual saving		24%	19%	14%	10%

\* estimates based on findings from a recent evaluation undertaken by the author in different wound care settings

absorb exudate vertically so that it is taken away from the wound, thus reducing the risk of damage to the periwound skin (Timmons, 2008); at the same time it reduces the lateral wicking of exudate, further preventing leakage and maceration. The dressing also has a high wet tensile strength, so that it can be removed intact without leaving any fibres in the wound (Kesteven et al, 2012).

However, while clinicians need to consider performance indicators of different products and choose the best care pathway for their patients, they also need to be mindful of costs and select treatments that offer savings without compromising quality. A recent evaluation of Aquafiber undertaken by the author in different wound care settings (GP-based wound clinic, Leg Club and in patients' own homes) found that by challenging their current practice and using a product similar to that already on the local formulary — in this case substituting Aquafiber for the formulary-recommended hydrofiber dressing — cost-savings could be achieved (Table 2) without diminishing the quality of care provided (see Case report). This was particularly true in

this case, as Aquafiber shares all the characteristics of a hydrofiber dressing and performs in the same way.

## CONCLUSION

Every patient needs to be treated individually, taking into account their preferences as well as any underlying comorbidities. There is no doubt that poorly controlled exudate volume can cause great distress to patients and thus products should be selected that have appropriate fluid-handling capacity and can protect the periwound skin, while also being cost-effective. In addition, in the author's clinical opinion, it is important that clinicians do not take a blanket approach to dressing selection, but explore and discuss all options with their patients. **JCN**

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## Case report

Mrs X was a 76-year-old patient with a previous history of peripheral vascular disease. She presented at her local Leg Club following a six-week stay in a community hospital, having been admitted for debridement of a necrotic wound and reconstructive vascular surgery.

At presentation she had a large ulcer which wrapped around the back of her right ankle across the Achilles tendon, measuring 20x7cm. The wound bed consisted of 90% green sloughy tissue with 10% granulation tissue and there was slight odour present. The periwound skin was also macerated, especially the lower edge. She also had two other areas of ulceration on the same leg — on the inner side of her calf measuring 1x8cm and on the bridge of her foot measuring 1x1cm. Due to a poor experience, Mrs X was wary about compression therapy and would only allow light bandaging to be applied at this stage.

Previously, she had been treated with a gel sheet to rehydrate the necrotic tissue and aid debridement, followed by a hydrofiber dressing that was on the local formulary.

As part of the evaluation process and after discussion and agreement with Mrs X, Aquafiber was used in place of the usual formulary hydrofiber dressing to treat the largest, longitudinal wound, while the smaller wounds were treated with simple foam dressings.

Four days later, Mrs X went to her local GP surgery to have her dressings changed. The attending clinician indicated on the evaluation data collection form that there was no change in the wound's condition. However, they were satisfied with the ability of the dressing to manage the volume of exudate being produced, and documented that the wound was still moist and the environment for healing had been maintained.

Mrs X was again treated at her local Leg Club three days later, where it was noted that there was less exudate on the dressing and a reduction in odour. The area of maceration was also reducing below the wound. Again, the clinicians indicated that they were satisfied with the dressing's performance.

At the next dressing change a week later at the Leg Club, the patient said that she had been concerned about leaving the dressing in place for so long, but had been reassured that she could contact the team at any time. The clinician was still pleased with the dressing's performance. All dressing changes were pain-free, although this may have been helped by the fact that the patient's leg was washed at the Leg Club, thereby easing removal.

A further seven days later Mrs X's wounds were again redressed. At this dressing change, the clinician commented that: 'Although there seems little reduction in the actual sloughy area, the overall picture shows improvement with a reduction in exudate and maceration, and the condition of the periwound skin has greatly improved...'

Ulcers to the lower leg are difficult to heal if it is not possible to apply compression. However, in this case, by using Aquafiber the clinicians were able to manage the volume of exudate effectively without causing the patient any distress or nurses having to make untimely visits. Mrs X is continuing to visit the Leg Club, not only to have her dressings changed, but also for the social aspect that it provides.

Throughout this evaluation, Aquafiber managed the wound well and after four weeks the clinicians were able to change treatment to a simple alginate dressing. The condition of the periwound skin also improved. More importantly, Mrs X's confidence has increased and she is now having compression therapy and the wounds are reducing in size.

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## IN BRIEF

- The UK has seen a rapid expansion in residential and nursing home care for elderly people.
- Care pathways ensure that members of the care team are aware of the treatment plan for a particular condition.
- Prevention of pressure ulcers in the community setting is paramount.
- Appropriate dressing choice is one of the key determinants in pressure ulcer outcomes.

## KEYWORDS:

- Pressure ulcers
- Nursing homes
- Infection
- Care pathways
- Dressing choice

# Treating pressure ulcers in a nursing home setting

Gloria Haycock, Florence Frantos

Throughout the UK there has been a rapid expansion in residential and nursing home care for elderly people, with a corresponding reduction in long-term hospital care (Hits, 2010).

Hythe Nursing Home accommodates 40 residents and last year a total of 59 patients were admitted (between August 2013—August 2014). Of these, six (10%) required chronic wound care. Many patients are admitted due to either a family crisis, for example loss of a main carer; falls; or following discharge from hospital after an acute illness.

Many residents are likely to have some degree of urinary incontinence or dysfunction linked to poor mobility and ill-health, and all of these factors increase the risk of pressure damage (Grey et al, 2006; National Institute of Health and Care Excellence [NICE], 2014a).

This article provides an overview of care pathways in pressure ulcer care, as well as exploring the benefits of appropriate dressing choice. The authors also examine the

management and treatment of two patients who were admitted requiring wound care for existing long-term pressure ulcers that had failed to improve over a significant period before admission.

The authors discuss the use of a new gelling fibre dressing (KytoCel®; Aspen Medical), which was used in the nursing home following advice and support from the local tissue viability team.

The authors have a special interest in wound care and ensuring that education and training is disseminated to other care home staff. Hythe Nursing Home has a proud record of achievement as detailed in a recent Care Quality Commission report, which highlighted the privacy, dignity and robust care pathways used in the home, as well as detailing how staff were prepared to refer to specialist care when required (Care Quality Commission, 2013).

## CARE PATHWAYS

As mentioned above, the authors' nursing home used care pathways to ensure the most efficient delivery of care for patients. Care pathways ensure that members of the care team are aware of the treatment

plan for a particular condition — in this case pressure ulceration — and have a clear, evidence-based management plan to follow.

According to the Welsh National Leadership and Innovation Agency for Healthcare (2005), a care pathway provides 'anticipated care placed in an appropriate time frame, written and agreed by a multidisciplinary team'.

A successful care pathway will provide clinicians with evidence-based standards that provide guidance on how to manage patients through the treatment of their specific condition, down to providing targeted clinical interventions that they are expected to implement according to the patient's progress. Following a clinical pathway also provides a mechanism for documenting the care given, as well as allowing for continuous quality improvement.

### Top tip:

Remember: care pathways are an excellent way of finding out about evidence-based treatment for a particular condition. Visit the NICE website (<http://pathways.nice.org.uk>) for a range of different care pathways...

*Gloria Haycock, lead nurse; Florence Frantos, lead nurse, both at Hythe Nursing Home, Hythe, Kent*

A successful clinical pathway will demonstrate that clinicians are working towards a set of standards, including (Welsh National Leadership and Innovation Agency for Healthcare, 2005):

- ▶ Multidisciplinary teamwork
- ▶ A single set of documentation
- ▶ Patient/user involvement in care
- ▶ Outcome-orientated care
- ▶ Treatment that has built-in audit
- ▶ The provision of up-to-date evidence-based care.

## PRESSURE ULCER CARE

In the UK, NICE (2014a) provides detailed guidance on the prevention and management of pressure ulcers.

Prevention of the development of pressure ulcers in the community setting is obviously the preferred scenario, both avoiding unnecessary suffering for the individual involved (Lyder and Ayelo, 2008), as well as ensuring that expensive admissions to hospital can be avoided.

In the nursing home setting, avoiding pressure ulcers is key, as many of the residents will be elderly with poor mobility and the development of pressure ulceration in these situations is regarded as indicative of poor care (Guy, 2010).

The NICE (2014b) pathway for pressure ulcer prevention includes a number of elements:

- ▶ Risk assessment: risk factors for pressure ulceration include significantly limited mobility; loss of sensation; a previous or current pressure ulcer
- ▶ Skin assessment: in patients who have been identified as at risk of pressure ulceration, a skin assessment is vital and should include colour changes or discoloration and variations in heat, firmness and moisture
- ▶ Care planning: it is vital to develop an individualised care plan for any patient at high risk of developing a pressure ulcer, including the need for additional pressure relief at specific at-risk sites, and taking account of patients' ability to reposition themselves
- ▶ Use of barrier creams: these can prevent skin damage in adults at

high risk of developing a moisture lesion or incontinence-associated dermatitis (IAD)

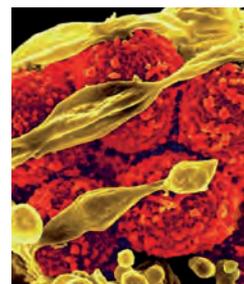
- ▶ Repositioning: encouraging patients at risk of developing pressure damage to change position frequently and at least every six hours
- ▶ Pressure redistribution: for example, the use of a high-specification foam mattress.

If a pressure ulcer does develop, NICE (2014b) also offers management guidelines and a pathway for clinicians to follow. This includes the steps below:

- ▶ Ulcer measurement and categorisation: the surface of all pressure ulcers should be measured and documented; pressure ulcers should also be categorised using the latest European Pressure Ulcer Advisory Panel (EPUAP), National Pressure Ulcer Advisory Panel (NPUAP) and Pan Pacific Pressure Injury Alliance (PPPIA) (2014) guidance
- ▶ Provision of nutrition and hydration
- ▶ Debridement: autolytic debridement (using an appropriate dressing) should be the first option, although sharp debridement can be used if autolytic debridement will prolong healing time
- ▶ Pressure redistribution: high-specification foam mattresses should be used in adults with a pressure ulcer, with dynamic support surfaces for those needing extra input. High-specification foam or equivalent pressure-redistributing cushions should be considered in those 'sitting out' for long periods
- ▶ Wound dressings: for those with category 2, 3 and 4 pressure ulcers, dressings should be chosen that promote a warm, moist wound healing environment. Pain, ulcer position, volume of exudate and frequency of dressing change should all be considered
- ▶ Systemic antibiotics: these should be offered if there is evidence of systemic sepsis, spreading cellulitis or underlying osteomyelitis.



## THE SCIENCE — WOUND CONTAMINATION



Loss of skin integrity such as that caused by a pressure ulcer can result in

a multitude of microorganisms such as bacteria (including meticillin-resistant *Staphylococcus aureus* pictured above), fungi, yeasts and viruses — known as the bioburden — being able to invade and contaminate the wound. If the body's own natural defences (mainly various types of white blood cells or leukocytes, such as neutrophils, lymphocytes and macrophages that attack bacteria and viruses) are unable to control wound bioburden, it overwhelms the immune system, resulting in infection.

Credit: NIH @ wikimediacommons

## THE PRESENCE OF MRSA IN NURSING HOMES

Unfortunately, the very nature of nursing and care homes provides an environment that promotes the development and spread of meticillin-resistant *Staphylococcus aureus* (MRSA), due in part to the close proximity of large numbers of elderly patients with multiple comorbidities (Hughes et al, 2013). Residents may also be receiving several different types of antibiotics and a significant proportion may have pressure ulcers and medical devices such as catheters *in situ*. This means that residents are at increased risk of colonisation and infection, so staff should be encouraged to develop an understanding of infection prevention and control strategies to limit MRSA transmission.

## MRSA IN PRESSURE ULCERS

According to Pirett et al (2012), pressure ulcers represent a significant

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## Did you know...

Risk assessment is a vital aspect of pressure ulcer prevention, and every patient should have a risk assessment undertaken within six hours of admission to hospital, or on first assessment in the community.

'reservoir' of MRSA in healthcare settings, with the strain being commonly identified in laboratory cultures taken from pressure ulcers (Roghmann et al, 2001).

This means that staff working in care homes need to have a comprehensive understanding not only of pressure development and identification, but also infection control and how infection can spread where large numbers of patients are cared for in close proximity, such as nursing homes.

Staff also require an understanding of the types of dressings needed to treat pressure ulcers in order to minimise the risk and/or development of infection.

## SUPPORTING PATIENTS AND FAMILIES

Bangova (2013) notes that the beliefs and opinions of individual staff can affect pressure ulcer prevention and, if staff members believe that they can control prevention, incidence can be reduced. Education is key, and nursing and care home staff should be trained in prevention and management. Using online training packages can be useful when resources are limited (Bangova, 2013).

Similarly, group or individual training sessions from tissue viability link nurses can be used for training nursing home staff, while support through regular meetings is also crucial (Bangova, 2013).

However, in the authors' opinion, if a patient does develop a pressure ulcer in a nursing home, it is also important to support the patient

## Case report 1

*This 81-year-old man was admitted to the nursing home in June 2012. He had experienced recurrent pressure ulcers for more than two years and his past medical history included a cerebral vascular accident (CVA) in 2008, and rheumatoid arthritis, which had left him bed-bound and incontinent.*

*He had undergone multiple admissions to the local hospital for recurrent urinary tract infections and vascular dementia was diagnosed in 2010, which caused him to have hallucinations. His wife, who was also the main carer, could no longer cope at home. Current medications included methotrexate, ferrous fumarate, codeine phosphate, donepezil and cefuroxime and he was also taking nutritional supplements. He was allergic to penicillin.*

*The main problem was a category 4 pressure ulcer on his left heel, that would show signs of healing but then repeatedly break down, despite a care plan including off-loading, frequent repositioning, dressing changes and nutritional supplements. He was referred to the tissue viability nurse and local GP in February 2014. A full Doppler assessment was carried out but no evidence of peripheral vascular disease was found and X-rays also excluded osteomyelitis. The recommendation of the tissue viability nurse was to use KytoCel® (Aspen Medical) as a primary dressing, with a secondary dressing of Mepilex® Border (Mölnlycke Health Care).*

*The nursing home staff continued off-loading the patient's left heel and he was prescribed additional nutritional supplements. On 5 February, the wound measured 4.2x4cm, probing to bone at a depth of 0.5cm (Figure 1 below). The surrounding skin was macerated, with a bleeding friable wound bed. KytoCel was applied and within 15 days the bone was no longer exposed, the surrounding skin was epithelialising, and clean healthy granulation tissue was noted (Figure 2). A wound care pathway was started, with all staff taking an active role. By 1 June, the left heel had completely healed (Figure 3).*

*Despite the initial bone exposure seen in the wound, there was no osteomyelitis. The infection risk remained high due to the patient's rheumatoid disease, however, the gelling fibre dressing incorporated antibacterial properties and promoted coagulation when the wound was bleeding and friable.*

*Despite the success of this treatment regimen, the patient continues to be a high risk and the nursing staff remain vigilant. However, at the time of writing, despite a two-year history of recurrent breakdown, this patient's heel has remained intact for 16 weeks.*



**Figure 1.** Patient's wound at presentation on 5 February, 2014.



**Figure 2.** Wound shows epithelialisation and granulation.



**Figure 3.** Healed wound on 1 June, 2014.

## Case report 2

This 94-year-old man had undergone a transurethral prostatectomy resection in 2009. Following this surgery he had ongoing problems with urinary and faecal incontinence and was wheelchair-bound. This led to the development of two category 4 pressure ulcers on the base of his spine and sacrum. He had a long-term self-retaining catheter in situ, and, unfortunately, experienced recurrent hospital admissions from home to hospital for urinary tract infections while multi-resistant strains of pseudomonas and meticillin-resistant Staphylococcus aureus (MRSA) were confirmed by blood tests and wound swab. He was admitted into the local hospital in October 2010 with rigors associated with pseudomonas contamination and bacteraemia attributed to his pressure damage and was given a course of intravenous (IV) antibiotics. Finally, At the end of this period, the patient's wife was unable to cope with his health needs despite community nurses visiting for day-to-day care, including the application of Aquacel Ag® (ConvaTec) for the bioburden and Allevoyn® Gentle Border (Smith and Nephew). Following a meeting with the patient and his wife, he was admitted into the authors' nursing home for long-term care.

The patient was referred to the tissue viability team on 30 June 2014, due to deterioration in his pressure ulcers. This was despite the implementation of a robust care pathway. The tissue viability team recommended the use of a gelling fiber dressing (KyroCel®; Aspen Medical), to be applied as a primary dressing. The aim was to reduce the wound's bioburden while maintaining a moist wound environment without causing trauma to the pressure ulcers. The patient was simultaneously prescribed erythromycin and metronidazole for a chest infection. A full care pathway of off-loading and frequent two-hourly turns was advised, as well as the use of a dynamic mattress with constant skin observations and hygiene. The patient finally agreed to be nursed in bed for the first time in four years.

Initially, the wound measured 9.5x7cm with significant necrosis and the wound bed was sloughy and very malodorous with heavy exudate. Dressing retention was difficult due to constant incontinence. However, by 5 August the wound measured 3x4cm — a reduction of 8cm — while the surrounding tissue had epithelialised with only a small area of sloughy tissue visible at the base of the spine.

At the time of writing this patient has shown significant improvement and has taken an active role in his pressure-relieving measures. The wound continues to reduce in size and the authors have every confidence that he will progress to healing, as demonstrated by a wound swab revealing that MRSA had been eradicated from the wound.



**Figure 1.** On 31 May, 2014 the patient had developed a category 4 pressure ulcer with moisture damage as a result of his double incontinence.



**Figure 2.** By 4 June, there was a visible reduction in necrotic tissue. Sorbaderm Barrier Cream (Aspen Medical) had been applied to the surrounding skin.



**Figure 3.** On 3 July, any necrosis had been removed from the wound bed and granulation tissue covered 70% of the wound, while the depth had decreased by 2cm.



**Figure 4.** Later, by 30 September the pressure ulcer had reduced in size by 8cm.

and family through what can be a distressing and confusing time. In the authors' nursing home there are open visiting hours and staff available to answer any questions, while families are encouraged to actively participate in decisions about their relatives' care. Staff also

provide written documentation regarding pressure ulcers.

As well as looking after the wound itself, it is important to treat the patient holistically, bearing in mind issues such as pain, quality of life (such as comfort; regular

provision of food and drink; environment etc), and flexible visiting times for family. In the authors' nursing home, the patients' next of kin were also present during consultations with the specialist team and were given the opportunity to ask questions.

## WHAT IS KYTOCEL®?

KytoCel is a highly absorbent dressing composed of natural, biodegradable acylated chitosan fibres, which bond with wound exudate to form a clear gel that locks-in fluid, absorbs pathogens and is conformable to the wound bed.

Chitosan is a naturally occurring polymer derived from the shells of crustaceans (Lee et al, 2009). Its positive charge allows it to interact with negatively charged molecules such as Gram-positive bacteria, blood cells, proteins, metals and lipids, which means that it has many applications in biomedicine (Lee et al, 2009) and wound management in particular.

The dressing's absorbency enables it to bind and lock away commonly encountered wound pathogens such as *Escherichia coli* and *S. aureus*, reducing wound bioburden and the risk of cross-contamination at dressing change (Li et al, 1992; Khor and Lim, 2003; Foda et al, 2007). It is also effective against commonly encountered wound pathogens such as *Candida albicans*, *Pseudomonas aeruginosa* and MRSA (Aspen Medical. Data on file. Antimicrobial activity of chitosan based dressing).

## CONCLUSION

Patients admitted from home or hospital for long-term care, come with a multiple of problems which have an impact on a their ability to heal, especially if they have had pressure ulcers in excess of two years or more.

While this may constitute a relatively small number of patients, the time and costs associated with their individual care can be high — treatment for pressure damage in the UK has been estimated as 4% of the NHS' annual expenditure — around £1.4–2.1 billion per annum (Bennett et al, 2004).

In these two case reports, the use of KytoCel as a primary dressing in treating category 4 pressure ulcers, in conjunction with a robust individualised care plan, demonstrated significant improvements. The first patient completely healed with no

further breakdown after 16 weeks. The second patient had MRSA in a wound that had failed to heal in four years but was reduced in size by 8cm.

Pressure ulcers continue to be a real challenge for nursing home residents and staff. However, with the right kind of training and support — and with the aid of recognised clinical pathways — staff can ensure that they are better placed to provide evidence-based care to residents. This will improve the quality of life of both residents and their families. **JCN**

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## Key points

- ▶ This article provides an overview of care pathways in pressure ulcer care, as well as examining the benefits of appropriate dressing choices in nursing and care homes.
- ▶ Pressure ulcers continue to be a real challenge for nursing home residents and staff.
- ▶ Many residents are likely to have some degree of urinary incontinence or dysfunction linked to poor mobility and ill-health, and all of these factors increase the risk of pressure damage.
- ▶ This article discusses a new gelling fibre dressing, which was used in the nursing home following advice and support from the local tissue viability team.
- ▶ With the right training and support, and with the aid of clinical pathways, staff can ensure that they provide evidence-based care to residents.
- ▶ Here, the use of KytoCel as a primary dressing in category 4 pressure ulcers, in conjunction with a robust individualised care plan, demonstrated significant improvements.

## IN BRIEF

- Infection prevention and control in the community setting can be challenging.
- Infection can not only have a negative impact on patient quality of life, but can also be potentially life-threatening.
- With more people with long-term/complex conditions being treated in primary care, principles of infection prevention/control are as important in the community setting as they are in the acute sector.

## KEYWORDS:

- Infection prevention and control
- Healthcare-associated infection (HCAI)
- Patient-centred care
- Skin decontamination

# Infection prevention and control in a community setting

Jackie Stephen-Haynes

Infection can have a devastating impact on patients' health and wellbeing and can even be potentially life-threatening (Swanson and Jeanes, 2011; Nazarko, 2014a). Thus, healthcare professionals have a duty to reduce the risk of infection regardless of cause and/or healthcare setting.

With the rise of antibacterial resistant organisms — so-called 'super-bugs' — this becomes more crucial, as these put a strain on NHS resources as well as negatively affecting patients' quality of life and wellbeing (Stephen-Haynes, 2014).

With the current shift of emphasis from secondary care to the community setting (Department of Health [DH], 2009), and with more patients being treated closer to home, healthcare professionals need to focus on preventing

**'... with more patients being treated closer to home, healthcare professionals need to focus on preventing and controlling infection and encouraging patients to self-care and follow aseptic techniques'**

and controlling infection and encouraging patients to self-care and follow aseptic techniques. In addition, the increase in the older population means that there are more patients with chronic, long-term conditions, which make them more vulnerable to infection (e.g. those with diabetes, pressure ulcers,

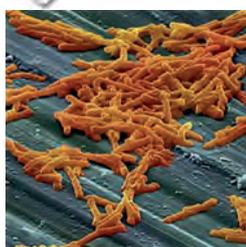
etc; Nazarko, 2014b), requiring care at home.

Ensuring that infection prevention and control measures in the community are effective poses a significant challenge. Previously, community nurses may not have had immediate access to infection prevention and control staff (Lawrence and May, 2003) and, while this has improved, it is still variable.

What is important is that healthcare professionals work with patients and their family/carer(s) to increase their awareness of infection prevention and control and educate and support them on the benefits of maintaining hygiene and cleanliness (Swanson and Jeanes, 2011).



## THE SCIENCE — INFECTION



Microorganisms such as bacteria, viruses, fungi, yeasts are all sources of infection which can live on people, animals, in the environment, and in food and water.

Healthcare-associated infections (HCAI) are no longer the preserve of hospitals but occur in any healthcare setting. This is due both to the changes in where care is delivered and microbial behaviour (Gould, 2005). One of the most commonly found HCAI in hospitals is methicillin-resistant *Staphylococcus aureus* (MRSA), and there are now strains of community-acquired MRSA. *Clostridium difficile* (pictured above) is another example, belonging to the *Clostridia* group of anaerobic bacteria.

Jackie Stephen-Haynes, professor and consultant nurse in tissue viability, Birmingham City University and Worcestershire Health and Care Trust

Credit: TCJ2nd @wikicommons

**Top tip:**

Remember: Following aseptic techniques prevents transmission of bacteria from wounds and other entry sites and reduces the risk of cross-contamination (Preston, 2005).

**PREVALENCE OF INFECTION**

The National Institute for Health and Care Excellence (NICE, 2012) have reported that around 300,000 people a year will acquire an infection associated with their time as an NHS patient. In 2007, meticillin-resistant *Staphylococcus aureus* (MRSA) and *Clostridium difficile* were reportedly responsible for some 9,000 deaths in hospital and community settings in England (NICE, 2012).

While improvements and awareness of good practice (including handwashing) have resulted in a drop in healthcare-associated infections (HCAI) — their prevalence was 6.4% in 2011 compared to 8.2% in 2006 (Health Protection Agency [HPA], 2012) — healthcare professionals still need to promote and practice good infection prevention and control techniques, particularly with the rise in antibiotic resistance threatening our ability to treat everyday infections and diseases (DH, 2013).

It has also been shown that around 20% of all HCAI could be avoided if correct infection prevention and control principles were rigorously followed (Harbarth et al, 2003).

**Did you know...**

Practices that can help to lessen the risk of developing SSIs aim to reduce the number of bacteria introduced to the incision made during surgery or the surrounding skin, for example, preoperative skin decontamination by showering with antimicrobial lotions to reduce normal skin flora.

The cost of HCAI to both the patient and healthcare provider are significant. They result in longer inpatient stays, increased nursing care after discharge and delay individuals from resuming normal activities of daily living — including going back to work — thus causing loss of earnings (Plowman et al, 2001; Harrington, 2014).

Twenty percent of all HCAI are made up of surgical site infections (SSI) (NICE, 2008). This figure could well be higher in reality, as many infections occur after patients have been discharged (NICE, 2008).

**Surgical site infections**

Surgical site infections have a significant impact on patients' quality of life in that they can cause pain, isolation and insecurity (Andersson et al, 2010), and can increase morbidity and mortality rates (Al Maqbali, 2013).

There are both intrinsic and extrinsic risk factors for developing an SSI. Intrinsic factors include:

- ▶ Age
- ▶ Active skin condition
- ▶ Being a smoker
- ▶ High body mass index (BMI)
- ▶ Other underlying comorbidities.

Extrinsic factors include:

- ▶ Poor/inadequate care practices pre-, peri- and postoperatively
- ▶ Operations lasting longer than expected
- ▶ Type of surgery — some procedures carry a high risk of infection, e.g. colorectal surgery
- ▶ Staff moving around in theatre
- ▶ Surgical drains
- ▶ Transplant or other operations.

While intrinsic factors are hard to control, healthcare professionals can take steps to reduce extrinsic factors. Although it is obviously not appropriate to advise patients on cleaning their own homes, unless the situation is extreme and referral to other health agencies is needed, e.g. local council and environmental agencies (DH, 2006), healthcare professionals can prepare patients ahead of hospital admissions/elective surgery by instructing them on good handwashing techniques and using skin disinfectants preoperatively.

**Practice point**

Infection spreads by bacteria, viruses or fungi infecting a vulnerable individual — this can either be through a portal of entry or because the person's immunity is low. The source of infection can be objects within the person's own home that have become contaminated or from another person, who may or may not be showing any signs of infection. The infection is then transmitted from one person to another.

**SOURCES OF INFECTION**

Sources of infection include bacteria, viruses, fungi and parasites.

**Bacteria**

These are single-cell organisms that live everywhere, including in and on the body. Human beings live in close contact with them and much of the time they cause no harm. However, they can infect the body, resulting in disease, such as streptococcal bacteria that cause sore throats and colds.

**Viruses**

These are far smaller than bacteria and need other living cells to grow and reproduce (their hosts). They multiply on entering the body and can cause minor illnesses such as common colds, gastroenteritis, influenza (flu), or more serious diseases.

**Fungi**

This group of organisms include yeasts, moulds and mushrooms. They prefer to live in damp, warm places. Some, such as edible mushrooms, are not dangerous, while others have been turned into drugs, such as penicillin. However, they can cause fungal diseases such as ringworm, athlete's foot and thrush, as well as more serious illnesses.

**Parasites**

These organisms live off other living organisms, their hosts, such as head lice, threadworms, tapeworms and can be transmitted from one host to another. They often cause water- or



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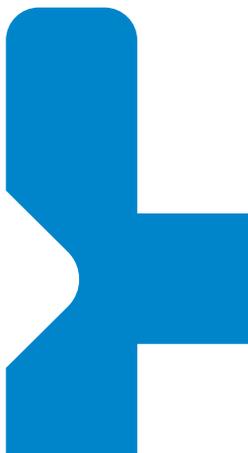


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## Practice point

Surgical site infections (SSIs) develop as a result of contamination of an incision with microorganisms from the patient's own body. Less common is infection caused by microorganisms from an outside source after surgery and most SSIs are preventable. Measures can be taken in the pre-, intra- and postoperative phases of care to reduce risk of infection. The strength of an SSI is influenced by the virulence of the microorganism that enters the body through the incision, and the ability of the patient's immunity to fight it off.

Source: NICE guideline — Surgical Site Infection: prevention and treatment of surgical site infection [www.nice.org.uk/guidance/cg74](http://www.nice.org.uk/guidance/cg74)

foodborne diseases. They range in size from very small, one-celled organisms, called protozoa, to worms that can actually be seen.

## INFECTION PREVENTION AND CONTROL MEASURES

With MRSA no longer being the sole preserve of hospital patients (Gould, 2009) and becoming more common in patients' own homes or nursing homes, community nurses need to be vigilant in preventing and controlling such outbreaks, known as community-associated MRSA or CA-MRSA. These infections are now also occurring in healthy individuals who have no intrinsic risk factors for developing MRSA (Higginson, 2010), thus making it even more important to take precautionary measures, such as stringent washing, to reduce infection risks.

In addition, with people spending less time in hospital and the increase in day surgery and subsequent transfer of patients between acute and long-stay care homes, community-acquired infections are likely to become more of an issue (Gould, 2009; Higginson, 2010). Procedures, such as catheter

insertion and removal, which were previously performed in a hospital setting, are now being routinely carried out in people's homes, again involving infection control risks (Higginson, 2010).

Of course, some patient groups are more susceptible due to their particular situations, e.g. those who are:

- ▶ Immobile
- ▶ Cognitively impaired
- ▶ Unable to look after their own personal hygiene.

**'... encouraging patients to prophylactically decontaminate their skin ahead of surgery with an antimicrobial wash lotion serves as a precautionary measure to ensure that infections are not carried into the hospital, as well as helping to avoid the risk of SSI post surgery'**

For these patients, healthcare professionals need to extend their principles of infection prevention and control beyond their own handwashing and clinical practice and consider the patient's hygiene and physical state (HPA, 2007).

### Educating patients

It is crucial that community nurses educate patients about steps they can take to halt the spread of infection. This includes advice on:

- ▶ Hand hygiene
- ▶ Not sharing personal items, such as soap, razors, towels
- ▶ Using separate flannels/cloths to wash the face/body and genital/anal areas (different coloured flannels can be helpful here). Alternatively, disposable cloths can be used
- ▶ Washing clothes and laundry at a minimum of 71°C (as hot water and detergent will destroy any bacteria)
- ▶ Thoroughly cleaning baths after use by someone who is infected.

There are also considerations that can be taken before being admitted for elective surgery to reduce the risk of acquiring an SSI.

As the skin's surface is covered with bacteria (100,000 bacteria on average to each square centimetre of skin [Nazarko, 2014a]), encouraging patients to prophylactically decontaminate their skin ahead of surgery with an antimicrobial wash lotion serves as a precautionary measure to ensure that infections are not carried into the hospital, as well as helping to avoid the risk of SSI post surgery.

Chlorhexidine is an antimicrobial commonly used for decontaminating the skin due to its antimicrobial activity. Octenidine dihydrochloride is another antimicrobial with proven, broad spectrum action against bacteria.

One randomised controlled study (RCT) found octenidine dihydrochloride to be effective in preventing infection around catheter sites after insertion (Dettenkofer et al, 2010), and it has also provided safe and therapeutic action against *Pseudomonas* in nail infections (Rigopoulos et al, 2009).

The octenisan® (schülke) range of wash products contain didhydrochloride as an active ingredient and aim to decontaminate and cleanse the body to help infection control. octenisan wash lotion is suitable for whole body washing and can be used on the hair, face and delicate body areas. It is free from artificial colours and perfumes and so is suitable even for patients with sensitivities to soap or hypoallergenic allergies. Another product in the octenisan range, octenilin irrigation solution, is suitable to decontaminate the skin after inserting peripherally inserted central catheter (PICC) lines which, as said, is becoming a more common procedure in community settings.

### Top tip:

Resistance to harmful bacteria varies from person to person. Some may not become infected (i.e. be immune); others may carry bacteria but have no symptoms; while others develop clinical signs of infection.

## CONCLUSION

Healthcare professionals, and community nurses in particular, are facing unique challenges as patients are increasingly being managed at home or in community centres. This means that new ways of working are often required to deal with developing and ever-changing threats, such as CA-MRSA.

In order to respond to the changing face of health care and the particular challenges of managing more seriously unwell patients at home, community nurses need to have a working knowledge of common health issues — such as infection risk — that can affect any patient, regardless of their primary diagnosis.

As well as increasing their knowledge base about the changing nature of community health care, it is also important that community nurses develop their knowledge of treatment strategies. In the case of infection prevention and control, this includes educating patients and providing practical guidance on personal hygiene. This can involve using antimicrobial body washes to help reduce the incidence of infection at home, as well as being a means of decontaminating the body before elective surgery, and taking a proactive approach to reduce the risk of developing an infection. **JCN**

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## Key points

- ▶ Infection can have a devastating impact on patients' health and wellbeing and can even be potentially life-threatening.
- ▶ Healthcare professionals have a duty to reduce the risk of infection regardless of cause and/or setting.
- ▶ The rise of antibacterial resistant organisms — so-called 'super-bugs' — put a strain on NHS resources as well as negatively affecting patients' quality of life and wellbeing.
- ▶ The increase in the older population means that there are more patients with chronic, long-term conditions, which make them more vulnerable to infection
- ▶ Ensuring that infection prevention and control measures in the community are effective poses a significant challenge.
- ▶ It has been shown that around 20% of all HCAs could be avoided if correct infection prevention and control principles were followed.
- ▶ It is crucial that community nurses educate patients about steps they can take to halt the spread of infection.
- ▶ MRSA is no longer the sole preserve of hospital patients and is more common in patients' own homes or nursing homes.
- ▶ Community nurses need to be vigilant in preventing and controlling such outbreaks, known as community-associated MRSA or CA-MRSA.